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Scientific Research and Technology
in the New Laender***

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Scientific Research and Technology in the New Laender

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Post-Unification Reorganization of R&D

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[Text]

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Outlook

Foreword

The German unification imposes major, historically
unique tasks on research policy: In the new laender a
research landscape must be established which is oriented
toward the proven principles of scientific freedom and is

capable of making a contribution, appropriate in quantity and quality, to the scientific progress and technological potential in all of Germany.

Long before political unity became a reality on 3 October 1990, the Federal Minister for Research and Technology, in cooperation with his then counterpart in the former GDR, had worked toward the goal of a rapid reorganization of research in the eastern parts of Germany, on a scientifically solid base and in a socially acceptable manner. The essential principles for this were included in the unification agreement (Article 38).

At the initiative of the BMFT, the Science Council, in an extraordinary effort, evaluated all the research establishments at the academies in the former GDR and submitted recommendations for the founding of new ones. The federal government and the laender, as well as the major scientific organizations, in particular the Max-Planck Society and the Fraunhofer Society, have taken up these recommendations and to some extent already implemented them.

Despite the great strain on the federal budget, it was possible to make sufficient funding available for research support in the new laender. After completing the transition funding for the institutes of the former Academy of Sciences, the BMFT will make approximately 585 million German marks [DM] available in 1992 for new research institutions in the new laender. Beyond that, in 1992 about DM650 million will be infused into the new laender from the BMFT's special programs in research and development projects. In 1992 about DM300 million from the joint Recovery East program will support research ventures in the economy (research companies) and the return of scientists to the universities.

In the new laender the BMFT supports universities, institutes and companies in the area of research and technology through a variety of special measures. This brochure attempts to give an overview of this. Since the research community in the new laender is in a state of dynamic change, the brochure can only represent a snapshot. It shows, however, how far the renewal process has already progressed and in which direction the research community is changing. The goal is clear. We want excellent research in all parts of Germany!

Bonn, November 1991, Dr. Heinz Riesenhuber, Federal Minister for Research and Technology

1. Creation of the All-German Research Community

Because of its experience and knowledge gained over the many years of preparation and implementation of the German-German agreement in 1987, the Federal Ministry for Research and Technology (BMFT) began to define, as soon as the fall of the Berlin Wall opened up the prospect of German unification, the resulting task in the field of science, research and technology.

Even before the People's Chamber election in March 1990, and all the more after it, the Federal Minister for

Research and Technology began conversations with his GDR colleague in order to come to an agreement as quickly as possible concerning what had to be done before and after restoration of German unity and how optimal conditions for research and technology could be created in all of Germany. The Federal Minister for Research and Technology was thus able, in agreement with the freely elected GDR government, to bring concrete proposals into the negotiation about the unification treaty (EV), proposals which were ultimately combined in Article 38 EV and its appendices.

Article 38 EV defines as the primary goal the creation of an all-German research and development community at the level already achieved in the old federal territory, retention of which is worth preserving in the area of the former GDR and reinforcement of the potential in science, research and technology, so that they may continue to play their important role for state and society in the unified Germany.

This goal is to be achieved by creating a joint structure and orientation for science, research and technology in Germany, by overcoming the—over 40 years of centralized, unfree, command system—misdirected development in the area of the former GDR and by aiming research and technology in this region toward the basic constitutional system and constitutional reality. This applies particularly to the fields of:

- scientific freedom
- autonomy of scientists and scientific institutions
- priority for the initiatives of science and economy over government action,
- Federal system of government activity.

In its various paragraphs, Article 38 EV describes the methods and measures for the three subareas in the new laender as follows:

- Reorganization of the public R&D facilities,
- preservation and strengthening of an efficient research and technology capacity in the economy,
- establishment of a modern scientific and technological infrastructure

On the day the treaty to restore German unity was signed, those responsible for research and technology had access not only to the regulations of this treaty and its appendices, as well as the protocol and the joint memoranda on the treaty, but also to a clear understanding of the difficult problems connected with its implementation and to an already extensively prepared set of instruments for their solution:

- Methods for evaluating and restructuring the research institutions of the former GDR and transition funding to assure the realization of these procedures,
- guidelines and funding from the BMFT for the purpose of expanding methods and programs to support research and technology in science and the economic sector to all of Germany and for meeting the need to catch up in the new laender,

- concepts to create an appropriate infrastructure in the research and technology sector in the former GDR territory and for access by the new laender to western German, West European and worldwide infrastructures,
- access by eastern German scientists and research institutions to the international scientific and technological cooperation established by the FRG, primarily with the West,
- regulations for dealing with the cooperation contracted for by the GDR, primarily with the East.

The preconditions for the transition from a German interstate relationship between the laender to intra-state, all-German conditions have thus largely been fulfilled within the area of responsibility of the BMFT.

The implementation was begun even before the day of German unity. Thus, the regulations of the 1987 agreement were used until the last day the GDR existed, in order to reinforce contacts and cooperation between western and eastern scientists and research institutions with a view to Article 38 EV. The BMFT conferred with the leaders of the major autonomous scientific organizations and research institutions in the FRG about their potential contributions to the creation of a homogeneous German research community.

As early as September 1990, the Federal Minister for Research and Technology called on the western German economy to spend at least 5 percent of its considerable R&D budget to support and reinforce modern, efficient scientific and technological capabilities in eastern German industry.

On the day of German unity, the BMFT established its branch in Berlin, thus creating the foundation for the settlement of additional project sponsors in Berlin, in order to bring the support offered by the BMFT as close as possible to eastern German research. Immediately thereafter the BMFT used its eight-point program for the new laender to make the general public more aware of the tasks, opportunities and solutions for all-German R&D. As soon as the governments in the newly created eastern German laender had been created, the Federal Minister for Research and Technology met with his colleagues over there in order to initiate a joint approach in the sense of support structure and allocation of responsibilities.

2. Establishment of Institutionally Supported Research in the New Laender

2.1 Restructuring of the Research Community

The evaluation of the institutes and facilities of the Academy of Sciences by the Science Council, on which the Federal Research Minister and his eastern German colleague had agreed in July 1990, and the submission of corresponding recommendations, provide the preconditions for the BMFT and the local laender to rapidly establish efficient and compatible structures for an all-German research community in a joint process. Among

these structures is the removal of overdimensioned, misdirected and inefficient capacities in research conducted with public funds. Among them is also, however, the prevention of a weakening dilution of the research community, that is to say capacities worthy of support must be assured. This can take place for entire institutions, parts of them or for individual, specialized groups and in various ways:

- by transferring them to research at academic institutions,
- by founding Land-owned establishments,
- by absorption into joint federal-laender funding, more specifically as an institute of the Max-Planck Society or the Fraunhofer Society, as a major research institution or as a new institution on the "Blue List,"
- by spin-off from institutional support for the purpose of transition to economic independence.

The recommendations of the Science Council, which have been available for some months, utilize all of these opportunities. The BMFT has fully set in motion this process of conversion in cooperation with its partners. Special importance is awarded to the Federal Government-Laender Commission. It is the central body for all conversion decisions. It may be anticipated that by the end of 1991, when the transition funding for institutes and facilities of the former Academy of Sciences (AdW) runs out, the recommendations of the Science Council will essentially have been implemented. Insofar as this might not be possible—for instance when making up the new Blue List facilities—interim solutions must be found.

2.2 The Evaluation Method of the Science Council

At the beginning of each evaluation procedure each institute of the former AdW was visited by one of the seven specialized working groups. Two additional groups dealt with the Construction Academy and the Academy of Agricultural Sciences. Each working group consisted of scientists from the old and the new laender as well as from other countries in Europe. There were a total of 150 experts. Every institute visit included one representative of the federal government and one from the respective Land where the institute is located.

During the course of its work, the Science Council did not undertake any professional assessment of individual persons. The federal government and laender agree, however, that it is the meaning of Article 38 EV that new institutions recommended by the Science Council should largely be operated with employees of those institutes which received a favorable recommendation. The major part of the work was concluded with the recommendations on 5 July 1991. To this extent the task under Article 38 of the unification agreement has been fulfilled, and, moreover, clearly before the end of the transition funding for the former AdW institutes, which runs out on 31 December 1991.

According to the recommendations of the Science Council, more than 40 new research institutions are to be

created. The Science Council based its recommendations primarily on the following guidelines:

- To reinforce the quality and self-determination of science,
- achieve good potential for research,
- bring university, non-university and industrial research into a balanced relationship, and
- promote scientific competition.

As a result of the stock-taking, evaluation and restructuring of the institutes of the Academy of Sciences, the Construction Academy, the Academy of Agricultural Sciences of the former GDR as well as of some selected departmental research institutions, the Science Council has recommended that approximately 11,000 new positions be created in the new laender in non-university research institutions. To these are added about 2,000 positions for individual scientists and working groups, which are to be integrated into the institutions of higher education in order to stimulate research and teaching.

In detail the recommendations encompass:

- Blue-List institutions:4400-4500 positions
- major research institutions:1670 positions
- Fraunhofer Society950 positions
- Max-Planck Society:680 positions
- Federal departmental research:1200 positions
- Laender departmental research, (70 percent in agriculture):2100 positions
- Integration into higher education:2000 positions
- Total:13000-13100 positions

Furthermore, the Science Council has recommended 30 projects for joint support by the federal government and the laender, which in the research community of the FRG fall under the implementation order entitled Academic Projects.

A series of research institutions will be created in the new laender for which there have been no comparable facilities in the FRG up to now. New impulses for research all over Germany will emanate, for example, from three major research centers after 1 January 1992: from the Environmental Research Center in Leipzig/Halle, the Center for Molecular Medicine in Berlin-Buch and the Geo-Research Center in Potsdam, as well as from new establishments of the Max-Planck Society (MPG) and the Fraunhofer Society (FhG).

2.3. Outlines of Future Institutional Support (see Graphic at End of Brochure)

With the submission of the 1992 draft budget the Federal Minister for Research and Technology created the financial preconditions for the federal government's ability to support the portions of the funding for which he is responsible after 1992. On 1 July 1991 the Federal Government-Laender Commission for Education Planning and Research Support (BLK) confirmed the joint opinion that urgent tasks can be mastered with the existing set of instruments for joint research support

according to Article 91b of the Basic Law. For institutional support in the new laender approximately DM585 million were set aside in the 1991 draft budget for the BMFT. The federal government is thus able to assume 66 percent, on the average, of the cost of the new facilities, and the remainder must be paid by the laender. In addition, DM120 million in 1992 and 1993 will be made available from the higher education renewal program (HEP) in order to ease the burden on the laender in funding newly established Blue-List facilities.

At the initiative of the BMFT, leading scientists from the major research institutions, the Max-Planck Society and the Fraunhofer Society, were detached to research institutions in the new laender. In addition, a lively exchange of scientists between research facilities in the old and new laender has begun.

2.4. The Max-Planck Society (MPG)

The Max-Planck Society is gaining a foothold in Mecklenburg-West Pomerania, Brandenburg, Saxony-Anhalt, Saxony, Thuringia and the eastern part of Berlin with temporary working groups at universities, with project groups and with new institutes.

Immediately after the "turnaround" in the Fall of 1989, the MPG intensified its close cooperation and exchange with researchers and institutes of the then GDR. In the past two years, within this cooperation based primarily on personal contacts, it was possible to initiate about two dozen joint research projects, undertake numerous joint arrangements, organize nearly 200 working visits by young scientists and fellowship holders at Max-Planck institutes and offer many equipment and book grants.

At its November 1990 and 1991 meetings, the senate of the Max-Planck Society decided to establish at the universities in the new laender temporary working groups, to be initiated and monitored by an existing Max-Planck institute but headed by a scientist from the new laender. After five years these working groups are then to be taken over by their host universities and integrated into their own research spectrum. The purpose of the working groups is to strengthen basic research outside universities and to provide new impulses.

The first working groups will start their research on 1 January 1992. Negotiations with the universities where the working groups are to be located have been concluded with favorable results. It was decided at the MPG senate meetings to found a total of 29 such working groups.

Humboldt University Berlin:

- Structural grammar
- Non-classical radiation
- Transformation processes in the new laender
- Theory of reduced-dimension semiconductors
- Cell division regulation and gene substitution
- X-ray diffraction with layer systems
- Algebraic geometry and number theory

University of Halle-Wittenberg:

- Enzymology of peptide bonds
- Environmental law
- Synthesis, structure and properties of liquid crystal systems

Friedrich Schiller University Jena:

- Regulation of the DNA replication for *Bacillus Subtilis*
- CO₂ chemistry
- Physics and chemistry of interstellar dust
- Gravitational theory
- Modulation of signal transmission by growth factors
- Pharmacological hemostaseology
- X-ray optics

Erfurt Medical Academy:

- Molecular and cellular physiology

Rostock University:

- Theoretical multiparticle systems
- Complex catalysis
- Asymmetric catalysis

Dresden Technical University:

- Mechanics of heterogeneous solid matter
- Theory of complex and correlated electron systems

Brandenburg Regional University Potsdam:

- Rule by landed gentry on the eastern Elbe as a social-historical phenomenon
- Quantum chemistry
- Fault-tolerant computing
- Partial differential equations and complex analysis
- Non-linear dynamics in astrophysics

Leipzig University:

- Time-resolved spectroscopy

For project groups and newly founded institutions there are both "original" facilities, initiated from the ranks of the MPG, as well as "induced" ones, recommended by the MPG as a result of its evaluation of AdW research institutions outside the universities. Among the original plans is the Max-Planck Institute for Infectious Biology, which has long been recommended by a commission, as well as the new projects called the Max-Planck Institute for Economic Sciences, the Max-Planck Institute for Molecular Plant Physiology, the Max-Planck Institute for Nonlinear Dynamics and the Enzymology of Peptide Bonds Project Group.

Among the MPG's "induced" projects are primarily two newly founded institutes. The MPG senate made the decision in principle in June 1991 to found a Max-Planck Institute for Microstructure Physics on 1 January 1992 in Halle as the first institute in the new laender, based on the AdW institute located there with 140

employees. It is to concentrate on studying solid state systems whose dimensions are so small that the properties are essentially determined by interfaces. At the sites of three former AdW institutes in Berlin-Adlershof, Teltow-Seehof and Freiberg, an initially decentralized Max-Planck Institute for Colloid and Interface Research will be founded, with about 100 employees. A decision is to be made during 1992 about its future location.

The request by the Science Council to work out a scientific concept for an Albert Einstein Institute for Gravitational Physics has also been agreed to by the MPG, as well as the recommendation that the MPG should take over the sponsorship of seven humanities research centers. In order to assure continued employment for the staff of about 100 scientists (and 70 employees for the infrastructure) planned at these liberal arts centers, an Association for the Promotion of New Scientific Projects, Ltd. has been founded.

Discussions about future structures and development opportunities for the seven fields of work—contemporary history, history and theory of science, study of European enlightenment, modern Oriental study, general linguistics, literature research, culture and history of Central Europe—have already been started.

In parallel, the humanities section of the MPG will take up the question of founding new institutes in the field of liberal arts. In order not to anticipate the result of these discussions and establish institutional solutions prematurely, the MPG is refraining from immediately establishing "centers" for these main research fields.

In addition to the two new Max-Planck institutes, the complex of research fields in the humanities, the 29 working groups at universities and the branch of the Max-Planck Institute for Plasma Physics (see 2.7.1), the MPG in 1992 plans to found additional institutes and project groups in the new laender. The commissions are debating seven projects in this context. The society will have a total of 825 planned jobs available for the totality of all research institutes in 1992. To supplement that, the MPG will make money available from its budget funding for more than 230 visiting scientists, post-doctoral positions and PhD-candidates, as well as scientific and student assistantships.

2.5 German Research Association (DFG)

By enacting an immediate program to "promote research cooperation between scientists of the FRG and the GDR with funding from the German Research Association," the DFG decision-making bodies found a way as early as January 1990 to help scientists in the eastern part of

Germany as extensively as possible. The program, unanimously passed with the votes of the funding parties, opened up the opportunity for eastern German scientists to plan and carry out research projects together with western German colleagues and to apply for the funds required as project grants through their western German cooperation partners according to the usual rules and methods.

In addition, the program was to give eastern German scientists cooperation and support within the framework of the DFG's main programs and special research areas as well as participation in scientific meetings and events, particularly by professional organizations in the FRG. Furthermore, the intended measures included contact and lecture trips in both directions, as well as brief visits to western and eastern Germany. Finally, scientific institutions in Germany's eastern part were able to receive scientific literature from the FRG without charge within the framework of the DFG program.

With this package of support measures, the DFG was able to offer help to qualified men and women in research and thus improve their often pitiful working conditions, and qualified partners in the old laender became involved. The primary purpose of this was to encourage good scientists of the next generation to continue their work in the former GDR and to resist the great temptation to emigrate to the West.

Faced with the alternatives that were becoming evident in the spring of 1990—setting up a parallel research support system in the then GDR or expanding the DFG's responsibility to include the eastern part of Germany—a unanimous senate decision took a negative position on efforts to establish new structures in the former GDR for a transitional period in the form of its own parallel support institutions.

In June 1990 it was thus decided to expand the DFG's responsibility to the area of the former GDR with the goal of creating a uniform scientific and research space as quickly as possible. It was also made clear from the beginning that in expanding the responsibility for assistance the proven principles of freedom and independence for the funding decisions should be adhered to, as well as the fact that the support of research projects should take place exclusively according to their scientific quality. Deviation from these granting criteria should not be permitted even for the—until now often disadvantaged—eastern German scientists.

After the decisions by the Federal Government-Laender Commission, the DFG was also able to begin working for the scientists in the new federal territory immediately after November 1990. After this point in time, applications from eastern German scientists have been directly received and processed. Since January 1991 all the DFG's funding methods, including the special programs, are equally open to all eligible scientists in the new laender.

Within the framework of processing applications for general research support, of the total of 1,085 applications in 1991, 739 were approved, 218 were rejected and 128 were otherwise taken care of. Applications from each specialty are divided as follows: humanities (72), biosciences (240), natural sciences (296) and engineering sciences (131).

For 1991 a funding amount of DM90 million is planned for the territory of the new laender. For 1992 it will be DM107 million (in each case for general research support as well as special research fields). In the area of "special programs" for conferences, contact, lecture and information trips for the new laender, by the end of 1991 the following had been approved: 70 lecture trips, 170 contact and information trips, 500 conference trips by scientists from the new laender within West Europe and 5,500 trips to meetings by scientists from the new to the old laender.

2.6 Fraunhofer Society (FhG)

Nineteen new establishments, nine institutes and 10 branch facilities will be operated by the Fraunhofer Society in the new laender. Eight independent Fraunhofer facilities are planned—and an institute section of the Duisburg Fraunhofer Institute for Microelectronic Circuits and Systems (IMS)—with a total of 700 employees and 10 branch facilities of existing Fraunhofer institutes with 250 employees.

The funding to be borne jointly by the federal government and the new laender at the ratio of 90:10 for these activities amounts to about DM500 million until 1994; DM160 million have been allocated for 1992 and DM170 million for each of 1993 and 1994. Further, the FhG has received additional requests from individual research institutes to establish Fraunhofer facilities. In this area an additional demand for 150 positions and DM70 million in funding may be anticipated.

The planning for the FhG expansion to the new laender was concentrated on research and development activities by institutes of the former AdW, by former combines and by a private institute in Dresden. Unfortunately, due to the short time and the comparatively unlikely event that they would be dissolved, college groups and institutes could only be considered in a few cases.

To be operated as independent Fraunhofer facilities are:

Berlin: Fraunhofer facility for Software and Systems Technology

Brandenburg: Fraunhofer facility for Applied Polymer Research, Bergholz-Rehbruecke

Saxony:

- Fraunhofer facility for Microelectronic Circuits and Systems, Dresden
- Fraunhofer facility for Electron Beam and Plasma Technology, Dresden

- Fraunhofer facility for Materials Physics and Layer Technology, Dresden
- Fraunhofer facility for Ceramic Technologies and Sintered Materials, Meissen/Coswig
- Fraunhofer facility for Forming Technology and Machine Tools, Chemnitz

Saxony-Anhalt: Fraunhofer facility for Factory Operation and Factory Automation, Magdeburg

Thuringia: Fraunhofer facility for Applied Optics and Precision Engineering, Jena

To be operated as satellite facilities of Fraunhofer Institutes are:

Berlin:

- Branch facility for Process Optimization
- Branch facility for Robot System Technology
- Branch facility for Image Processing

Brandenburg:

- Branch facility for Polymer Composites, Teltow
- Branch facility for Biochemical Ecotoxicology, Bergholz-Rehbruecke

Mecklenburg-West Pomerania: Branch facility for Graphic Data Processing, Rostock

Saxony:

- Branch facility for Automation of Circuit and System Design, Dresden
- Branch facility for Process Control, Dresden
- Branch facility for Powder Metallurgy and Composite Materials, Dresden

Saxony-Anhalt: Branch facility for Microstructure of Materials and Systems, Halle

The new facilities will initially be established as Temporary Scientific Facilities (BWE) for a transition period of three years, as a rule. The goal is actual integration of these facilities into the FhG by 1 July 1991. The FhG will make decisions about conversion of the BWEs into permanent establishments in 1993. Should it turn out in the meantime that contrary to expectations a BWE is not able to meet the criteria imposed on permanent FhG facilities, the FhG will make efforts to steer the facility toward more suitable sponsors with respect to research subject and financing. If this does not succeed, the facility would have to be closed.

The integration of the new facilities into the community of existing Fraunhofer institutes will not only increase their number but also the degree to which the FhG segments cover the contract research market. On the one hand, in every case new methods and technologies could also be opened up for the FhG with the new facilities. On the other hand, individual elements of these technologies today are already the object of research at existing Fraunhofer institutes. In particular, however, the new

facilities will use their techniques in the same market segments, that is to say for the same clients to solve comparable problems.

The increasing degree of overlapping of the acquisition fields of the individual Fraunhofer establishments, acting as profit-making centers, has triggered a process of debate in the FhG. It is conducted with the goal of supporting, by means of the proper organizational measures, the increasingly necessary processes of balance and demarcation between the individual institutes and facilities.

2.7 Major Research Institutions (GFE)

Even before November 1989 the major research institutions cooperated with the GDR in various forms within the framework of the agreement on scientific and technical cooperation, and, independently of that, with research establishments of the AdW, with advanced schools and with individual combines in the GDR. After the border was opened, these contacts were intensified considerably and new connections were established. As early as the end of February 1990, approximately 40 cooperation agreements existed between major research institutions and partners in the former GDR.

In order to advise and support the newly created research administrations, particularly those outside the university sector, the Working Group of Major Research Institutions (AGF) has established an "Expert Service." It offers expertise and help in mastering concrete problems at various levels of the hierarchy, including a few days' assistance for each project. The expert service includes fields such as finances and accounting, personnel management and procurement, as well as legal questions, problems of radiation protection, data protection and use of data processing in administration. The AGF also plans to make trainee positions available for longer-term continuing education purposes to administrative employees of research establishments in the new laender.

As a result of the evaluation process, the Science Council recommended that three major research facilities be founded in the new laender:

The personnel and local conditions in Berlin-Buch are the starting point for the founding of the Center for Molecular Medicine (CMM) and operation of modern biomedical research along with its clinical application under conditions not realized in Germany until now. This is to remedy in particular the existing shortcomings in clinical research (see 5.8.2).

In addition to its own research, the new major geoscience research establishment, the Potsdam Geo-Research Center, also has the objective of supporting university and non-university establishments in this field in their planning and implementation of major earth science projects and joint tasks on the national and international levels (see 5.2).

The urgent environmental problems in the new laender, the great complexity of the research and the investments needed for that require the founding of a major research institution as one of the supporting pillars of a research union of higher education and the economic sector working in the field of environmental research. The Leipzig/Halle Environmental Research Center takes into account the extreme environmental burden which exists in the Halle-Leipzig-Bitterfeld region (see 5.1.2).

The characteristics shared by these major new research institutions, according to the recommendations of the Science Council, are the desirable special organizational flexibility, such as the avoidance of rigid institute structures, a large number of fixed-term contracts and close ties to the university environment. In all, planned positions are being created in the area of major research institutions for about 700 employees in order to implement the recommendations of the Science Council, and to these are added third-party funding, trainees, doctoral candidates, visiting researchers, etc. In addition to the new establishments, the major research institutions of the old laender will establish new locations, satellite facilities and research groups in the new laender with more than 500 positions.

2.7.1 Satellite Facilities and New Locations

Upon the recommendation of the Science Council, working groups from institutes of the former AdW in Berlin are being incorporated into major research institutions there, such as the Photovoltaic research group with 30 employees from the Central Institute for Electron Physics of the AdW into the Hahn-Meitner Institute. The major research institutions in the old laender will further build up the research capacities by establishing the following research locations in the new laender:

German Electron-Synchrotron (DESY)

With the signing of the new DESY treaty between the BMFT, the Free and Hanseatic City of Hamburg and the Land of Brandenburg, a DESY satellite facility will be founded on 1 January 1992 in Zeuthen/Brandenburg and be based on the Institute for High-Energy Physics (IfH) of the former AdW. This therefore replaces the treaty concluded on 18 December 1959 for the founding of DESY.

The German Electron Synchrotron DESY, located in Hamburg, is a major research institution which studies fundamental questions of the structure of matter and of the microcosm by means of high-energy accelerators in international cooperation.

The IfH was among the first institutes for which the Science Council, using the assistance of a British scientist to evaluate the AdW institutes, issued a recommendation for future development as early as January 1991. The institute was successfully engaged in the international cooperation in this research field and has participated for many years in major high-energy projects at

CERN [European Center for Nuclear Research] in Geneva, at DESY in Hamburg and at the research centers in the Soviet Union. It should be noted that the IfH was the only AdW institute in the former GDR which was able to devote itself exclusively to epistemological basic research.

DESY-Zeuthen will have 136 planned positions; of the formerly 220 male and female employees at IfG, 131 will find a new position here. The 1992 budget is approximately DM19.3 million, of which the BMFT pays 90 percent and the Land of Brandenburg 10 percent. The Zeuthen institute will thus have the opportunity in the future of participating in major ongoing experiments in high-energy physics.

The institute is expected to develop an independent and scientifically attractive program. It will primarily take part in the experiments at the HERA accelerator at DESY in Hamburg. In international cooperation, projects at CERN and the cooperation with the Soviet Union will continue to be pursued, for example the study of particles from cosmic radiation (neutrinos) in an underwater telescope in Lake Baikal in Siberia.

German Aerospace Research Institute (DLR)

For the Institute for Cosmic Research in Berlin-Adlershof, the Science Council recommended the establishment of a DLR institute for the principal subject of Planetary Remote Sensing, with the goal of providing a complementary addition to this until now underrepresented research field in the FRG, as well as the recommendation to continue the ongoing cooperation projects with the USSR and develop space instruments and make remote sensing data available to a broad group of users. Further, it was suggested that the Real-Time Signal Processing department from the Institute for Automation of the AdW should be incorporated.

For the satellite ground station at Neustrelitz (Mecklenburg-West Pomerania), the Science Council has proposed a regional user center for remote sensing data, in particular with respect to environmentally relevant questions, a reference station for the geodetic and navigation satellite systems which are under construction and a continuation of the atmospheric and ionospheric research.

Corresponding with the DLR's structure at research centers and branch facilities in the old laender, a DLR research center will be created in Berlin. An Institute for Planetary Exploration, and Institute for Sensory Analysis of Space as well as a Department for Remote Sensing of the Hydrosphere will be established. Neustrelitz will be professionally connected to the Oberpfaffenhofen research center and administratively to the Berlin-Adlershof research center. In the course of the new establishment, the DLR will concentrate all of its activities in the field of planetary exploration to Berlin-Adlershof.

Alfred Wegener Institute for Polar and Marine Research (AWI)

The Alfred Wegener Institute for Polar and Marine Research located in Bremerhaven will establish a satellite facility for polar research on Telegraph Hill in Potsdam. On the one hand, it is to include and bring together in one place the internationally recognized scientific potential for polar research built up in the former GDR, and on the other hand close significant gaps in the FRG's existing polar research program. This strengthening of polar research on the polar and subpolar mainland and the islands will particularly benefit from projects within the framework of the Global Change and Environmental Research (see 5.10).

Max-Planck Institute for Plasma Physics (IPP)

The Central Institute for Electron Physics (ZIE) possesses special scientific knowledge and experience in the field of fusion-oriented plasma physics. Valuable contributions toward progress in plasma-wall-interactions were made here, which are internationally recognized. In particular, the scientific results were obtained in the large Soviet Tokamak T-10 experiment by means of independent diagnostic developments.

The Science Council has recommended that the research work in the research field of plasma physics be continued and that an establishment working in this field should be founded in Berlin. To begin with, it should be associated in an administrative-technical manner with the IPP. This recommendation is being implemented by establishing a satellite facility of the IPP for an initial period of five years, which will have a staff of 50 employees financed by the BMFT, the Land of Berlin and the Commission of the European Communities.

GKSS Research Center at Geesthacht

The GKSS [Society for Utilizing Nuclear Energy in Shipbuilding and Shipping] is interested in establishing a branch facility in Magdeburg which is based on the research establishment of the former Magdeburg Water Management Directorate, which was judged to be viable by the Science Council. In view of the independent research profile the Science Council recommended an independent Blue-List research facility. For many years water research has been one of the main focal points for the GFSS research center, which until now was mainly involved with the tide-influenced area of the Lower Elbe including the transportation processes, conversion and burden on the running waters of the Elbe.

The founding of a branch facility in Magdeburg would now make it possible for the GKSS to expand its work on the complex subject of Energy and Hydrological Cycles to the entire Elbe system. Furthermore, this location facilitates cooperation with the international Elbe Protection Commission, which is headquartered in Magdeburg.

Membrane research has also been one of the GKSS's research fields for many years. The study, development and testing of membrane methods for material separation and material enrichment are the focus of the Environmental Techniques concentration. In addition to the development of energy-efficient or energy-saving alternatives to conventional separation methods, modern separation projects are being engaged in, such as the preparation of process streams. The Science Council has recommended the establishment of new GKSS departments at its Institute for Chemistry in order to utilize the professional experience of the Working Group for Membrane Research at IPOC Teltow, an institute of the former AdW.

In order to utilize the energy-saving and production-efficient advantages of the membrane procedures, the following research and development fields are being pursued with the knowledge available at GKSS and in Teltow:

- Basic research on tailor-made membranes, molecular design, polymer structure, interface and transport and incorporating ordered separation phases,
- development of high-performance membranes using constant organic and anorganic membrane materials, the properties of which can be adjusted to various problems sets,
- development of application-specific modular concepts.

Further intensive cooperation in teaching and research with the advanced schools in Brandenburg and participation in the BMFT's joint Nonporous Membranes project are planned. It is anticipated that incorporation of the Teltow departments for membrane research into the GKSS will lead to a considerable increase in performance and that in this specialty field the FRG will be able to secure for itself a prominent place internationally in this key technology.

Society for Mathematics and Data Processing (GMD)

The existing GMD branch facility in Berlin, the Research Center for Innovative Computer Systems and Technology of the Berlin Technical University (FIRST), will move to Berlin-Adlershof in March 1992 and be transformed into an institute. Thirty-one employees will be hired from the institutes of the former AdW by 1 January 1992 and will also work in this institute. In early 1993 the GMD's Research Center for Open Communication Systems (FOKUS), also located in West Berlin, will presumably then continue its work in Adlershof as a second institute.

2.8 Strengthening Higher Education Research

The transfer of research personnel to the institutions of higher education is an important means for their restructuring. The federal and laender governments agreed in May 1991 on the Renewal Program for Higher Education and Research in the New Laender (HEP), which over a five-year period provides for spending of a total of

DM1.76 billion, which is borne by the federal government and the new laender at a 75:25 ratio. The core of the program is immediate help for personnel and investment renewal in higher education and to create efficient research in the new laender.

In the field of research sponsored on the federal side by the BMFT, in addition to all the measures planned so far, approximately 3,500 scientists will be supported in 1992 and 1993 at a cost of DM520 million. DM400 million is made available for the incorporation of 2,000 scientists from the academies of the former GDR into higher education. In accordance with the recommendations of the Science Council, the research capacity of the institutions of higher education will be significantly improved by this, in order that the research, which during the time of the GDR was largely transferred from the advanced schools, may be returned to them. A new facility in Berlin, jointly supported by the new laender and Berlin, is to implement this measure.

But this will not be completed with transitional funding. The BMFT is urging that:

- opposition at the institutions of higher education to former AdW scientists should be reduced,
- the new hiring needed for the restructuring should be accelerated,
- scientists from the old laender should be integrated, and
- preconditions be created in unconventional ways at the advanced schools also to accept larger research groups, the dissolution of which would be a loss.

2.9 Academies in the New Laender

In accordance with Article 38 EV, the Academy of Sciences (AdW) of the GDR has been dissolved. Its institutes and facilities are in the process of restructuring. Only its actual core, the "Learned Society," continues to exist, according to the law of the Land of Berlin. According to the plans of the Land of Berlin it will be dissolved, as the West Berlin Academy has already been. Replacing the two will be a new Berlin Academy, which will continue the tradition of the Learned Society founded in the year 1700 by Leibniz. In parallel, the Saxon Academy in Leipzig will be revived.

The Leopoldina German Academy of Natural Scientists in Halle, founded in 1652, played a special role during the SED [Socialist Unity Party] rule. It has about 1,000 employees, half of them foreigners. The Leopoldina, the oldest academy of natural sciences and medicine in the world, will play an important role in the future as well, and funding will be shared by the federal government. The BMFT will also help with project funding. Thus, the Leopoldina will get a fellowship program which will enable qualified young scientists from the new laender to spend time studying at research institutions in the West (see 4.4).

When evaluating the AdW's humanities institutions, the Science Council recommended 30 projects for continued

joint support by the federal government and laender in the academic program. The conference of the Academies of Sciences examined these recommendations and, for its part, submitted a list of more than 60 projects, which in its opinion should be jointly funded by the federal government and the laender. It also includes projects in natural sciences, music and social sciences, which are outside the review task of the Science Council.

The Federal Government-Laender commission called Academic Projects complied with these wishes at its meeting in October and decided on 60 projects with 224 positions and a funding amount of DM17 million. In so doing, it was also possible to significantly reduce the concentration of academy projects to Berlin.

2.10 Regional Distribution

The regional distribution of research establishments is in need of correction with a view to their massive concentration in East Berlin and the Saxon region. However, previous recommendations by the Science Council are only to a limited extent aimed at balancing the regional distribution. Relocation from Berlin to the area around Berlin, such as Potsdam, is relatively easy to undertake. Moving to neighboring regions, such as Mecklenburg, often fails due to the lack of housing alone.

Nevertheless, the attempt is being made to utilize this singular historic opportunity to restructure and to overcome regional imbalances. The Federal Minister for Research and Technology has emphatically asked the laender governments to meet this challenge with active policies. He is prepared to work jointly on concepts of regional relocation.

2.11 Renewal of Management Structures

A special problem is the renewal of the personnel management and management structures, particularly the elimination of "linkages." In a first step all directors, regional and division leaders of research institutions and the former AdW center are being subjected to examination for potential activity as an "MfS [Ministry for State Security] officer on special duty." When such activities are confirmed, the people are given notice.

The laender are also examining those groups which, without being asked by the AdW, in the Fall of 1989 were suddenly officially transferred to individual institutions. Insofar as leading positions at the institutions have been vacated through resignations or through dismissals at the request of fellow workers, they are only being temporarily filled. So far, nearly half of all institute heads have left. Basically, all leadership positions are being readvertised, while the former occupant may also apply.

2.12 Employment Prospects

Since the existing duties of about 50 percent of the still remaining AdW employees were not recommended by the Science Council for transfer to new establishments,

the BMFT is helping to exhaust all opportunities for opening up new employment prospects for them.

2.12.1 Measures for Social Organization

Within the framework of the duties of the Coordination and Liquidating Office for Institutes and Facilities of the former Academy of Sciences (KAI-AdW, active since 1 January 1992 as a registered association), a series of measures for social organization of the necessary personnel reduction has already been implemented. Special responsibility rests with the individual institutes to make optimal use of the available funds for their employees' future. The BMFT supports competence training, continuing education and retraining as a basis for future employment. For former AdW employees this includes primarily:

- long-term continuing education measures such as the NETZ [Reorientation-Entry-Transfer-Access] qualification program,
- information events with offers for advanced training from about 80 educational establishments in cooperation with the labor administrations,
- establishment of a contact and advisory office for competency training and continuing education at the KAI.

These measures, begun in Berlin, were expanded to the entire area of institutes or facilities, and financial support was provided particularly for rapid entry into additional competency training. Interested persons who desire to switch to economic independence will receive support according to the circumstances of each individual case, such as:

- professional counseling,
- use and occupation contracts for study rooms and premises with favorable, time-limited conditions,
- transfer of assets, raw materials, auxiliary and operational means,
- financial subsidies when accepting additional employees of the former AdW into the enterprise.

Beyond this, there are special BMFT support measures for founding technology-oriented enterprises (see 4.6).

2.12.2 Job-Creating Measures

Opportunities to avoid the threat of unemployment and to undergo additional training are primarily offered by the Job-Creating Measures (ABM). Employees who in the short term have no prospect of being accepted into a new research establishment outside a university, by institutions of higher education or in industrial research thus get a chance with ABM to orient themselves toward new fields of work. In agreement with the Federal Minister for Labor and Social Organization, the Federal Minister for Research and Technology has opened up opportunities to use ABM funds from the Federal Labor Agency and the joint Recovery East agency for work that includes the R&D sector in the new laender.

In connection with an ABM activity it will be possible to establish businesses as well as create new employment in research, industry or in scientific-technological services. It is anticipated that this will have positive retroactive effects on local labor markets and regional economic structures. Tasks which are connected to the specific professional experience of the research personnel are of particular interest for ABM. These are, among others:

- the study, analysis and documentation of contamination at industrial sites and their cleanup,
- current tasks in environmental research, such as in the development of methods to reprocess water and eliminate waste water, renaturing ecological biotopes, decontamination of heavily polluted soils and medical research, for example in studying the statistics of various clinical pictures,
- the introduction of more efficient methods for using energy and of techniques in regenerative energy production,
- restoring and safeguarding archives and cultural materials,
- tasks to improve the infrastructure close to the economy, such as in publicly funded counseling and demonstration, on a level above the enterprises, to introduce new industrial technologies such as production technology, composite materials or microelectronics,
- renovation and modernization work in industrial buildings.

Employees in research and development are demonstrating great interest in the ABM opportunities. According to present estimates, it will be possible to create about 3,700 ABM jobs in the area of the former AdW. The establishment of a decentralized network of ABM advisory offices, decided in April 1991, in places with a high concentration of establishments in the R&D sector will also contribute to this. The counseling teams will be trained at project seminars in cooperation with the labor administration.

This set of ABM instruments facilitates the restructuring of the R&D community in the new laender, because founding new establishments will often be simpler in connection with an ABM bridging phase. A "guide" offered by the BMFT is to provide practical help to the administrations in the new laender, the corresponding institutes, the business economy and the Trust Agency in using the set of ABM measures.

3 Research and Technology Policy Relating to the Economy in the New Laender

3.1 The State of Market-Oriented R&D

The crucial overcoming of economic disparities, the lack of competitiveness as well as innovation inertia in the former combines present the need for radical economic restructuring processes, accompanied by a considerable reduction of the enterprise-related capacities in the R&D sector. On the other hand, as a result of liquidity bottlenecks the risk exists that capacities which are worth

keeping and are necessary for future competitiveness are cut. Thus, of the approximately 86,000 persons who once worked in the field of research and development in the economy (excluding agriculture) of the former GDR, only a minor part can continue to be employed.

Efficient, market-oriented R&D is needed for positive economic development and the creation of jobs which are safe for the future of the new laender. It will therefore be of decisive importance for companies to design their R&D out of their own competence and knowledge of the market. The state can only render assistance in this respect and contribute to an innovation-oriented infrastructure.

The restructuring of industrial R&D in the new laender will only succeed if western German companies, in particular, become involved in all their diversity. Therefore, as early as the end of 1990 the Federal Minister for Research and Technology appealed to the western German companies to spend 5 percent of their budget on a short-term basis for research and technology in the former GDR in a market-oriented manner.

This appeal was heeded by the business associations, since the often parallel focal points of industrial research and development in the former GDR provide good starting points for this. The planned or already agreed-on joint ventures have principal concentrations in the fields of communications technology, microelectronics, microsystems technology, information processing, laser technology, materials research, environmental technology and chemistry.

In addition to the necessary involvement of the economy itself in creating efficient, market-oriented R&D in the new laender, the Trust Agency (THA) also plays an important role. The THA has thus established a working unit which deals with questions of R&D in Trust Agency companies in general and the problems of the research corporations in particular.

The special problems of these corporations result from their specific position within the industrial capacity of the R&D sector in the new laender. These corporations include a considerable portion of the industrial capacity of the former GDR (about 20 percent). They were created out of the research establishments of the combines, and when all combine structures were dissolved they were converted into companies now in the possession of the THA. Today, they have often been separated from the enterprises and are forced to rely on outside R&D contracts.

Since their importance is largely in connection with industrial policy, the responsibility for the restructuring process of the research corporations rests basically with the Federal Ministry for Economics (BMWi). Under its aegis a working group has been established at the Federal Government-Laender Committee for Research and Technology, in which the BMWi, the BMFT, the new laender and Berlin, as well as the THA, are represented. The BMFT supports the restructuring process within the

framework of its possibilities. This includes primarily project funding within the scope of its specialized programs as well as the Contract Research Program.

3.2 Support for R&D in the Economy

The BMFT supports restructuring and establishment of efficient, market-oriented capabilities in the R&D sector with priority on companies in the commercial economy (including the research corporations) in the new laender. The funding is for solidly defined projects by means of partial grants (generally 50 percent with a 10 percent bonus for the new laender), in which the initiative is taken by the business economy.

At present, in the new laender this support is concentrated in the branches of electrical engineering, precision engineering and optics, steel, mechanical engineering and motor vehicle construction, energy and water supply and the chemical industry. The share of the traditionally research-intensive industries of electrical engineering, precision engineering and optics as well as steel, mechanical engineering and motor vehicle construction comprises more than 50 percent.

When regarding this project funding according to the main areas of content, the fields of information and production technology, energy research and energy technology as well as environmental research stand out. The share of support in the fields of information and processing technology amounts to about 43 percent.

3.3 Special BMFT Measures

For the new laender the BMFT has adapted programs which have proved themselves in the old laender and has renewed them for periods initially running until the end of 1993. They are aimed at the establishment of a productive innovation infrastructure, the support of internal or external technology development in businesses and an acceleration of the technology transfer. They are to support the economy in the new laender in its efforts to retain or build innovation potentials in order to reinforce competitiveness. The recipients are primarily small and medium-sized companies and start-up businesses. But the offer is also directed toward research establishments as well as their employees, to whom the programs offer help for greater market-orientation or a change of jobs.

The Personnel Growth Subsidy is aimed at strengthening the innovative force of small and medium-sized businesses (up to 1,000 employees), which want to place themselves in a better position by hiring additional scientists and engineers in the field of R&D. This can also be used to support market-conforming re-employment of people who used to work in research establishments. This subsidy represents 60 percent (in 1991) or 50 percent (in 1992 and the following years) of the gross salaries for a period of 15 months after hiring. Up to DM250,000 may be allocated per company and year. For 1992 between 1,000 and 1,500 applications are anticipated for 3,000-4,000 employees.

The measures involving contract research are also aimed at reinforcing the innovative ability of small and medium-sized enterprises in the new laender by utilizing external know-how, opened up through R&D contracts which are awarded to contractors in the business community or at institutions of higher education. At the same time this provides support for market-conforming reorientation of research corporations and private engineering bureaus.

The group of companies with fewer than 1,000 employees entitled to apply will continue to grow over the next few years. In 1991 about 550 applications were received (principally from firms in the mechanical engineering and textile industries as well as agriculture and construction), but in 1992 about 800 applications are expected, for which DM30 million in support funding have been set aside. The reason for the increase in applications lies in the accelerated privatization and breakup processes in major enterprises as well as in spinoffs and new establishments of firms and, further, expiration of the layoff protection in collective agreements and of temporary work regulations.

Another contribution to the reorientation of capacities worthy of keeping in the R&D sector in the new laender will be made with the West-East Contract Research program. The BMFT introduced this as a supplement to the Contract Research support program aimed at applicants from the new laender. This program involves western German enterprises and foreign companies with an annual turnover of up to DM500 million, which are given help in awarding contracts in the new laender through a subsidy amounting to 40 percent (50 percent for companies below DM50 million in annual turnover) of the R&D contract costs.

As early as mid-1990 a funding project called Startup of Technology-Oriented Companies (TOU) was initiated for the new laender and East Berlin. Support is given to the founding of companies in which the products, methods and technical services to be developed and marketed allow for the expectation of distinct competitive advantages and market opportunities due to the technical innovation they represent.

Company founders specifically want to convert R&D results from their former fields of work into innovative products or procedures. Consequently, it is not surprising that nearly half of the applicants come from academic institutes and university establishments. This contrasts with the experience in the old laender, where only 15 percent of the founders come from the university sector, including major research installations and institutes. Joint foundings are involved to a greater extent than in the old laender. The accompanying seminars on starting companies and how to manage firms are laid out by subject according to the concerns of young technology enterprises.

Approximately one out of four applications is deemed worthy of support. Since about four to five applications

arrive each week, it may be expected that when the application period expires at the end of 1993 about 200 young companies will have been funded within the framework of this model. Without these BMFT support measures, many researchers and developers would not be in a position to take the step into independence.

4. Auxiliary BMFT Measures and Improvement of the Infrastructure

The research establishments and companies in the new laender quickly need modern techniques if they are to remain in the scientific competition and in the markets. The need for innovation and information is extremely high due to decades of isolation. The federal government supports the necessary renewal process by means of equipment purchases, by way of information and offers of training as well as administrative aid all the way to demonstration and model projects.

4.1 Personnel and Information Aid from the BMFT

Even before the German unification, the BMFT initiated measures to support the new laender in building the administrations responsible for R&D and in working out the research policies. Administrative personnel aid was also given in the form of detachment of experienced officials to the laender governments.

Furthermore, the BMFT has started a broadly based information and advisory offensive to accompany the new orientation of R&D in the new laender and provide information about national and international support programs. The agency for the information and counseling campaign is the BMFT's branch office in Berlin. It has turned out to be a permanent point of contact for institutions in the new laender in charge of research and technology.

Many problems can be solved through immediate contacts and close to the location. Above all, the Joint Information Events on the research and development policy of the federal government and the European Communities, held for representatives of science, the economic community and the administrative sector, have proved successful.

So far, the BMFT has established five project agencies in the new laender to advise potential applicants and prepare funding decisions for the BMFT. There are project agencies for the fields of:

- marine research (Warnemuende),
- biology, energy and ecology (Berlin-East),
- information technology (Berlin-East),
- water technology and sludge treatment (Dresden), and
- shipbuilding technology (Rostock)

These facilitate the generation of R&D projects worthy of supporting in close contact with the research institutions. At the same time they also handle assistance management for the old laender.

4.2 European Community and EUREKA Programs

The need for counseling is particularly high in the new laender regarding the possibilities of participating in European Community and EUREKA programs. Since the restoration of German unity, scientific establishments from the new laender have had unrestricted access to all EC programs. With the help of the BMFT it has been possible by means of subcontracts to include some establishments from the new laender in EC projects already under way.

The BMFT ascribes major importance to the participation of researchers in the new laender in the European research programs. For this, the principal need is for information about the contents of the programs and about the procedures to be observed. This is the purpose of the information meetings in the new laender held jointly by the BMFT branch and EC officials. Further, the BMFT has set up program coordinators at the project agencies to advise the applicants and arrange contacts with the EC as well as with project partners.

Participation in EC programs is still low at this time despite the major interest on all sides, primarily because of the difficulties in seeking partners and in financing the applicants' own share.

Meanwhile, institutes from Potsdam, Berlin, Leipzig, Jena and Mittweida, as well as an industrial enterprise from Magdeburg, participate in the EUREKA projects of:

- EUROTRAC (study of transportation routes and conversion of environmentally harmful materials in the troposphere over Europe),
- COSINE (linking of public and private computer facilities through the communications networks)
- EUROLASER (high-performance systems from technically different laser sources for industrial application)
- FAMOS-TRAQ (development of flexible, automated assembly systems for the production technology)

through the German Research Network, and 15 institutes from the new laender participate in the European research network COSINE. In order to preserve this trend, special efforts will continue to be undertaken by the BMFT, such as support for preliminary phase projects for industrial enterprises in order to work out the foundations for cooperation across the borders.

4.3 Science Foundations

In the old laender there is a multitude of private foundations for the support of sciences. They were set up by companies as well as by individuals. These foundations have also expanded their support activities to the new laender. There is no complete overview of the nature and financial volume of the measures, because revealing the foundation's funds would clash with the self-image of these private institutions.

As early as March 1989 the Volkswagen Foundation made an offer of support for joint projects in non-specific fields by research institutions in the former GDR and the FRG, through which more than 80 joint projects with a total of DM10 million are being funded. In his capacity as a member of the board of directors of the Volkswagen Foundation, the Federal Minister for Research and Technology has, on the board of directors, initiated measures with the goal of even greater involvement by the foundation in the acceded region (shifting of concentrations, transitional financing for research groups, endowed professorships, visiting professorships, fellowship programs, guest houses).

The Federal German Environmental Foundation, whose function lies essentially in research, development and innovation of environmentally beneficial methods and products with a special view to small and medium-sized enterprises, began its support activity in 1991. It has about DM200 million available to it annually, for the distribution of which the new laender are to be given preferential treatment.

The Alexander von Humboldt Foundation, financed by the federal government, made it possible immediately upon restoration of German unity for foreign scientists to spend periods of research at research establishments in the acceded region. Conversely, highly qualified scientists from the acceded area receive support for research visits to establishments in the old laender.

4.4 Support Grants

As early as April 1990 the BMFT agreed with the then Ministry for Technology that about 30 young, qualified scientists from the former GDR, who had been held back by the former political conditions, should be awarded support grants. The supported scientists find excellent equipment at the host institutes, are very well taken care of and are included in international contacts. After their return, the grant winners receive equipment grants. A total of 32 grants has been awarded so far.

The favorable response from all involved has shown that visits by scientists from the new laender are capable of erasing the results of decades of isolation and help keep the new research community open to the world.

The BMFT has therefore created a fellowship program, the Leopoldina Prize, for the support of qualified young scientists, a grant which makes continuing education at western research establishments possible. By making more than DM3 million a year available at the Leopoldina German Academy for Natural Scientists in Halle, after 1992 between 30 and 35 scientists annually will receive a fellowship in order to continue and conclude research work or take up new research ideas, while absorbing new and current impulses and questions. The academy itself will be responsible for awarding the grants, based on recommendations from a selection committee.

The funding period is 12 months, six months of which are spent at a research establishment in the old laender or in Western Europe, and the second half at the home institution. A research fellowship is awarded for the first six months. During the second half year the experience gained is to benefit the future research activity and contribute to the promotion of structural change in the new laender and the creation of competitive research geared toward international quality criteria.

Funding may also be given to older scientists who are working with a research institution in the old laender or in another country in Western Europe and who need travel money, consumer goods and other material support.

4.5 Innovation Counseling

As a result of a pilot project supported by the BMFT, innovation counseling offices have been established at western German chambers of industry and trade (IHK). These offices help enterprises with advice and information on questions of research, development and innovation. Among other things, they schedule information meetings on new technologies, arrange contacts with research establishments and provide counseling on issues of financing projects in the research and technology sector and on applications for government funding.

Innovation counseling by the IHK has proven successful and has been expanded to the new laender. In a new pilot project lasting until the end of 1993 and specially tailored to the particular needs of the new laender, eight IHKs will receive supplementary personnel and materials funding for the innovation counselling agencies in Chemnitz, Dresden, Erfurt, Halle, Leipzig, Magdeburg, Potsdam and Schwerin, which are in the process of being set up. The pilot project is supported by the Federation of German Chambers of Industry and Commerce (DIHT), which together with western German IHKs assures an intensive transfer of knowledge and experience.

The network of innovation counseling offices being developed with BMFT funding also includes those IHKs in the new laender which are not directly involved. The goal of the new pilot project is for all IHKs to set up innovation counseling offices in the medium term. A network of coordinating bodies for small and medium-sized enterprises should be created to cover the largest area possible.

4.6 Technology and Business Establishment Centers

The BMFT's pilot project for supporting 15 technology and business establishment centers (TZ) in the new laender is meeting with a great deal of interest. These centers, which are to be equipped with a modern communications and infrastructure, are primarily to help establish enterprises which want to build an independent existence based on new technologies such as information technology, biotechnology or production technology. In

addition to low-cost availability of suitable business premises, the emphasis is on technical and commercial advice for founders of businesses.

In order to stimulate the new laender and municipalities to take over the centers as a task for the laender and the regions themselves, the BMFT, in addition to the 15 locations, is funding an additional 10 planning phases for setting up technology and business establishment centers, if the individual laender involved can guarantee the follow-up financing.

Of the 15 technology centers whose construction phase is supported by the BMFT, four are in the Land of Saxony, three in the Land of Mecklenburg-West Pomerania and two each in the other laender including East Berlin. Meanwhile, 183 young enterprises have been able to rent nearly 12,000 m² of floor space on favorable terms, and 850 jobs have been created, which, in view of the growth potential for young technology companies, will attract numerous others.

After all construction work has been concluded and the 15 funded technology centers have finally been occupied, a total of 65,700 m² of floor space will be available for about 500-600 young enterprises, which should correspond with the creation of between 5,000 and 6,000 high-level jobs.

4.7 Demonstration and Transfer Centers

A new type of initiative to support the transfer of technology to small and medium-sized enterprises and for special qualification in each field of personnel in the research and technology sector is the model-like, temporary support of so-called demonstration centers, in which key technologies are provided for "hands-on" presentation. These demonstration centers are to eliminate information gaps and help reduce the risk of entering into new techniques particularly for small businesses.

The centers are being built in existing establishments which have already acquired a good reputation in the corresponding field of technology. The offer of technology transfer covers the entire spectrum of technical information from manufacturer-neutral advice on application opportunities to actual cooperation and training of employees.

In the last few years more than 50 such centers have sprung up in the old laender, mainly in the fields of electrical engineering, production technology, composite fiber materials and new energy techniques. Now, such centers have also been started in the new laender. Thus, through the already existing 16 transfer offices for CIM [Computer Integrated Manufacturing] technology another four branches are being created in the new laender, more precisely at the Chemnitz, Dresden and Magdeburg Technical Universities and at the Wismar Technical College.

The BMFT's funding for this amounts to approximately DM12 million for 1993. In addition, two centers for

Synthetic Materials Technology are in the planning, at the Institute for Polymer Technology in Dresden and at the Central Institute for Welding Technology in Halle.

5. Measures by the BMFT Under Its Programs for Specific Fields

The use of project funds is oriented toward solving scientific and technical problems under the programs for specific fields. In so doing, the design of the funding method must guarantee that the federal funds go where the use for a productive research community and the chances for later implementation of the research and development results are the greatest. This could mean that aspects of development of promising research potentials in the new laender have priority over permanent continued support for high-quality projects in the old laender.

Until the day of German unity, scientists from the former GDR could not themselves apply for project funding. The BMFT has therefore opened the way for assistance mechanisms. In particular, western research institutions have included eastern scientists in their projects and in this manner have had funds approved for them. The joint projects, in particular, represent a means on the way toward equal cooperation.

In order to improve access opportunities to the programs in specific fields for enterprises from the new laender, the BMFT, with the agreement of the EC supervision of grants, is allowing these enterprises a 10-percentage-point bonus for their production quota. With the normal funding of 50 percent, the effect of this is to cut the enterprise's own share to 40 percent. Further, the path toward the subsidies is smoothed with regulations to accelerate and simplify the approval procedure.

5.1 Environmental Research and Technology

Environmental research and technology enjoy high priority above all in the new laender, and for that reason this field will represent a main focal point there with about 15 institutes. Among them are:

- Environmental Research Center in Leipzig/Halle with 345 employees
- Leipzig Institute for Tropospheric Research (55)
- Berlin Institute for Water Ecology and Freshwater Fishing (110)
- Rostock Institute for Baltic Research (124)
- Rostock Institute for Atmospheric Research (30)
- Potsdam Institute for Climate Research (36)

5.1.1 Climate and Atmospheric Research

In the last quarter of 1990 eight projects with a grant volume of DM1.7 million were funded in Saxony and Brandenburg under the joint project Scientific Parallel Program for Cleaning up the Atmosphere in the New Laender (SANA). For the following years, the funding of

approximately 20 projects totaling DM8.5 million annually in support has been provided for in the SANA joint project and for climate research.

The maintenance and continuation of long and scientifically demanding series of data on climate and atmospheric research, which could not be made public in the GDR, is also being supported. In addition, the establishment of a research center on the consequences of a potential climate change will be funded at Humboldt University.

5.1.2 Ecological Research

For 1992 and 1993 it is assumed that there will be a research volume of DM30 million for a total of about 50 projects. Among them is ecosystem research in polluted conurbations and dioxin problems in the principal funding area of environment and health. In the Water Ecology funding area, support is foreseen for cleanup plans for polluted rivers (Warnow) and lakes, and in the Forest Damage Research field for the subject of regeneration of damaged forests (Tharandt and Eberswalde).

A joint research project called Ecological Plans for the Greatly Polluted Leipzig/Halle/Bitterfeld Region, funded since October 1990, served as the opening phase for an environmental research center proposed as early as 1990, which is to be in operation on 1 January 1992. It will be the first major German research institution devoted exclusively to environmental research. Ninety percent of the research center, located in Leipzig, will be financed by the BMFT and 10 percent by the two laender of Saxony and Saxony-Anhalt. The financial requirement for 1992 is estimated at DM50 million to DM60 million. The environmental research center will have a staff of 400 persons, about 140 of whom are scientists. Even before it was founded, contractual agreements were signed with the Universities of Leipzig and Halle.

5.1.3 Environmental Technology

All the BMFT programs and funding plans in this field have already been expanded and applied to the new laender. These involve the four funding plans of:

- Water (water protection, drinking water supply, waste water treatment),
- Waste management and pollution cleanup,
- Low-emission technologies,
- Safety research.

The water supply and waste water treatment in the new laender is in much worse shape than in the old laender. A lack of environmental precautions, primarily insufficient waste water treatment, has led to extreme stress on the surface waters and the ground water in many places. To this is added that due to the general lack of water from low precipitation and too little influx from mountain waters, even highly polluted, untreated waters must be used to provide drinking water.

The lack of or the age of the treatment plants partly result in a critical situation for the drinking water. According to scientific publications, approximately 7.6 million inhabitants, meaning nearly half of the population in the new laender, cannot at the moment be assured of a constant supply of qualitatively good drinking water. Due to the high degree of pollution from organic substances, 38 percent of the surface waters require new and expensive technologies for drinking water treatment, and 47 percent of the surface waters are unusable as a source of drinking water.

For this reason the BMFT's Water Funding Plan was expanded to the new laender immediately after German reunification. Since the Fall of 1990, 15 research projects running until 1994, which deal immediately with the water and drinking water situation in the new laender, have been approved, 11 of them going to grant recipients in the new laender.

Three projects include demonstration plants for drinking water treatment in Coswig, Halle and Magdeburg. In another project, the plan for new construction of the Elbe River Bank Filtration Plants in Dresden-Saloppe was worked out on a semi-industrial scale. In parallel, in another project biological toxicity tests are being further developed and tested in four river bank filtration plants on the Elbe to see if they are suitable for more detailed quality declarations and for monitoring drinking water processing plants.

5.2 Geosciences

A stocktaking of basic earth science research in Germany after the unification gives evidence of the urgency of supplementing the present research landscape with a major research institution. For this reason, at its meeting on 2 July 1991 the Science Council recommended, based on a proposal by its Geo- and Cosmic Research Working Group, the founding of a major research institution for Continental Lithospheric Research in Potsdam. The new establishment is to be called the Potsdam Geo-Research Center.

The founding of such a high-powered research institution is intended to help the future planning, coordination and sponsorship of projects in basic earth science research, particularly in higher education. This refers not only to projects within the national framework but also to appropriate active participation by the research establishments in Germany in joint international earth science programs and long-range undertakings. In the past this was only possible to a very limited extent because of the small capacity of the institutions of higher education.

The new institute is to have the following duties:

- Its own basic research in the subareas of geodesy, geophysics, geology, mineralogy and geotechnology, which are to pursue new approaches relating specifically to major research,

- Develop and demonstrate modern technologies for projects, such as for the international program on prevention of catastrophes, for operating large equipment such as the drilling plant for the Continental Deep-Drilling Program (KTB) and its field laboratory,
- Take over joint tasks in the field of science of the solid earth in cooperation with higher education institutions, particularly the coordination of national and international programs, a World Data Center and the implementation of observatory programs.

Ninety percent of this large research establishment will be financed by the BMFT and 10 percent by funds from the Land of Brandenburg. The staffing schedule shows 348 employees, 151 positions of which are intended for scientists. Over the following years additional positions will be taken over from ongoing basic earth science research programs such as the Continental Deep Drilling Program of the FRG as well as the German Continental Reflection Seismic Program (DEKORP).

Personnel from the favorably reviewed working groups at the Central Institute for Physics of the Earth (ZIPE), the research agency for High-Pressure Research (FHD), the Heinrich-Hertz Institute (HHI) and in part from the Central Institute for Isotope Research in Leipzig (ZFI), as well as the VDE (administrative and service institutions) supply enterprises, will be taken over by the Potsdam Geo-Research Center.

5.3 Energy Research

The misdirected subsidy policies for energy sources and consumer energy as well as inefficient production and use of energy in the territory of the former GDR have led to wasted energy and excess use of brown coal with major environmental damage. By expanding the priority funding areas of the Third Energy Research and Energy Technologies Program, the new laender are enabled to use all opportunities of research policy and technology transfer for a rapid increase in energy efficiency, for economical and efficient energy use as well as a noticeable reduction in environmental pollution. For 1992, 68 projects with a funded volume of DM52 million are being planned. Nearly half of the projects are being implemented in Saxony.

5.3.1 Efficient Energy Use

In order to reorganize the energy industry in the new laender, it is very important to recognize quickly where and at what speed the most modern energy-saving technologies can become economically viable and effect drastic cuts in consumption.

A contribution is being made with a complex optimization model system, the funding project called Zittau Energy Concept 2000, to determine the long-term measures for increasing the degree of effect of the conversion, particularly in brown coal plants, and for saving energy. At the same time, the optimization model from the Zittau Technical College is to clarify the ways to reduce harmful and climate-affecting emissions and derive the required measures.

The goal consists of creating sound illustrations of solutions for energy supply concepts for selected urban areas and territories. These are intended to bring about an efficient deployment structure for the energy sources, the most efficient energy use, including secondary energy and renewable energy sources, as well as greater expansion of heat-power cogeneration, maximum energy savings and thus considerable ecological improvement.

Between October 1990 and July 1991 a total of six seminars in the field of Efficient Energy Use (REV) were held with professionals from eastern and western Germany, in order to analyze the current situation in the new laender and to discuss joint approaches to solve it. For example, in Berlin seminars were held on the topics of District Heating, Energy-Saving Construction—Low-Energy Houses, Improvements in Heating Technology for Existing Housing—The Building Shell and Heating Systems. The subject of Industrial Furnaces was discussed in Leipzig and the subject of Energy Supply Concepts in Erfurt. This initially concludes the cycle of seminars on entering and defining research fields in the sector for efficient energy.

The first interim stocktaking provides the following picture: The method, introduced by the BMFT in the REV sector, of Tandem or Sponsorship Projects—meaning that the applicant and the priority funding area for the work are in the new laender and a professionally competent western German partner with administrative experience is included in the subcontract—is felt by all those involved to be a successful as well as helpful concept in actual practice both in applying for and carrying out the project.

The actual result of the seminar held in October 1990 in Berlin on the topic of district heating is a joint project for Analysis of the Opportunities of Reorganizing District Heating in the New Laender. This is to help not only the—at approximately 23 percent, comparatively large—share of district heating in the residential heating supply to be maintained in an approximate fashion, but in the long run to concentrate it to long-term, solid and survivable structures.

The subject of regional municipal energy supply concepts (EVK) meets with major interest in the new laender, as was shown by the seminar on the topic of Energy Supply Concepts in May 1991 in Erfurt. Prompted and stimulated by the four Berlin Energy Supply Concepts (South-East), Leipzig, Meissen and Neustadt-Glewe, funded by the BMFT, more than 120 declarations of interest from cities and communities in establishing EVKs have now been received.

5.3.2 Renewable Energy Sources

The BMFT's support measures are aimed at creating the necessary scientific and technological preconditions for the most far-reaching utilization of renewable energy in the new laender and thus contributing to a reduction of fossil fuel combustion.

In connection with the reunification, geothermal energy has acquired a new dimension. Until now, within the FRG as well as in the European and international framework, the Hot-Dry-Rock method has been promoted as a principal approach. This method is aimed at utilizing water heated at depths of 5,000 to 6,000 meters with a surface temperature of more than 180°C for power production. In the former GDR three geothermal heating plants were built, not for power production, which requires high temperatures, but to supply hot water, for which the temperature is between 60° and 90°C. These plants were built in Waren in 1984 and in Prenzlau and Neubrandenburg in 1988. In addition, a number of sites were studied and some drill holes made.

Immediately after the reunification, a series of studies costing more than DM3 million was awarded primarily to Geothermie Neubrandenburg GmbH, with the goal of working out foundations for the decision to modernize old plants and build a new facility.

Two photovoltaic demonstration plants are also being funded in the new laender. Here there is also very lively interest in wind energy. Mecklenburg-West Pomerania is already in third place with respect to wind energy production applied for, behind Schleswig-Holstein and Lower Saxony, and already in fourth place with respect to applications.

5.3.3 Energy Production From Fossil Energy Sources

The ecological realities of using brown coal in the former GDR by no means corresponded even approximately with the standard in the FRG. In order to transfer developed technologies as quickly as possible in this sector, funds (initially to western German companies) were approved as early as 1990 for cooperative ventures with companies and institutions in the new laender (piggyback method).

One of the priority topics is methods to reduce the emission of harmful substances during coal combustion, such as dust filters and desulfurization procedures. Projects involving the use of brown coal without harming the environment, as well as the finding and promotion of carbon dioxide reserves and resources, were tackled as priority items.

5.3.4 Nuclear Energy and Nuclear Safety

Among the priorities for the work at the Dresden Materials Engineering Institute of the Dresden Institute for Energy Technology are studies on the planning and optimal use of management techniques in closing down reactors, particularly decontamination and dismantling and reprocessing contaminated equipment parts. Additional work on the closing plans take place at the German Fuel Institute in Freiberg and at Dresden Power Plant Construction.

In the field of waste disposal, fundamental work is being done at the Leipzig Institute for Geomechanics on permanent storage of radioactive waste in salt mountains,

and at the German Fuel Institute in Freiberg on new methods and techniques for final deposit. This work makes an important contribution to the protection of people and environment against the potential risks of using nuclear energy.

5.4 Materials Research

The "philosophy" of the materials research program, to promote cooperation between industry and science in joint projects, has also turned out to be effective for projects in the new laender. Since 1 January 1991 the BMFT has granted funding in the amount of about DM50 million for projects with partners from the new laender; the latter received about DM31 million of this. Out of 164 newly approved grants in 1991, 84 went to partners from the new laender. It has turned out that precisely in the field of materials research there are highly qualified research groups in industry and at scientific institutes who are actively participating in the materials research program.

In Saxony and, above all, in the Dresden region there is a concentration of highly qualified research institutes in materials research. In addition to a technical university which is strong and established in this field, the former Academy of Sciences of the GDR had concentrated its research in the field of materials sciences in Dresden. Based on recommendations by the Science Council, the Free State of Saxony and the federal government, represented by the BMFT, found two new "Blue-List" research institutes on 1 January 1992 in Dresden.

This involves the Institute for Polymer Research with about 200 employees and the future principal fields of:

- Synthesis and chemical modification of polymers,
- development of new composite materials using polymer matrices,
- researching the relationship between the internal structure of polymer materials and their processing properties

And the Institute for Solid State and Materials Research with about 320 employees and the principal fields of:

- Physical and chemical foundations in materials research—synthesis and representation of new inorganic materials,
- development of methods of production and processing of new inorganic materials
- physical and chemical characteristics of new inorganic materials and the development of methods for this.

The Free State of Saxony and the BMFT will each finance 50 percent of these institutes. For the 1992 budget year, Saxony and the BMFT will set aside approximately DM30 million each. At the same time the Fraunhofer Society will also establish two institutions and a branch office with a total of 150 employees and the Max-Planck Society one working group with about 15 employees.

If it is possible in the near future to bring the Saxon universities into close cooperation and interlinking with the two new facilities, Dresden will develop into one of the most important centers for German materials research in the future.

5.5 Information Technology

In the former GDR microelectronics was supported as a prestigious technology with more than DM10 billion. However, no technique suitable for production, with competitive stability and profit resulted from that. After unification it is necessary to support companies in the field of microelectronics by means of so-called conversion projects, in order to open up prospects for the realization of a reorganization plan evaluated by the Trust Agency.

The recognition that efficient and forward-looking research in the field of information processing (computer science) is an important precondition both for economic growth and for the creation of safe jobs, is particularly valid for the new laender.

The BMFT therefore devotes great attention to computer science research in the new laender and documents this by funding joint projects, in which project groups from industry and science get the chance to work together, using synergy effects and the transfer of know-how in their work on long-term and complex research subjects based on division of labor.

Within the framework of the federal government's Future Concept for Information Technology, the BMFT currently supports principally the fields of Artificial Intelligence, Neuroinformation Science, Parallel Processing and Software Technology. For projects from these forward-looking fields of computer science, the BMFT has provided research groups in the new laender with funding totaling nearly DM10 million for 1991 within the framework of such joint projects.

In order to get the research work in the united Germany to harmonize as quickly as possible, partners from the new laender were integrated into existing or just forming joint projects whenever possible, and where, with the agreement of the eastern partners, coordination of the project initially rests in the hands of experienced scientists from the old laender. It has thus been possible since the German unification to involve 20 research groups in 10 joint computer science projects in a relatively short time:

- Artificial intelligence: eight groups in four projects
- neuroinformation science: five groups in three projects
- parallel processing: three groups in one project
- software technology: four groups in two projects.

A typical and, with respect to the common German language, particularly important undertaking of this kind is the following one: The Central Institute for Linguistics in Berlin and Dresden Technical University

participate in the very complex and demanding joint project Program Architectures of Systems for Integrated Analysis of Phonetics and Linguistic Structures (ASL). Together with their joint partners from the western laender, they want to try to make a computer understand spoken language. The central task consists in combining the hitherto separately treated fields of speech signal recognition with interpretation of the content in a new kind of architecture.

The potential application spectrum for the intended computer system for processing spoken language ranges from automatic information systems to machine translation of spoken language. An essential aspect of this is to improve human-machine interaction.

With respect to the high standards of evaluation which are being applied when granting equal funding both at the national and at the European level to applicants from all laender, it must be specially pointed out that Dresden Technical University has succeeded in bringing its know-how into the joint European EUREKA Software Factory project. This venture pursues the goal of improving and standardizing the foundations for industrial software production.

Altogether, the BMFT has provided funding in the amount of DM82.5 million for the year 1991 in the field of computer technology. The BMFT support can only point the way in this respect, however, but not guarantee commercial success.

5.6 Physical and Chemical Technologies

In the field of physical and chemical technologies and laser technology the research projects in the new laender represent a valuable supplement to the BMFT's funding programs. They correspond with the thematic objectives and their incorporation into joint projects poses no difficulties, so that the exchange of results with western German partners is eased and accelerated. The projects are principally undertaken in regions of concentration such as Berlin, Jena, Chemnitz, Halle, Ilmenau and Mittweida.

5.6.1 Laser Technology

The Fraunhofer Society will take over as an independent facility from the Dresden Central Institute for Solid State Physics and Materials Research the subdepartment which works on laser applications. For this Fraunhofer Institute for Materials Physics and Layer Technology, which is in the process of being founded, the FhG plans a staff of 56 employees beginning in 1992.

The Laser Demonstration Center, opened in June 1991, will become a component of this Fraunhofer institute. With a view to the planned demonstration center, the BMFT as early as 1990 financed its outfitting by means of equipment funding. The center has a special mission in helping small and medium-sized enterprises introduce laser technology as a key technology for application areas

as important as machine building, production technology or medicine, for example.

For the establishment of laser research in the new laender, the Science Council has further recommended the founding of an Institute for Non-Linear Optics and Short-Duration Spectroscopy in Berlin (East). This institute is to become a Blue-List facility. It will be split off from the Central Institute for Optics and Spectroscopy (ZOS).

These two institutes in Dresden and Berlin are to be kept under joint federal government-laender responsibility and financing. Additional small research facilities or working groups outside the universities of Jena and Halle, as well as laser research resources at various institutions of higher education would then supplement and round off the research community in the new laender.

By supporting projects in the BMFT's priority area of Laser Research and Laser Technology, it was possible after unification to provide aid to outstanding research groups. A total of 25 projects so far have been granted a total volume of DM15.8 million, which is divided between 14 research institutions in the new laender.

5.7 Biotechnology

The scientists in the former GDR were called on as early as July 1990 to present to the BMFT their concepts of the future shape of biotechnology research in the form of project outlines. Approval was given to 144 projects with a total of DM17.8 million. In order to prepare funding measures for 1991, about 650 project outlines from scientists in the entire FRG were evaluated. Approximately 250 were recommended for funding within the framework of the Biotechnology 2000 program. The focal point for the funding is in the fields of methods and process development, biological waste disposal methods and biological safety research.

Greifswald University was included in a joint project, which in concrete terms involves biological reduction of highly toxic dioxin compounds. Thus, another step was taken to integrate the scientists from the new laender into existing BMFT joint projects with the participation of the universities of Hamburg and Bielefeld as well as Hamburg-Harburg Technical University and the Society for Biotechnology Research (GBF) in Braunschweig. The goal of the new partial project, in which several working groups from Greifswald University are included, is to expand the biological reduction potential for dioxin-containing compounds primarily by including fungi and yeasts. Studies in the old laender are concentrated above all on bacteriological dioxin reduction.

In this project young scientists from Greifswald will learn modern high-performance methods of biochemical analysis in the partner installations of the old laender, in order to be able to apply them to the solution of important questions in their partial tasks. At the same time this next generation of scientists will become

important multipliers at their home universities for the transfer of the most modern methods and knowledge within the framework of student education.

Three measures, once again endorsed by the BMFT in July 1991, are aimed preferably at younger scientists who work in various areas of biotechnology in the new laender. Based on the positive experience which was gained with the support of particularly qualified young scientists in the old laender, the following measures in the form of competitions were designed especially for the new laender:

By supporting 10 up-and-coming groups with specialties in the investigation and function of genome information, protein engineering and the development of new technical applications for molecular and cell biology, the new generation of scientists is to be given the opportunity to realize its own ideas and research concepts. They are to train themselves with a large measure of independence over a period of about five years to occupy leading positions in science.

In the Neurobiology Partnership Project competition, a total of 10 projects in cellular and molecular neurobiology as well as brain research are funded, which are carried out jointly by one western and one eastern working group. The goal of these support measures is rapid exchange of know-how and intensive cooperation between the scientists. The individual term is limited to three years.

Fifty fellowships are planned for doctoral and postdoctoral candidates in biotechnology at research installations in the new laender. In addition to a subsistence grant, funding for literature, for going to meetings and materials for the research laboratory is offered. The topics of the work may be chosen freely within the disciplines of biotechnology (such as bioprocess engineering, processes for purifying exhaust air and waste water, waste treatment or new reprocessing methods).

5.8 Medical Research

The conditions for rapid and successful restructuring of medical research in the new laender are favorable. Medical research has a long tradition there which goes back to the 15th century. Famous personalities are connected with the university clinics in Berlin, Greifswald and Jena, people who helped found the reputation of German medical research: Rudolf Virchow (cell pathology), for example, Robert Koch (bacteriology), Emil von Behring (serology), Ferdinand Sauerbruch (surgery), Gerhard Domagk (development of sulfonamide). Eight subsequent Nobel Prize winners began their careers at the Charite hospital alone.

The Science Council's evaluation of academic medicine praises the interdisciplinary research groups, among others, which were integrated in the clinics and in part conduct internationally noted research. Public scientific defense of doctoral theses in medicine is also part of the tradition, something which the Science Council is even

recommending for adoption by the old laender. Further, the contacts with the Eastern European countries which have grown up in the last few decades are to be maintained and expanded.

5.8.1 Support for Medical Schools

In agreement with recommendations by the Science Council and the Medical Research Council, the BMFT is helping, by means of a special program of Funding to Establish Medical Research at Academic Locations in the New Laender, all the medical departments and schools in the new laender (Berlin, Greifswald, Rostock, Magdeburg, Erfurt, Jena, Halle, Dresden and Leipzig) and the new non-university research establishments in the medical research sector, to develop an individual research profile based on an independent infrastructure as quickly as possible. The laender have approved supplementary measures such as conversions and personnel appointments. The BMFT is making more than DM100 million available for the next three years for these special programs.

Primarily joint research projects are funded under the special program (a maximum of two principal subjects per higher education institution, but three at Humboldt University in Berlin because of its size), which have a common content. As to planning and organization, the scientists in these groups also work closely together. The research topics in the new focal points tie in with the strengths of the previous research at the medical departments and schools and are simultaneously oriented toward the BMFT's program called R&D in the Service of Health, which places special emphasis on clinical research and focuses on common diseases.

According to the applications now pending, the following research concentrations are evident: Neurological research subjects are supported in Berlin, Jena and Magdeburg, while bone and joint illnesses, particularly rheumatism and osteoporosis, will be more intensely studied in Jena, Rostock and Leipzig. Berlin scientists at the Charite are expanding their research on respiratory improvement and respiration in newborns, as well as microinvasive surgery, from their already famous research. Halle and Dresden will concentrate on the fields of cancer research, cardiovascular system and pulmonary research.

While these focal points are intended mainly to promote basic biological research, by doing diabetes research Greifswald University will continue a tradition in epidemiological research which has developed there. A previously cancelled joint research project at the medical faculty of the Erfurt Academy is heading in the same direction with dental prevention. Both projects involve ways of life and conditions under which people remain healthy or may be at risk of becoming ill. This research also promises to show improvement in health information and preventive medicine, both against diabetes and against tooth decay and periodontal disease.

The BMFT expects that with this "startup help," the structural reorganization of the medical faculties will be sped up and a "critical mass" for excellent research develop. Close ties between basic research and clinical research, comparable to the clinical research groups already in existence in western Germany, is a very significant goal for this special program.

5.8.2 Support of Institutions

In addition to the recommendations of the Science Council, plans are being implemented to found new research institutions under joint federal government and laender responsibility in place of the institutes of the former Academy of Sciences. In Potsdam an Institute for Nutrition Research is being created; in Berlin an Institute for Molecular Pharmacology (pharmacological research) and in Magdeburg an Institute for Neurobiology will be founded. Together with the Center for Molecular Medicine (CMM) in Berlin-Buch, when fully completed these so-called Blue-List institutes will offer jobs to about 1,200 employees including third-party-funded personnel.

With respect to the establishment of the CMM, the Science Council had recommended that the fine premises and scientific conditions at the central institutes for molecular biology, cancer research and cardiovascular system of the former GDR Academy of Sciences at Berlin-Buch be used jointly. At the new center it will then be possible to conduct modern biomedical research and its clinical applications under conditions which have not so far been possible either in the former FRG or in the former GDR.

The basic direction of work at the center—analysis of symptoms with molecular and cell-biological methods—requires concentration on a few, long-term research fields. In the opinion of the founding committee, clinical research at the Center for Molecular Medicine will involve the foundations for congenital and acquired illnesses as well as new ways to diagnose them, therapy and prevention with methods of basic research. By means of modern cell biology, fundamental connections between groups of diseases, such as vascular diseases, autoimmune diseases, neurological diseases, chronic infections or cancer, can be made.

What is new in the CMM concept is that individual illnesses will no longer be researched here, but instead common, interdisciplinary, basic features of molecular biology for various groups of illnesses will be studied in order to gain new, integrated concepts for diagnosis, therapy and prevention. This new knowledge of methods helps understand and combat the occurrence of diseases such as cancer and rheumatic illnesses and illnesses of the cardiovascular system, from which many people suffer.

Particularly stressed should be the planned close interaction between basic scientific working groups and the clinic. Project-oriented research groups, which for a brief time join in research concentrations, will replace institutes and clinics oriented toward methods. Their members are to bring in the methods and concepts of various disciplines.

By so doing they contribute flexibly and rapidly to the implementation of basic research knowledge at the clinic.

It has been possible to establish favorable conditions for achieving this goal in a new model for clinical research: The Land of Berlin is taking over regulation of funding for the Robert-Roessle Clinic and the Cardiovascular System Clinic and for establishing other prerequisites. The latter means that the CMM, based on a cooperation agreement with the clinic operator and as recommended by the founding committee, will receive unrestricted access to beds for use in a research-friendly clinic.

In order to achieve the scientific objectives, it is indispensable that the new research center is closely tied to the research community in Berlin. Cooperation between the CMM and the economy is to be established by inviting third-party financing. A larger financial contribution from private economy is being considered as soon as the research concentrations at the center have taken shape and become established.

About 350 male and female employees will work in established positions at the new center; funding for an additional 250 employees is to be invited through research projects. The federal government and the Land of Berlin have taken the necessary steps for the new center to begin operating on 1 January 1992. The CMM will be funded at the ratio of 90:10 by the federal government and the Land of Berlin. According to the administrative agreement worked out between the sponsors, the center will be established as a public trust.

5.9 Construction Research

Research work on maintaining the existing buildings in the area of architectural preservation is being systematically expanded to the new laender. In addition to the necessary basic research, the use of developed techniques and methods, closely coordinated with practical application, is being promoted for selected objects. Pilot projects in Potsdam, Erfurt and Dresden will be used to increase the capabilities of diagnosing and treating damage to public buildings. These measures are very urgent in view of the conditions of many public buildings in the new laender.

Since July 1989 the BMFT has supported the establishment and introduction of the new information service ARCONIS [Architecture and Construction Information Service] at the Space and Construction (IRB) information center of the Fraunhofer Society in Stuttgart. It is to provide information regarding all questions of planning and construction. In addition, a pilot project involving the establishment of regional ARCONIS agencies in the new laender is being promoted. With this, a rare opportunity will be taken in the founding and reconstruction phase of the eastern German construction industry to use external professional information as a natural resource for all business activities. Open-minded young enterprises will be able to achieve an invaluable competitive advantage by utilizing worldwide available professional knowledge.

By making available the most recent know-how from all areas of planning and construction, one wants to avoid repeating old mistakes when mastering the enormous construction tasks in the new laender and in East Berlin. If existing knowledge is used at the right time and expertly, many millions of German marks can be saved annually which can be proven to result—even in the old laender—from unnecessary construction damage.

But innovative products and methods are also urgently needed for the restructuring process in the construction industry. In most construction companies the practice has included building and assembling housing and special-purpose buildings from finished concrete parts or concrete room sections. The business organization was usually marked by inertia and inflexibility.

This brought along major specialization and division of labor and, as a result, monotonous, low-level jobs, posture damage and other burdens of work. Furthermore, the standardized, uniform, concrete structures of the past met with increasing criticism from the population. By means of a model project in Oranienburg, financed by the BMFT, new products and building methods to improve working conditions are promoted for the construction industry. DM2.3 million are being allocated for this purpose for the period from June 1991 to May 1993.

5.10 Marine and Polar Research

Numerous projects are being funded in the field of marine research, particularly the study of stress on the ocean and the ground water from anthropogenic (by people) causes. By including scientists from the new laender in the voyages of the research ship *Sonne*, the institutes over there receive money for the field of marine earth sciences. Funding in the amount of DM17.2 million is being allocated as support in the new laender for the following years (1992-95).

At the unification of Germany, the former GDR looked back on 30 years of successful work in Antarctica. Geoscientists, meteorologists and biologists regularly participated in Soviet expeditions. Over the years an independent research program developed, which led to the founding of the Georg Forster wintering-over station at the Schirmach Oasis. The complementary nature of western and eastern German polar research—in the FRG predominantly oriented toward the oceans, in the former GDR toward the continent—will balance each other ideally in German polar research.

Particularly notable are the longest series of ozone measurement in the world at the Georg Forster station. But the close connection between eastern German and former Soviet polar research is also highly regarded in view of the present global political situation. A large part of the polar research activities of the former GDR is being continued. For this purpose a branch facility of the Alfred Wegener Institute for Polar and Marine Research (AWI) is being founded in Potsdam. A staff size of about 40 employees is planned here (not counting the next

generation of scientists and doctoral candidates), one-fourth of whom will come from the AWI.

5.11 Space Research

Even before the German unification it was evident that projects at individual scientific establishments as well as in industry would be suitable for inclusion in the FRG's space program.

After contact had been established with the Institute for Cosmic Research (IKF), it was confirmed that support measures had to be instituted in order to preserve the efficient scientific structures and incorporate them into the agreed-on German/Soviet space research (Project Mars-Camera). In 1991 DARA (German Space Agency) used a total of DM20 million to support science and industry in the new laender, of which the largest share went to Berlin.

5.12 Transportation and Communications

In order to improve the transportation and communications systems in the new laender, the BMFT used DM16 million to fund a total of 42 projects in 1990. The intent is to undertake experimental and demonstration projects for new ways of communication and traffic technologies primarily in the new laender.

For this purpose the Transrapid magnetic high-speed train is more suitable than any other means of transportation for creating new connections in the united Germany. The first results of route studies undertaken jointly with the Federal Ministry of Transportation show that Transrapid connections between Hamburg and Berlin or Berlin and Dresden have very good prospects both from the aspect of transportation and of economics.

Approximately 15.3 million passengers a year are forecast for the Hamburg-Berlin stretch, and 16.2 million for Berlin-Dresden. With investment costs between DM7.4 billion for the Hamburg section and about DM5.9 billion for the Dresden section, it is thus anticipated that the capacity will be well used. Construction time for the Berlin-Hamburg route is estimated at about six to eight years, so that this connection could become operational by 2002 or 2004. The opening of partial sections by the Olympic Games in 2000 is entirely conceivable. In addition, a Bonn-Berlin route is also being examined with the goal of possibly being included in the Federal Traffic Plan in early 1992.

5.13 Labor and Technology

In the new laender there are major shortcomings in the organization of workplace and health protection. These deficits not only mean danger for the workers, but they are part of the reason for the low productivity and motivational crisis in the enterprises. For the BMFT's research program Labor and Technology it will thus be of primary importance to accelerate the transfer of results from the program to the new laender. In particular, operational model projects which will provide incentives, are to be funded in regions and sectors. It will be made evident that

by adapting work and technology to humans, economic success will also follow. In the regional distribution of funding (1992: DM20 million), Saxony (27 percent) is ahead of Saxony-Anhalt (20 percent).

The BMFT therefore supports the project Improvement in Innovation in the Sanitary, Heating and Air Conditioning (SHK) Trade, in which particularly the approximately 5,000 enterprises in the new laender are facing major demands for innovation. Not only must they master the use of new technologies, but in addition the market field of Energy and Environment is becoming more and more important. Since "western" innovation experiences cannot simply be transferred to the new laender, the knowledge gathered in the course of the project needs to be specified and modified to take the development conditions in the newly forming trade enterprises into account.

As examples for the new laender, in the second phase of the project the Land of Brandenburg will implement this experience using enterprises, chambers of manufacturing trade and advanced training experts to carry out and test such strategies for Brandenburg's manufacturing enterprises.

5.14 Evaluation of Technological Consequences

For ideological reasons no Evaluation of Technological Consequences (TA) had ever been instituted as a government-induced measure in the GDR. By perfecting the plans in science and technology, negative results were a priori excluded. Projects relevant to TA were nevertheless undertaken by individual research institutes (10-12 working groups).

For reasons of research policy, TAs supported by the BMFT will predominantly deal with subjects in environmental protection, communication, productivity increase and information technology. One difficulty in quickly awarding a large number of TA studies as assignments lies for the near future in the lack of educated young students trained in this methodology who could undertake these studies. On the other hand, the TA institutes in the old laender which are trained in the methods lack knowledge of the specific problems in the new laender in order to structure the assignments thematically and to work on them efficiently.

It is therefore necessary to build up solid research, advisory and assessment capacities over a period of about five years by means of project support and to integrate them into the existing TA network in the old laender.

The BMFT thus supports the cooperation efforts of four chemical enterprises in the new laender in doing a study on the technological consequences for the evaluation of innovative, market-economic, efficient and ecologically tolerable research strategies, technologies and products in the field of a New Generation of Raw Materials for use in the chemical industry. In addition to the companies Buna AG, Chemie AG Bitterfeld (CBW), Filmfabrik Wolfen and Leuna Werke AG, the Institute for Food Technology of the Humboldt University in Berlin, as well as an advisory

association participate in the project. The study of technological consequences is directed at defining new research topics and appropriately preparing industrial production.

5.15 Humanities and Social Sciences

Because of the political change in the former GDR, extensive and important humanities fields, particularly German studies, history and philosophy, are facing the necessity of basically having to start over. The objective of this will be to restore the union of teaching and research by reducing the humanistic activities of the Academy of Sciences in higher education, a task which is closely connected with university reform in the new laender. For those humanistic projects which until now were carried out at the institutes of the Academy of Sciences, the plans are to assign them to an academy to be established in Berlin and to the Saxon Academy in Leipzig (see 2.4).

The following support measures have already been undertaken by the BMFT:

- Submission of a report on the situation in humanistic research and on the condition of the scientific libraries in the new laender.
- Since the second half of 1990, scientists from the new laender may work at German institutes abroad. The program has so far been utilized to the full extent (one to two scientists per institute).
- The Institute for German Language in Mannheim and the Central Institute for Linguistics in Berlin participate in a research project lasting three years.
- A listing of objects of architectural conservation is being prepared for Thuringia. The Thuringia Land Architectural Conservation Office and the Dehio Association in Munich are participants.

For ideological reasons, social science research faces an even more extensive beginning. Funding began as early as 1990 with a special allocation, made possible by including the new laender in the "socio-economic panel." In this manner it was possible immediately after the currency union to do a real stocktaking of the economic and social situation in private households in the new laender. In 1991 the new laender were also included in the survey.

In the course of 1990 the Science Center for Social Research in Berlin (WZB) invited approximately 20 visiting scientists to spend several weeks doing research. This activity was continued in 1991 and supported by additional funding from the BMFT. The visiting scientists came from social science and economics institutions of the former Academy of Sciences as well as from institutions of higher education at various locations.

The Society of Social Science Infrastructure Facilities (GESIS), with establishments in Bonn, Cologne and Mannheim, made contact as early as 1990 with non-university social science research institutions in Leipzig (Institute for Youth Research) and Berlin (AdW institutes) with the goal of securing empirical social research

data in the former GDR and unpublished manuscripts for further scientific evaluation. The recommendations of the Science Council provide for the founding of a GESIS branch facility with 12 employees in the Berlin-Brandenburg region.

5.16 Professional Information

The 1990-1994 Professional Information Program, passed shortly before unification, is based, among other things, on the fact that the supply of modern information and literature is essential to research and teaching, science and economy in the new laender in order to quickly improve the unsatisfactory scientific and economic performance. The program activities and goals are of particular importance for the new laender because they enable future graduates of higher education institutions and research establishments to be able to do research with databases during their professional lives. Professional information is also of particular use for small and medium-sized enterprises, including manufacturing enterprises.

Connections with the German Research Network (DFN) also represents a decisive integration step into the worldwide scientific community for the scientific institutions of the new laender. Today, scientific data communication is a natural and necessary part of the prerequisites for successful scientific work.

Through the DFN scientists from the new laender are able to maintain contacts with other institutions all over the world and exchange news (electronic mail) and data

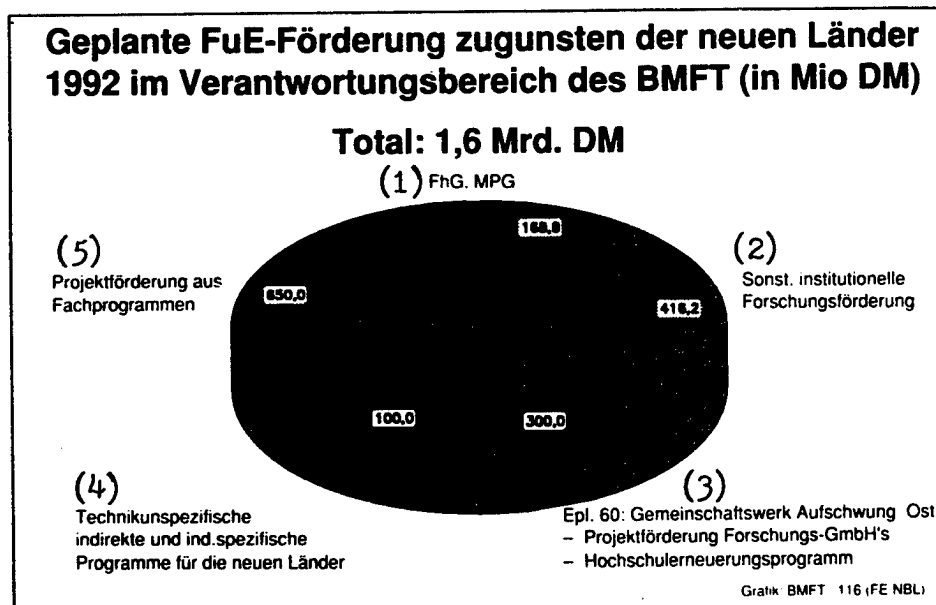
and hold conferences, research databases and use the computer capacities of other computer systems for their own work. Initially, the facilities in Berlin, Dresden, Leipzig, Halle, Rostock and Magdeburg will be the principal users of the DFN connection.

Outlook

The BMFT will make every conceivable effort within the framework of its capabilities to get the development of the all-German research community started in a direction which opens up the same opportunities for science and research in the new laender as for those in western Germany. For the further development of research in the new laender, special emphasis is placed on energy research topics as a contribution to resource-saving innovation processes and in order to avoid environmental damage, and on environmental research to help improve or clean up the environment and living conditions.

It is simultaneously of major importance for the economic upswing in eastern Germany to exploit the opportunities of modern technologies, particularly in small and medium-sized companies and in the manufacturing trades.

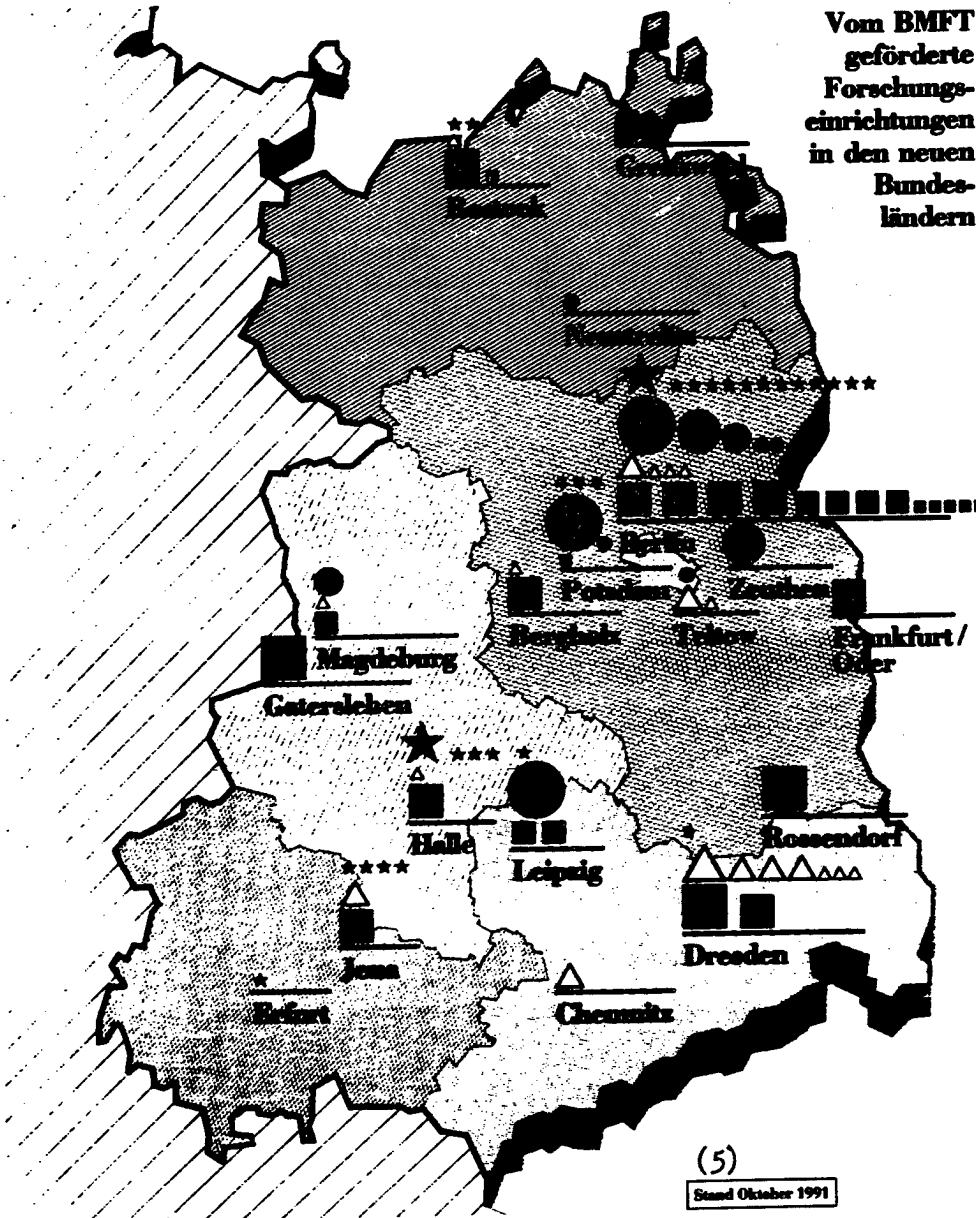
Not lastly, the new laender will necessarily have to work out where they are going as well as how to get there. This is the purpose primarily of the social sciences, economics and humanities. This support in the federal system comes primarily under the responsibility of the laender, however. But the federal government will—together with the laender—do its share so that in subject areas of



**Planned R&D Support for the New Laender in 1992 in the BMFT's Area of Responsibility (in million DM);
Total DM1.6 Billion**

Key: 1. Fraunhofer Society, Max-Planck Society 2. Other institutional research support 3. Epl. 60: Joint Project Recovery East—Project funding for research corporations—Advanced education renewal program 4. Nonspecific technology & indirectly specific programs for the new laender 5. Project funding from programs for special fields

Vom BMFT
geförderte
Forschungs-
einrichtungen
in den neuen
Bundes-
ländern



- ★ = MPG-Einrichtungen (1)
- = Großforschungseinrichtungen (2)
- △ = Fraunhofer Einrichtungen (3)
- = Einrichtungen der „Blauen Liste“ (4)
- ★●△■ = mehr als 250 Mitarbeiter (6)
- ★●△■ = 100 - 250 Mitarbeiter (7)
- ★●△■ = 50 - 100 Mitarbeiter (8)
- ★●△■ = bis 50 Mitarbeiter (9)

Research Institutions Funded by the BMFT in the new Laender

Key: 1. MPG establishments. 2. Major research establishments. 3. Fraunhofer establishments. 4. Blue-List establishments. 5. October 1991 status. 6. More than 250 employees. 7. 100-250 employees. 8. 50-100 employees. 9. up to 50 employees.

supraregional importance and of interest to all states the fields of economics, social science and humanities in the new laender will be able to carry out independent research. Not until then can an all-German research community become a reality in its full range.

Applied R&D Institutions

92WS0450B Berlin APPLIED R&D INSTITUTIONS
IN THE NEW LAENDER in German 1991 pp 1-31

Booklet published by the German Federation of Industrial Research Associations (AIF)

[Text]

Foreword

This booklet is a first attempt to publicize urgently needed information about applied R&D institutions in all of Germany, in order to accelerate the consolidation in this research field.

The goal of all the AIF's initiatives is to promote industrial research and development in small and medium-sized enterprises. It has decades of experience with respect to the organization and implementation of this.

In cooperation with the Federal Economics Ministry, toward the end of 1990 the AIF coordination office listed as editor of this information booklet was established in Berlin. It has collected and prepared the present information.

The authors are aware that with the rapidly changing conditions at the present time they can neither claim to be complete nor absolutely correct in their information. But in the present situation speed of information is more

important than efforts to be perfect and complete. We will quickly bring the information up to date if necessary, and ask you even now to express your interest in it immediately.

This information booklet includes three parts:

1. An outline of selected, applied R&D establishments in the new laender, arranged by laender and industries (economic branches).

2. A list of the characteristics of the establishments in the list with indication of their connections with AIF member associations.

3. A list of connections between AIF member associations and enterprises or R&D establishments in the new laender.

The R&D establishments listed under 1 and 2 were reported by means of a survey and later evaluation by an expert panel chaired by AIF president Prof. Schiele. Hence, it represents the state of information as of the end of 1990!

The attributions listed under 3 are the result of evaluating all the information which resulted from the end of 1989 to the end of 1990 from surveys, consultations, lectures and joint research projects.

We hope that this unconventional information may be useful for the recipient and we would be glad to have your feedback.

AIF Branch Office in Berlin, Dr. Wolfgang Hergarten

1. General Outline of Selected, Applied R&D Establishments in the New Laender, arranged by Laender and Industries (Economic Branches)

Laender/Industries	Berlin	Brandenburg	Mecklenburg West Pomerania	Saxony	Saxony-Anhalt	Thuringia
Energy Industry and Water Supply	13 EWU Engin., Berlin	21 Vetschau Power Plant		49 Fuel, Freiberg; 51 Energy util., Leipzig; 61 Water techn., Dresden		
Mining				73 Mining safety, Leipzig		
Quarrying Minerals and Earths, Fine Ceramics, Glass Industry				56 Ind.-Park, Bad Muskau; 66 Engin. Ceramics, Coswig; 70 Ceramics, Meissen	85 Cement, Dessau	90 WTI Heat, Jena; 91 Process. Engin., Unterwellem
Chemical Industry and Petroleum Processing	10 Biopharm., Berlin; 12 AFZ Biotechn., Berlin; 11 Biotechn., Berlin	24 Biochemistry, Kleinmachnow			79 Inst. f. Lacquers, Magdeburg	
Synthetics, Rubber and Asbestos Processing				48 Synthetics, Leipzig		

Laender/Industries	Berlin	Brandenburg	Mecklenburg West Pomerania	Saxony	Saxony-Anhalt	Thuringia
Iron and Nonferrous Metal Production and Processing	17 Inst. f. Metallurgy, Berlin; 18 Steel-Techn., Berlin			68 Techn. Ctr, Freiberg; 69 Materials research, Dresden	Powder Metallurgy, Thale	
Casting, Steel Forming				32 GISAG, Leipzig		
Steel, Mechanical Engineering and Motor Vehicle Construction	2 Rail vehicles, Berlin			30 FZ Forming, Zwickau; 31 Roller bearings, Leipzig; 31a Forming techn., Chemnitz; 33 Automation, Leipzig; 35 Tech-Ctr hydraulics, Leipzig; 36 ILKA Dresden; 37 Food techn, Dresden; 38 Agric. techn., Neustadt; 39 Takraf, Leipzig; 40 Chemnitz Textil, Chemnitz; 42 Gerfema, Chemnitz; 43 FER Mont, Dresden; 71 Steel constr., Leipzig	74 SKL, Rosslau; 75 ZIS, Halle; 76 Fluid, Halle; 77 FER Ing. Autom., Magdeburg	88 GFE, Schmalkalden
Wood, Paper and Printing Industry	1 Innotechn., Berlin			43 Contacta, Leipzig; 55 Res. Ctr. Packaging, Dresden; 63 WTZ Wood, Dresden; 64 ZEPA, Heidenau		
Electr., Precision Engin. and Optics	4 Techn.-Innov., Berlin; 5 WGC, Berlin; 9 Communications engin., Berlin; 93 Inst. f. Image Proc., Berlin; 94 Inst. f. Inform. Science, Berlin			44 Microelectronics, Dresden; 45 Electronics, Dresden; 46 Sinus, Leipzig; 50 Inst. Schwabe, Meinsberg; 67 Inst. Ardenne, Dresden; 47 Medical techn., Dresden		87 ERMIC, Erfurt
Iron, Sheetmetal and Metal Goods, Musical Instruments, Sports Equipment, Toys and Jewelry				59 Musical instrum., Zwota		
Food and Semi-Luxury Consumables Industry		22 Starch institute, Kyritz; 23 Grain institute, Bergholz		65 Lactoform, Dresden	78 Nursery, Bernburg; 80 OEHMI, Magdeburg; 82 Seed culture, Biehdorf; 83 WTZ Meat, Magdeburg; 86 Messtron, Holleben	
Leather, Textile and Garment Industry				52 AHI, Auerbach; 53 Textile techn., Chemnitz; 54 Leather techn., Freiberg; 60 Textile techn., Dresden; 62 Textile research, Plauen		89 Textile-Service, Greiz

Laender/Industries	Berlin	Brandenburg	Mecklenburg West Pomerania	Saxony	Saxony-Anhalt	Thuringia
Construction Industry and Other (Transportation and Communications)	3 IG Verkehr, Berlin; 14 Business admin., Berlin; 15 Sero-Recycling, Berlin; 16 Inst. f. Sero, Berlin; 19 Botec, Berlin	20 Shipbuilding, Potsdam	25 Shipbuilding, Warnemuende; 26 Shipbuilding, Rostock; 27 WTZ Sec, Rostock; 28 Computers, Rostock	58 Commercial trades, Dresden; 72 Baufa, Leipzig; 57 Packaging, Dresden		

2. List of Characteristics of the Establishments in the Outline With Indication of Their Relations With AIF Member Associations

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations

Running number	R&D establishment	Employees; a. total; b. of whom R&D persons	Total 1991 R&D spending (in thousand DM)	Relations with the AIF member associations. a. No. of member association, Contact (K), Information relations (I), Mixed research (F), Special measure (FS), Member (M). b. Eval. of proj. in structural adjustment with AIF member assoc. (No). c. Sugg. for expansion of relations with AIF member assoc. (No).	Industry
Berlin					
1	Innotech Holztechnologien GmbH, Hannoversche Str. 17, Berlin 0-1040	a. 10; b. 9	1263	c. 41,42	Wood processing
2	Institute for Rail Vehicles GmbH, Adlergestell 598, Berlin 0-1183	a. 136; b. 64	8,500		Steel and light metal constr, rail vehicle construction
3	Transportconsult International Berlin GmbH, Frankfurter Allee 216, Berlin 0-1130	a. 40; b. 32	1,500	a. 84 (K); b. 56	Other (transportation and communications)
4	Technologie- und Computer-Innovation GmbH, Alexanderplatz 6, Berlin 0-1026	a. 26; b. 20	2,100	b. 20; c. 20	Electrical engineering
5-8	Wissenschaftlicher Gerate- und Anlagenbau GmbH, Koepenicker Str. 325 b, PF 40, Berlin 0-1170	a. 1,251; b. 414	40,000	a. 20 (K); b. 20, 26; c. 25, 26	Precision engineering, optics
9	Development Association for Communications Technology mbH, Edisonstr. 63, Berlin 0-1160	a. 557; b. 505	40,700	b. 20; c. 20	Electrical engineering
10	Pharmacological Research Association Biopharm GmbH, Alfred-Kowalke-Str. 4, Berlin 0-1136	a. 125; b. 96	2,000	b. 49; c. 49	Chemical industry

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations (Continued)

11	Research Center for Biotechnology GmbH, Alt-Stralau 62, Berlin 0-1017	a. 242; b. 200	20,000	b. 13	Chemical industry
12	Industrial Research Center for Biotechnology GmbH, Alt-Stralau 52-54, Berlin 0-1017	a. 77; b. 54	2,297	b. 80	Chemical industry
13	EWU-Engineering GmbH, Storkower Str. 134, Berlin 0-1055	a. 57; b. 52	3,400	a. 27 (FS); b. 27	Energy industry/ Water supply
14	Institute for Business Management und Business Consulting GmbH, Eichbuschallee 51, Berlin 0-1195	a. 94; b. 66	5,000	b. 54	Other
15	Sero Recycling GmbH—Recycling Consulting Buero, Thulestr. 7, Berlin 0-1100	a. 289; b. 35			Other (environmental protection and waste processing)
16	Institute for Secondary Raw Materials Industry GmbH, Niederbarnimstr. 3, Berlin 0-1035	a. 55; b. 45	1,000	b. 54	Other (recycling industry)
17	Operations Research Institute for Metallurgy GmbH, Karl-Liebknecht-Str. 34, Berlin 0-1020	a. 51; b. 24	5,500	a. 18 (I, F); b. 18; c. 17	Iron and steel-producing industry
93	Institute for Image Processing, Kurstr. 33, Berlin 0-1086	a. 25; b. 20	3,000	b. 53, 58, 15; c. 53, 98	Electrical engineering
94	Institute for Information Science in Design and Production, Kurstr. 33, Berlin 0-1086	a. 45; b. 40	6,000	b. 15, 83; c. 53, 98	Electrical engineering
18	Stahl-Technologie und Engineering Berlin GmbH, Karl-Liebknecht-Str. 34, Berlin 0-1020	a. 6; b. 4	1,000	b. 18; c. 17, 18	Iron and steel-producing industry
19	BOTEC Automation GmbH, Plauener Str. 163-165, Berlin 0-1092	a. 8; b. 6	610		Construction
		a. 3,096; b. 1,686	143,870		
Brandenburg					
20	Experimental Institute for Shipbuilding Potsdam GmbH, Marquardt Chaussee 100, Potsdam 0-1572	a. 80; b. 59	2,800	c. 8, 70	Shipbuilding
21	Ingenieurunternehmen fuer Kraftwerks-, Energie- und Umwelttechnik, Vetschau 0-7544	a. 650; b. 390	40,000	b. 27; c. 37	Energy industry and water supply
22	Kyritzer Staerke GmbH, Strasse der DSF 10, Kyritz 0-1910	a. 390; b. 10	1,097	b. 23; c. 23	Food industry
23	Institute for Grain Processing, Arthur-Scheunert-Allee 40-41, Bergholz-Rehbruecke 0-1505	a. 149; b. 92	9,400	b. 23; c. 23	Food industry
24	Biochemie Bernd Belger, Heinrich-Mann-Str. 11, Kleinmachnow 0-1532	a. 15; b. 3	400	b. 13	Chemical industry

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations (Continued)

		a. 1,284; b. 554	53,697		
Mecklenburg-West Pomerania					
25	Institute for Shipbuilding Technology and Environmental Protection GmbH, Am Strom 109, Warnemuende 0-2530	a. 100; b. 80	9,500	b. 70; c. 59	Shipbuilding
26	Engineering Center for Shipbuilding GmbH, Wismarsche Str. 6-7, Rostock 1, 0-2500	a. 343; b. 173	9,800	a. 70 (FS); b. 70; c. 8	Shipbuilding
27	Rostocker Wirtschafts- und Ingenieurbuero GmbH, Lagerstr. 26, Rostock 0-2500	a. 45; b. 40	4,000	b. 70	Other (shipbuilding and harbor industry)
28	Association for Computer Integration and Software Development, R.-Luxembourg-Str. 16-18, Rostock 0-2500	a. 30; b. 17	1,600	b. 58, 4	Construction (general industrial)
29	Institute for Ocean Fishing and Fish Processing GmbH, An der Jaegerbaek 2, Rostock 0-2510	a. 205; b. 147	19,000		Other
		a. 723; b. 457	43,900		
Saxony					
30	Research Center for Forming and Plastics Processing Technology GmbH, Scheringerstr. 1, Zwickau 0-9541	a. 384; b. 322	18,400	a. 9, 76 (FS), 51, 52, 58 (I); b. 9, 76	Mechanical engineering
31	Waelzlager Engineering GmbH Leipzig, Merseburger Str. 8, Rueckmarsdorf 0-7101	a. 50; b. 30	2,900		Mechanical engineering
31a	Form Tech Chemnitz Ingenieur- und Verkaufsbuero GmbH, Hainstr. 100, Chemnitz 0-9072	a. 17; b. 12	1,000	b. 58, 76	Mechanical engineering
32	GISAG-AG, Gerhard-Ellrodt-Str. 24, Leipzig 0-7034	a. 4,596; b. 51	2,400	b. 33; c. 33	Casting
33	Automatisierungstechnik GmbH, Schoenauer Str. 113, Leipzig 0-7064	a. 247; b. 169	8,654	b. 26, 58; b. 58	Mechanical engineering
34	Polygraph contacta GmbH, Zweinaundorfer Str. 59, Leipzig 0-7050	a. 170; b. 87	8,900	b. 89; c. 14	Mechanical engineering
35	Technikzentrum Hydraulik GmbH, Poetenweg 32-34, Leipzig 0-7022	a. 142; b. 118	8,000	b. 58	Mechanical engineering
36	Institute for Ventilation and Refrigeration GmbH, Berthold-Brecht-Allee 20, Dresden 0-8019	a. 147; b. 128	7,000	b. 43; c. 43, 57	Mechanical engineering
37	Ingenieurbuero fuer Nahrungsguetertechnik GmbH, Dorotheenstr. 14, Dresden 0-8020	a. 45; b. 38	2,300	b. 23; c. 54, 58	Mechanical engineering
38	Ingenieurbetrieb Agritechnik GmbH, Berghausstr. 1, Neustadt/Sa 0-8355	a. 171; b. 61	1,420	b. 13; c. 29, 58	Mechanical engineering

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations (Continued)

39	Takraf IFF GmbH, Anton-Zickmantel-Str. 50, Leipzig 0-7034	a. 393; b. 144	7,300	b. 73; c. 58	Mechanical engineering
40	Chemnitzer Textilmaschinenentwicklung GmbH, Altchemnitzer Str. 11, PSF 811, Chemnitz 0-9010	a. 114; b. 103	5,000	c. 58	Mechanical engineering
41	Numerik GmbH, Bornaer Str. 205, Chemnitz 0-9010	no longer independent			Electrical engineering
42	GERFEMA GmbH, Karl-Marx-Allee 4, Chemnitz 0-9001	a. 650; b. 530	50,000	b. 58, 69, 20, 91; b. 92	Mechanical engineering
43	FER-Mont Association for Assembly Technology mbH, Strehlener Str. 14, Dresden 0-8012	a. 82; b. 57	1,451	b. 58, 91; b. 58	Mechanical engineering
44	Center for Microelectronics Dresden GmbH, Grenzstr. 28, Dresden 0-8080	a. 935; b. 200	58,000	a. 97 (I), 20 (K); b. 20; c. 98	Electrical engineering
45	Electronic GmbH Dresden-Neustadt, Am Lagerplatz 8, PSF 969, Dresden 0-8060	a. 230; b. 118	7,350	b. 20; c. 98	Electrical engineering
46	Sinus Messtechnik GmbH, Untere Eichstaedtstr. 12-14, Leipzig 0-7027	a. 16; b. 11	520	b. 20	Electrical engineering
47	Medizin- und Labortechnik Engineering GmbH Dresden, Overbeckstr. 48, Dresden 0-8030	a. 115; b. 95	7,900	b. 26; c. 26	Precision engineering/optics
48	Synthetics Center Leipzig GmbH, Erich-Zeigner-Allee 44, Leipzig 0-7031	a. 70; 2. 63	4,900	a. 51, 52 (K)	Synthetic materials processing
49	German Fuel Institute Freiberg GmbH, Halsbruecker Str. 34, Freiberg 0-9200	a. 750; b. 550	30,000		Energy industry and water supply
50	Kurt Schwabe Research Institute, Meinsberg, PSF 733, Waldheim 0-7305	a. 52; b. 48	2,600	a. 13 (FS); b. 13	Precision engineering/optics
51	Association for Economic Energy Use mbH, Torgauer Str. 114, PSF 178, Leipzig 0-7024	a. 150; b. 116	12,000		Energy industry and water supply
52	Auerbacher Ingenieur- und Handels-GmbH, Tischelweg 5, Auerbach 0-9162	a. 14; b. 7	400	b. 80; c. 80	Textile industry
53	Research Institute for Textile Technologie Chemnitz GmbH, Annaberger Str. 240, Chemnitz 0-9010	a. 250; a. 220	9,900	a. 80 (FS); b. 5, 80	Textile industry
54	Research Institute for Leather und Synthetic Leather Technology GmbH, Thaelmannring 1, Freiberg/Sa. 0-9200	a. 100; b. 75	6,200	b. 55; c. 55	Leather production
55	Research and Packaging Center GmbH, Reisstr. 42, Dresden 0-8017	a. 104; b. 77	4,200	a. 64 (K), 87 (K); b. 56	Paper and cardboard processing
56	Business and Industrial Park Bad Muskau GmbH, Heideweg 2, Bad Muskau 0-7582	a. 93; b. 75	6,500	a. 35 (K); b. 35	Glass manufacture and processing

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations (Continued)

57	Ingenieur- und Beratungsbuero Verpackungs- und Transportlogistik, Heynaststr. 16, Dresden 0-8019	a. 11; b. 9	300	b. 54	Other (transportation and communications)
58	Institute for Municipal Economics GmbH, Winterbergstr. 26, Dresden 0-8020	a. 51; b. 11	950	b. 13	Other (municipal economy)
59	Institute for Musical Instrument Building Zwota GmbH, Klingenthaler Str. 42, Zwota 0-9657	a. 33; b. 29	1,900	a. 61 (FS); b. 61	Manufacture of musical instruments
60	Institute for Technical Textiles GmbH, Hohe Str. 6, Dresden 0-8012	a. 71; b. 61	2,700	a. 80 (M, FS); b. 80, 54	Textile industry
61	Institute for Hydrotechnology GmbH, Otto-Wagner-Str. 3, Dresden 0-8060	a. 240; b. 190	7,000	b. 64	Energy industry and water supply
62	Textil-Forschung Plauen GmbH, Morgenbergstr. 41, PSF 674, Plauen 0-9900	a. 20; b. 17	860	a. 80 (M); b. 80	Textile industry
63	Scientific and Technical Center for the Wood Processing Industrie GmbH, Zellescher Weg 24, Dresden 0-8020	a. 100; b. 60	6,400	a. 41 (M, FS), 42 (FS), 74 (FS); b. 41	Wood processing
64	ZEPA Engineering GmbH, Pirnaer Str. 31-33, Heidenau 0-8312	a. 120; b. 89	5,300	a. 42 (FS), 64 (FS), 93 (FS); b. 64	Wood, paper and printing industry
65	Lactoform GmbH, Wilhelm-Franke-Str 61, Dresden 0-8020	a. 67; 2. 11	1,000	c. 23	Food industry
66	Saechsische Ingenieurkeramik GmbH, Karl-Liebknecht-Str. 73, Coswig 0-8273	a. 115; b. 100	5,600	b. 48; c. 48	Fine ceramics
67	M. v. Ardenne Research Institute, Platteite 29, Dresden 0-8051	a. 80; b. 52 (Section I, Fraunhofer Soc.); a. 70; b. 38 (Section II)	6,600 [Section I]; 2,500 [Section II]		Precision engineering/optics
68	Freiberg Nonferrous Metals GmbH-Materials and Technology Center, Lessingstr. 41, Freiberg 0-9299	a. 290; b. 180	11,500	a. 60 (FS); b. 60	Iron and nonferrous metal production and processing
69	Institute for Materials Research und Application Technology GmbH, Karl-Marx-Str., PSF 44, Dresden 0-8080	a. 360; b. 300	20,000	a. 50 (K), 17 (FS), 51 (FS); b. 18, 58	Iron and nonferrous metal production and processing
70	Innovation Centre Ceramics Meissen GmbH, Ossietzkyst. 37 a, Meissen 0-8250	b. 65; b. 50	3,500	b. 48; c. 48	Fine ceramics
71	Institute for Steel Construction Leipzig GmbH, Arnoldsche-Str. 45, Leipzig 0-7030	a. 105; b. 24	600	a. 75 (FS), 88 (FS)	Steel construction
72	Baufa Engineering GmbH, Zachortauer Str. 42, Leipzig 0-7021	a. 98; b. 55	6,000	a. 41 (FS); b. 41	Construction
73	Institute for Mining Safety, Frederikenstr. 60, Leipzig 0-7030	a. 190; b. 120	12,000	b. 77; c. 77	Mining
		a. 12,173; b. 4,901	369,705		

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations (Continued)

Saxony-Anhalt					
74	SKL Engineering GmbH, Karl-Liebkecht-Str. 38, Rosslau 0-4530	a. 265; b. 229	13,700	b. 58, 85; c. 85	Motor vehicle building
75	ZIS Halle GmbH, Koethener Str. 33 a, Halle 0-4060	a. 370; b. 170	17,800	a. 52 (I), 51 (F), 73 (M, FS), 9 (FS); b. 73	Steel construction/mechanical engineering
76	Fluid-Ingenieurtechnik GmbH, Leninallee 90, Halle 0-4020	a. 150; b. 80	5,100	b. 58; c. 58	Mechanical engineering
77	FER-Ingenieurbuero fuer Automatisierung GmbH, Bleckenburgstr. 25, Magdeburg 0-3011	a. 190; b. 167	7,300	b. 89, 58, 85	Mechanical engineering
78	Anhaltische Pflanzenzucht GmbH, Mitschurinstr. 22, PSF 5, Bernburg-Strenzfeld 0-4351	a. 53; b. 45	3,000	b. 65; c. 65	Food industry
79	Institute for Lacquers and Paints e. V., Fichtestr. 29, PSF 42, Magdeburg 0-3010	a. 60; a. 54	3,500	a. 66 (K), 63 (K); b. 66	Chemical industry
79a	Magdeburger Lacke GmbH Unternehmensbereich Lack-Engineering, Gr. Diesdorfer Str. 210, Magdeburg 0-3060	a. 14; b. 13	1,100		Chemical industry
80	OeHMI Forschung und Ingenieurtechnik GmbH, Berliner Chaussee, Magdeburg 0-3050	a. 43; b. 30	3,100	c. 22, 23	Food industry
81	Research Institute for Fruit and Vegetable Processing, Nicolaistr. 5, Magdeburg	a. 68; b. 48	400	b. 23	Food industry
82	Saatzucht Bernburg-Biendorf GmbH, Hauptstr. 8, Biendorf 0-4351	a. 131; b. 24	2,400	b. 65; c. 65	Food industry
83	Institute for Meat Industry, Liebknechtstr. 35, PSF 490, Magdeburg 0-3060	a. 73; b. 62	4,350	c. 23	Food industry
84	Profitcenter "Engineering Pulvermetallurgie", Parkstr. 1, Thale 0-4308	a. 37; b. 13	3,000		Iron and nonferrous metals production and processing
85	Institute for Cement, PSF 201, Dessau 1, 0-4500	a. 159; b. 96	6,100	c. 44, 45	Construction
86	Messtron GmbH Messmittel-, Behaelterbau und Entsorgung-GmbH, Suedstr. 6, Holleben 0-4101	a. 38; b. 13	1,525	b. 23	Food industry
		a. 1,651; b. 1,044	72,375		
Thuringia					
87	Ermic GmbH-Center for Intelligent Sensors, Rudolfstr. 47, Erfurt 0-5010	a. 76; b. 55	6,500	b. 58; c. 97, 98	Electrical engineering
88	Association for Production Technology and Development mbH, Am Bad 2, Schmalkalden 0-6080	a. 199; b. 163	8,600	a. 91 (FS); b. 18, 58, 91, 13; c. 63	Mechanical engineering
89	Textile-Service GmbH Greiz, Zeulenrodaer Str. 42, Greiz 0-6600	a. 58; a. 43	674	a. 80 (M, FS); b. 80	Textile industry

List of Characteristics of Applied R&D Establishments in the New Laender, Their Relations With the AIF and Funding Recommendations (Continued)

90	Waermetechnik und Industriearomatisierung GmbH, Goeschwitzer Str. 22, Jena 0-6905	a. 479; b. 165	1,500	a. 35 (I); b. 35	Glass manufacture and processing
91	Process Technology Institute Saalfeld GmbH, PSF 25, Untere Wellenborn 0-6806	a. 112; b. 50	2,600	b. 56	Quarrying and processing of minerals and earths
		a. 924; b. 476	19,874		
	Total	a. 19,851; b. 9,118	703,421		

List of Connections Between AIF Member Associations and Companies or R&D Establishments in the New Federal Laender

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(1) Drive Technology Research Assoc., reg. assn. (FVA)	ASUG Antriebstechnik GmbH Magdeburg	Maxim-Gorki-Str. 16, 0-3010 Magdeburg	K	
(1)	SKL Engineering GmbH Magdeburg	Magdeburg	K	
(5) Garment Industry Research Assoc., reg. assn.	Gesellschaft f. Prozessgestaltung, Technik u. Beratung mbH	Schoenhauser Allee 6-7, 1054 Berlin	FS	Manufacturing systems, garment industry
(8) Research Institute for Inland Shipbuilding, reg. assn. Research Institute for Shallow-Water Hydrodynamics	Rosslauer Schiffswerft GmbH	Werftstr. 4, 4380 Rosslau/Elbe	E Establishment of contact recommended in letter of 6 Dec 1990.	
(9) German Research Assn. for Sheetmetal Processing, regional association (DFB)	Research Center for Forming und Plastics Processing Technology	Scheringerstr. 1, 0-9541 Zwickau	F Cooperation between WITZs [scientific and technical centers] in GDR and FRG, Project 9, subprojects 9, 6, "Automation of Forming Processes"	
(9)	Institute for Production Technology and Quality Assurance	Universitaetsplatz 5, 0-3010 Magdeburg	F Research project set up (5/90) "Determination of Radial Stress-Strain Coefficients From Experimental Deep-Drawing Simulation"	
(9)	ZIS [Central Institute for Welding] Halle GmbH	Koethener Str. 33a, 4060 Halle	FS	Technologies for resistance welding of aluminum tools
(9)	Research Center for Forming and Plastics Processing Technology GmbH, Zwickau	Scheringerstr. 1-3, 9541 Zwickau	FS	Drawing of out-of-round collars on sheetmetal parts
(9)	Research Center for Forming and Plastics Processing Technology GmbH, Zwickau	Scheringerstr. 1-3, 9541 Zwickau	FS	Forming of hot bands as well as hot-rolled steels
(9)	Research Center for Forming and Plastics Processing Technology GmbH, Zwickau	Scheringerstr. 1-3, 9541 Zwickau	FS	Stretch-forming of body parts for vehicles
(9)	Rostock University, chair for industrial design	Albert-Einstein-Str. 2, 2500 Rostock	FS	Design and dimensioning of riveted joints

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(9)	Chemnitz Technical Univ., Section for Production Methods and Production Means	Reichenhainer Str. 70, 9022 Chemnitz	FS	Combination of bending joints and soldered joints
(9)Zwickau Technical College	Dr.-Friedrichsring 2 a, 9541 Zwickau	FS	Forming of thin aluminum sheets	
(9)Institute for Production Methods and Tools of Dresden Technical Univ.	Mommсенstr. 13, 8027 Dresden	FS	Simulation of deep-drawing of rotating, symmetrical parts	
(9)Magdeburg Techn. Univ., Inst. for Production Technology and Quality Assurance	Universitaetsplatz 2, 3010 Magdeburg	FS	Production and tool parameters for reaming out pipes	
(9)	Magdeburg Technical University, Inst. for Production Technology and Quality Assurance	Universitaetsplatz 2, 3010 Magdeburg	FS	Forming of thick sheet-metal parts
(9)	Dresden Technical University, Institute for Machine Tools	Mommсенstr. 13, 8027 Dresden	FS	Tilt compensation and press force monitoring at the pressure point
(9)	Institute for Production Methods and Tools at Dresden Technical University	Mommсенstr. 13, 8027 Dresden	FS	Basic studies of properties of self punch riveting of aluminum workpieces
(9)Magdeburg Technical University, Inst. for Production Techn. and Quality Assurance	Universitaetsplatz 2, 3010 Magdeburg	FS	Determination of radial stress-strain coefficients through experimental deep-drawing simulation	
(9)	Res. Center for Forming Techn. and Plastics Processing Techn.	Scheringstr. 1, 9541 Zwickau	FS	Computer-based process storage, sheetmetal forming
(9)	Chemnitz, chair for forming technology	Reichenhainer Str. 70, 9022 Chemnitz	FS	
(11) Experimental and Teaching Institute for Brewing in Berlin	Humboldt University, Food Technology Dept.	Invalidenstr. 42, 1041 Berlin	FS	Flow-injection analysis for performance and quality control
(12) German Brown Coal Industrial Assn., reg. assn.	Institute for Energy Science GmbH	Torgauer Str. 114, D-7024 Leipzig	E establishment of contact recommended in letter of 26 Nov 1990	
(12)	Freiberg Mining Academy	Brennhausgasse 14, 9200 Freiberg	FS	Elutability of ashes from brown coal power plants
(12) Freiberg Mining Academy	Reiche Zeche, 9200 Freiberg	FS	Agglomeration of powdered activated charcoal	
(13)DECHEMA German Society for Chemical Instruments, Chemical Technology and Biotechnology	Kurt Schwabe Research Institute, Meinsberg	PSF 73, D-7305 Waldheim	F Coordinated research work	
(13)	Institute for Measurement and Control Technique of Koethen Techn. College	Bernburger Str. 52-57, 4370 Koethen	FS	Coupling of sensors and measuring devices to process engineering facilities
(13)	AdW Central Institute for Physical Chemistry	Rudower Caussee 5, 1199 Berlin	FS	Wet oxidation reduction of toxic materials which are difficult to degrade
(13)	Institute for Technical Chemistry (Dresden Technical University)	Mommсенstr. 13, 8027 Dresden	FS	Robot-controlled reactor for chemical use in the laboratory

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(13)	Freiberg Mining Academy, Chemistry Dept.	Leipziger Str. 23, 9200 Freiberg	FS	Application of flue gas desulfurization of calcium sulfate-containing substances
(13)	Kurt Schwabe Research Institute, Meinsberg	PSF 73, 7305 Waldheim	FS	Electrochemical sensors for immune diagnostics
(13)	Institute for Biology/Biochemistry of Koethen Techn. College	Bernburger Str. 52-57, 4370 Koethen	FS	New supporting material for cell immobilization
(13)	Institute for Environmental Technology of Koethen Techn. College	Bernburger Str. 52-57, 4370 Koethen	FS	Cleanup with chlorinated and hydrocarbonated [word omitted] in elastic soils and waste waters
(13)	Institute for Biotechnology of the Koethen Techn. College	Bernburger Str. 52057, 4370 Koethen	FS	Produced syntheses in bioreactor systems with microorganism suspension
(13) Kurt Schwabe Research Institute, Meinsberg	PSF 73, 7305 Waldheim	FS	Gas sensors for the energy industry and mining	
(14) Printing Machinery Research Association, regional association	Druckmaschinenwerk Planeta	Fr.-List-Str. 2, 8122 Radebeul	I Offer of service	
(16) Assoc. for the Research Inst. for Pure Metals and Metal Chemistry	Freiberger Nonferrous Metals GmbH, Materials and Technology Center	Lessingstr. 41, D-9200 Freiberg	E Establishment of contact recommended (meeting on 6 Dec 1990 on applications from the GF Special Measure Program)	
(16)	Freiberg Mining Academy, Inst. for Metal Science	G.-Zeuner-Str. 5, 9200 Freiberg	FS	Structural studies of electrolytic Cu coatings
(17) Study Association for Application Technology of Iron and Steel, regional association	Magdeburg Technical University, Institute for Process Techn. and Quality Assurance	Universitaetsplatz 2, 3010 Magdeburg	FS	Determination of deflection angle/Profiling with elementary design formulation
(17)	Institute for Materials Research and Application Techniqu GmbH	Karl-Marx-Str. Postfach 44, 8080 Dresden	FS	Introd. of ferritic corrosion-resistant steels
(17)	Fire Fighting Institute	Biederitzer Str. 5, 3010 Heyrothsberge	FS	Fighting natural fires
(18) VDEh Society for Promotion of Iron Research mbH	Operations Research Institute Metallurgy GmbH	Karl-Liebknecht-Str. 34, D-1020 Berlin	F: Model rolling and I: forming experiments with the F: experimental rolling facility (F)	
			Consultation on recycling of steel rolling stands (I)	
			Application of the Symodat time recording equipment	
(18)	Freiberg Mining Academy	Zeunerstr. 5, 9200 Freiberg	FS	Assured absence of cold cracking in deep-desulfurized construction steel
(18)	Freiberg Mining Academy	Zeunerstr. 5, 9200 Freiberg	Crack studies in welded joints of construction steel	
(18)	Magdeburg Technical College, Inst. for Techn. Physics	Universitaetsplatz 5, 3010 Magdeburg	FS	Microstructure and creep damage from long-term load on CrMoV steel

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(20) Electrical Engineering Research Assn. at ZVEI [Central Organization of Electrical Engineering Industry], regional association	Elpro AG Berlin—Industrial Electronics and Systems Engineering	Rhinstrasse 100, D-1140 Berlin	K Working contacts established with ZVEI by individual companies in the consortium	
(20)	EAW Automatisierungstechnik AG	Hoffmannstrasse 15-26, D-1193 Berlin	K Working contacts established by individual companies in the consortium with ZVEI	
(20)	WIGEBÄ Wissenschaftlicher Geräte- und Anlagenbau GmbH	Gensler Str. 13, D-1092 Berlin	K Working contacts with ZVEI	
(20)	VEM-Antriebstechnik AG	Hennigsdorfer Str. 25, D-8017 Dresden	K Working contacts established with ZVEI by individual companies in the consortium	
(20)	PTC-Electronic AG	Rudolfstr. 47, D-5010 Erfurt	K Working contacts established with ZVEI by individual companies in the consortium	
(20)	Dresden Microelectronics Center GmbH	Grenzstr. 28, D-8080 Dresden	K Working contacts established with FhG by individual companies in the consortium	
(21) Association of German Enamel Professionals, regional association	Freiberg Mining Academy	Leipziger Str. 28, 9200 Freiberg	FS	Influence of fluoride burn-off on enamels
(23) Food Industry Research Group, regional association	Meat Industry Institute	Liebkechtstr. 35, D03060 Magdeburg	K first working contacts announced, existing cooperation in production and planning of development projects	
(23)	Institute for Grain Processing GmbH	Arthur-Scheunert-Allee 40-41, D-1505 Bergholz-Rehbr.	K working contacts with several institutes in FRG through research group. Ongoing preparations for joining the research group.	
(23)	Institute for Grain Processing GmbH	Arthur-Scheunert-Allee 40-41, 1505 Bergholz-Rehbr.	FS	Fats from microalgae
(23)	Slaughter and Processing GmbH	Kantstrasse 71, 7030 Leipzig	FS	Adherence to Meat Ordinance in GDR smoke-houses
(23)	AdW Central Food Institute	Arthur-Scheunert-Allee 114-116, 1505 Bergholz-Rehbr.	FS	Enrichment of ballast materials of physical methods
(23)	AdW Central Food Institute	Arthur-Scheunert-Allee 114-116, 1505 Bergholz-Rehbr.	FS	Methods for determining sweetness intensities
(23)	Institute for Research and Rationalization of Sugar	Schleuzenstr. 3, PSF 103, 4060 alle	FS	Methods for determining the technical value of sugar beets
(23)	Dresden Technical University, Section for Processing Technical and Process Engineering	Mommsenstr. 13, 8027 Dresden	FS	Soybean protein in minced meat products

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(25) Research association for Precision Instruments, Micro- and Clock technology, regional association	Chemnitz Technical University	PF 964, 9010 Chemnitz	FS	Design tools, silicon-monocrystal wafers
(26) Research association for Precision Instruments and Optics, regional association	Carl Zeiss JENA GmbH Research Center	Carl-Zeiss-Str. 1, D-6900 Jena	K	
(26)	Technical Center for Optics and Precision Technology		FS	Polishing compound medium with free polishing compounds
(26)	Jena Research Center, Central Section for Information Science	Carl-Zeiss-Str. 1, 6900 Jena	FS	Optical coupling at high speeds
(27) District Heat Research Institute in Hanover, regional association	Union-Bau AG, Special R&D Section	Am Koellnischen Park 1, D-1020 Berlin	E BRD institute recommended cooperation	
(27)	EMY Engineering GmbH	Stokower Str. 134, 1055 Berlin	FS	Status analysis, district heating pipes
(27)	Institute for Construction and Civil Engineering	Richard-Lehmann-Str. 19, 7030 Leipzig	FS	New materials and fasteners for medium pipes
(27)	Dresden Technical University, chair for industrial power management	Mommensenstr. 25, 8027 Dresden	FS	Heat pumps as heat carriers in industry
(27)	Institute for Construction and Civil Engineering, Leipzig	Richard-Lehmann-Str. 19, 7030 Leipzig	FS	
(29) International Research Association for Fodder Production, Paulinenaue	Paulinenaue	K first working contacts		
(33) Association of German Foundry Professionals, regional association	Freiberg Mining Academy, Metallurgy Section	Bernhard-v.-Cotta-Str. 4, 9200 Freiberg	FS	Thixo-casting of aluminum alloys
(33) Institute for Production Techn. and Quality Assurance	Universitaetsplatz 5, 3010 Magdeburg	FS	Deburring of inside contours	
(33)	Dresden Technical University, Institute for Industrial Prod.	Mommensenstr. 13, 8027 Dresden	FS	Expert systems for designing cast parts
(35) Technical Association of German Glass Works, regional association	WTI Waermetechnik und Industrieautomatisierung GmbH	Goeschwitzer Str. 22, D-6905 Jena	I Information contacts	
(35)	Bad Muskau Business and Industrial Park GmbH	Heideweg 2, D-7582 Bad Muskau	I	
(35)	Otto Schott Institute for Glass Chemistry at Jena University	Fraunhoferstr. 6, 6900 Jena	FS	Control of glass melting process through degasification studies
(35)	Freiberg Mining Academy, WB Glass and Enamel Techn.	Leipziger Str. 23, 9200 Freiberg	FS	Bubble growth, bubble nucleation in glass melting
(35)	Institute for Inorganic Chemistry and Materials Research	Rudower Chaussee 5, 1199 Berlin	FS	Crack aging in glass

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(37) VGB Research Foundation (Research Foundation of VGB Technical Association of Large Power Plant Operators, regional association)	Institute for Energetics GmbH	Torgauer Str. 114, D-7024 Leipzig	I Based on consultation with the head of the Simulator Development Section, Mr. Wachsmuth, on 20 Dec 1990, recommendation for contacts to take over projects or, in special measure, initiate joint research.	
(40) Research Association for High Voltage and High Power Techn., regional association (FGH)	Elpro AG Berlin—Industrial Electronics and Systems Engineering	Rhinstrasse 100, D-1140 Berlin	E Contact establishment recommended after consultation on 10 Dec 1990.	
(41) German Association for Wood Research, regional association (DGfH)	Baufa Engineering GmbH	Zschortauer Str. 42, D-7021 Leipzig	E Cooperation recommended by DGfH	
(41)	WTZ for Wood GmbH i.G.	Zellescher Weg 24, D-8020 Dresden	M	
(41)	Recontie-Ingenieurbuero Holz GmbH	Berliner Str. 5, 1113 Berlin	FS	Eval. of wood structures in need of reconstruction
(41)	Baufa Engineering GmbH	Zschortauer Str. 42, 7021 Leipzig	FS	Solidity of dovetail joints
(41)	Baufa Engineering GmbH	Zschortauer Str. 42, 7021 Leipzig	FS	Application of sound emission analysis in laminated structures
(41)	Dresden Technical University, Structural Engineering Section	Mommensenstr. 13, 8027 Dresden	FS	Gable roof construction with laminated wood panels
(41)	Magdeburg Technical University, Instrument and Systems Engineering Section	PF 124, 3010 Magdeburg	FS	Fire-fighting techniques for wood structures
(41)	WTZ for Wood-Processing Industry	Zellscher Weg 24, 8020 Dresden	FS	Chipboard production using less glue
(41)	Wismar Technical College	Philipp-Mueller-Str., 2400 Wismar	FS	Composite beams from wood and concrete polymer
(41)	Scientific Center for Economic Information of Martin-Luther-University, Halle-Wittenberg	Steinstr. 73, 4020 Halle	FS	Complementary additional criteria for production optimization in the furniture industry
(41)	WTZ for Wood-Processing Industry	Zellescher Weg 24, 8020 Dresden	FS	Development of a sensor system for on-line measurement of wood composites
(41)	Leipzig Technical University, chair for statics		FS	
(42) Association for Technical Questions Involving Wood, regional association	WTZ for Wood-Processing Industry	Zellescher Weg 24, 8020 Dresden	FS	Hydrolysis resistance of wood to wood bonding
(42)	WTZ for Wood-Processing Industry	Zellescher Weg 24, 8020 Dresden	FS	Changes in needles of spruces and firs, indications
(42)	ZEPA Engineering GmbH	Pirnaer Str. 31-33, 8312 Heidenau	FS	Usability of deciduous woods in fiber boards—MDF

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(44) Research Association for Lime and Mortar, regional association	Institute for Cement in Construction Service GmbH	Junkerstr. 27, 4500 Dessau	FS	Study and standardization of multipurpose mortars
(47) German Rubber Association, regional association	Institute for Mechanics, Numerical Processes Section	Reichenhainer Str. 88, PF 408, 9010 Chemnitz	FS	Layout of elastomer coatings of rollers
(48) German Ceramic Association, regional association	Tridelta AG/UB Electrical Installation Material	Friedrich-Engels-Str. 79, D-6530 Hermsdorf/Thuringia	K membership application under preparation	
(48)	Freiberg Mining Academy	Agrikolastr. 17, 9200 Freiberg	FS	Extrusion of thin-walled ceramic bricks
(48)	Ceramics Institute ICM GmbH	Ossietzkystr. 37 a, 8250 Meissen	FS	Artificial structural and thermal wear properties in ceramic material
(48)	Institute for Architectural and Heavy Ceramics GmbH, Weimar	Erich-Weinert-Str. 7 b, 5300 Weimar	FS	Environmental furnace
(48)	Freiberg Mining Academy, chair for ceramics	Agrikolastr. 17, 9200 Freiberg	FS	Eval. of ceramic pressed granules
(48)	Freiberg Mining Academy	Agrikolastr. 17, 9200 Freiberg	FS	
(50) Research Association for Synthetics, regional association	Institute for Materials Research and Application Techn., GmbH	Karl-Marx-Str., Postfach 44, D-8080 Dresden	K	
Association for Promotion of the Institute for Synthetics Processing in Industry and Trade of Rhine-Westphalia Technical College in Aachen, regional association	ZIS Halle	Koethener Str. 33a, D-4060 Halle	F Application being formulated for joint project	
(51)	Research Center for Forming Technology and Plastics Processing Techn.	Scheringerstr. 1, D-9541 Zwickau	K	
(51)	Synthetics Center in Leipzig GmbH	Erich-Zeigner-Allee 44, D-7031 Leipzig	K	
(51)	Chemnitz Technical University, Processing technical section	PSF 964, 9010 Chemnitz	FS	Mechanical behavior of slide and split molds
(51)	Institute for Polymer Technology	Hohe Strasse 6, 8010 Dresden	FS	Reactive extrusion of PA6 and PET for block copolyesteramides
(51)	Institute for Materials Research and Process Technical GmbH	Karl-Marx-Str. Postfach 44, 8080 Dresden	FS	Recycling of synthetic waste through mold casting
(52) Development Association for the South German Synthetics Center, regional association	ZIS Halle	Koethener Str. 33a, D-4060 Halle	I Contract being prepared for cooperation in research and teaching	
(52)	Research Center for Forming Techn. and Plastics Processing Techniques	Scheringerstr. 1, D-9541 Zwickau	K	
(52)	Synthetics Center in Leipzig GmbH	Erich-Zeigner-Allee 44, D-7031 Leipzig	K	

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(55) Interest Group for Leather Research and Hide Damage Prevention of the Association of German Leather Industry, regional association	Freiberg Research Institute for Leather and Synthetic Leather GmbH	Thaelmannring 1, D-9200 Freiberg	I	
(56) German Association for Logistics, regional association	Magdeburg Technical University, Institute for Development Techn., Steel construction/Logistics	PF 124, 3010 Magdeburg	FS	Design of article-differentiated logistics process chains
(56) Engineering Association for Communications Berlin GmbH	Markgrafendamm 24, 1017 Berlin	FS	Logistics concept for waste disposal providers	
(56)	College for Economics	Hermann-Duncker-Str. 8, 1157 Berlin	FS	Analytic programs and strategy concept for small and medium-sized enterprises in the new Laender
(56)	Institute for Road Transportation and Passenger Traffic GmbH	Friedrich-Engels-Str. 2, 8060 Dresden	FS	
(56)	College for Transportation Systems, chair for development techn.	Friedrich-Liszt-Platz 1, 8010 Dresden	FS	
(58) Research Institution for Mechanical Engineering, regional association	SKL Engineering GmbH Magdeburg	Magdeburg	K First contacts established and information obtained	
(58)	Weimar-Werk GmbH	Weimar	K Membership in VDMA is being prepared	
(58)	Engineering Bureau for Food Techn. GmbH Dresden	Hermannstr. 4, D-8020 Dresden	E On 4 Dec 1990 informed about support possibilities, established of contact recommended	
(58)	Research Center for Forming Technical and Plastics Processing Techniques	Scheringerstr. 1, D-9541 Zwickau	K	
(58)	Rostock University, Shipbuilding section	Albert-Einstein-Str. 2, 2500 Rostock	FS	Atomization of diesel fuel and heavy oil
(58)	Freiberg Mining Academy, Mechanical Engineering and Energy Techn. section	Gustav-Zeuner-Str. 7, 9200 Freiberg	FS	Long-term durability of graphite materials
(58)	Freiberg Mining Academy, Mechanical Engineering and Energy Techn. section	Gustav-Zeuner-Str. 7, 9200 Freiberg	FS	High-emission coatings for industrial furnaces
(58)	Zwickau Technical College, Institute for Tool Techn.	Dr. Friedrichs-Ring 2a, 9541 Zwickau	FS	Fiber-reinforced light metals
(58)	Dresden Technical University, Institute for Energy Machinery and Machine Laboratories	Mommsenstr. 13, 8027 Dresden	FS	Thermal fatigue in modern high-temperature components
(58)	Magdeburg Technical University, section for diesel engines, pumps and compressors	FS	Combustion in lean-burn Otto engine	

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(58)	Institute for Mechanics	Reichenhainer Str. 88, PF 408, 9010 Chemnitz	FS	Measurement methods to determine exhaust of diesel engines
(58)	Dresden Technical University, chair for pumps, compressors and instruments	Mommstr. 13, 8027 Dresden	FS	Flow calculations for centrifugal pumps
(58)	Magdeburg Technical University, Mechanical engineering section, Dept. for Finishing Metals	PSF 124, 3010 Magdeburg	FS	Crack propagation in articulated spindle heads under operating stress
(60) Founders' Association for Metals—Association for Development of Metals Research	Freiberg Nonferrous Metals GmbH, Materials and Technical Center	Lessingstr. 41, D-9200 Freiberg	K	
(60)	Freiberg Nonferrous Metals GmbH, Materials and Technical Center	Lessingstr. 41, 9200 Freiberg	FS	Improvement of continuous casting quality
(60)	Freiberg Nonferrous Metals GmbH, Materials and Technical Center	Lessingstr. 41, 9200 Freiberg	FS	Disposal of used oil
(61) Research Association for Musical Instruments, regional association	Institute for Musical Instruments, Zwota	Klingenthaler Str. 42, D-9657 Zwota	I Project determination, exchange of scientists	
(61)	Institute for Musical Instruments, Zwota	Klingenthaler Str. 42, 9657 Zwota	FS	Influence of wall materials on properties of wind instruments
(63) German Research Association for Surface Treatment, regional association (DFO)	Magdeburg Lacke GmbH	Fichtestr. 29 PSF 42, D-3010 Magdeburg	K	
(63)	Institute for Lacquers and Paints	Fichtestr. 89, PSF 42, D-3050 Magdeburg	K	
(63)	Institute for Materials Research and Development Techn. GmbH	Karl-Marx-Str., Postfach 44, 8080 Dresden	FS	Monitoring cleanliness quality of workpiece surfaces
(63)	College for Transportation Systems, research group for electrostatic coating	Friedrich-Liszt-Platz 1, 8010 Dresden	FS	Studies of electrostatic coating of synthetic parts
(64) Paper Technical Foundation for Research and Training in Paper Production and Paper Processing	Institute for Cellulose and Paper	Pirnaer Str. 31-33, 6312 Heidenau	I	
(64)	Research and Consultation Center for Packaging GmbH	Reisstr. 42, D-8017 Dresden	K	
(64)	ZEPA Engineering GmbH	Pirnaer Str. 31-33, 8312 Heidenau	FS	CTMP materials as raw fibers for paper
(64)	Dresden Technical University, section for development and process techniques	Mommstr. 13, 8027 Dresden	FS	Evaluation of structure and strength distribution in paper
(64)	Dresden Technical University, section for development and process techniques	Mommstr. 13, 8027 Dresden	FS	Potential for old paper in the East
(64)	ZEPA Engineering GmbH	Pirnaer Str. 31-33, 8312 Heidenau	FS	Control and monitoring of biological purification plants

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(65) Association for Development of Private German Agricultural Plant Culture, regional association (GFP)	Saale-Saaten GmbH	D-4104 Salzmünde	K	
(66) Research Institute for Pigments and Lacquers, regional association	Magdeburg Lacke GmbH	Fichtestr. 29 PSF 42, D-3010 Magdeburg		
(66)	Institute for Lacquers and Paints	Fichtestr. 89, PSF 42, D-3050 Magdeburg	K	
(66)	Central Office for Corrosion Protection Dresden	Karl-Marx-Str. PF 44, 8080 Dresden	FS	Improvement in durability of inorganic zinc compounds
(67) Research Association for Quality Assurance, regional association	Institute for Image Processing at SKI	Kurstr. 33, D-1086 Berlin	E Establishment of contact recommended (meetings on 29 Nov 1990)	
(67)	Technical College for Diagnosis and Reliability, College for Transportation Systems	PSD 103, 8027 Dresden	FS	Computer-supported process analysis for quality assurance
(67)	Institute for Electron Physics	Hausvogteiplatz 5-7, 1086 Berlin	FS	Multiple parameter screening of components
(67)	Humboldt University, FG	1120 Berlin	FS	Quality assurance for industrial component repair
(68) Research Association for Programming Languages for Production Facilities, regional association	Institute for Information Science in Production and Development of the ZKI	Kurstr. 33, 0-1086 Berlin	E Establishment of contact recommended	
(68)	Dresden Technical University, Process Techniques and Machine Tool Section	Mommstr. 13, 8027 Dresden	FS	Technology database for numerical control manufacture and work planning
(69) Research Institute for Rationalization, regional association	Magdeburg Technical University, Institute for Factory Automation and Factory Operation	3010 Magdeburg	FS	Production planning and control for foundries
(69)	Magdeburg Technical University, Institute for Factory Automation and Factory Operation	3010 Magdeburg	FS	Digital image processing in casting shops
(69)	Zwickau Engineering College, Business Administration Department	Dr.-Friedrichs-Ring 2a, 9541 Zwickau	FS	Reorganization of the maintenance sector for small and medium-sized enterprises
(70) German Shipbuilding Research Center, regional association	Volkswerft GmbH Stralsund	Werftstr. 3, 2300 Stralsund	K	
(70)	Information Systems & Data Processing Consulting GmbH	Doberaner Str. 110/111, D-2500 Rostock	K	
(70)	Rosslauer Schiffswerft GmbH	Werftstr. 4, 4380 Rosslau/Elbe	E Establishment of contact recommended in letter of 6 Dec 1990	
(70)	Shipbuilding Engineering Center GmbH Rostock	6/7, 2500 Rostock		Shipbuilding—literature—information system by means of IDIS (automatic inspection system) components

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(70)	Ingenieurtechnik und Maschinenbau GmbH Rostock	Postfach 1084, 2500 Rostock	FS	Ecological technique for removing rust and coatings
(70)	Rostock University	Albert-Einstein-Str. 2, 2500 Rostock	FS	Simulation of operational behavior of marine diesel engines
(70)	Dieselmotorenwerk Rostock GmbH	Erich-Schleusinger-Str., 2500 Rostock	FS	
(72) Test and Research Institute for Shoe Manufacture, regional association	Development and Service Corp. for Shoe and Leather Manufacturing	D-4850 Weissenfels	I	
(72)	Development and Service Corp. for Shoe and Leather Manufacturing	4850 Weissenfels	FS	Evaluation of the fit of shoes
(72)	Development and Service Corp. for Shoe and Leather Manufacturing	4850 Weissenfels	FS	Positioning and fixation of limp parts in shoe manufacture
(73) Research Association for Welding and Cutting, regional association	ZIS Halle	Koethener Str. 33a, D-4060 Halle	K	
(73)	ZIS Halle	Koethener Str. 33a, D-4060 Halle	M Advice on possibility of joint research support, contract research and personnel increase grants. Support for public relations work approved.	
(73)	Institute for Production Methods and Tools of Dresden Technical University	Mommsenstr. 13, 8027 Dresden	FS	Modeling and simulation of welded production methods to improve production planning and control
(73)	Otto von Guericke Technical University Magdeburg, Institute for Welding Techn.	Universitaetsplatz 2 PSF 124, 3040 Magdeburg	FS	Technological metal studies of the quality of thick sheetmetal welding
(73)	Chemnitz Technical University, chair for welding techn.	Reichenhainer Str. 70, 9022 Chemnitz	FS	Foundations for a friction welding consultation system
(73)	Chemnitz Technical University, chair for welding techn.	Reichenhainer Str. 70, 9022 Chemnitz	FS	Process engineering for cutting structural materials
(73)	Otto von Guericke Technical University Magdeburg, Institute for Welding Techniques	Universitaetsplatz 2 PSF 124, 3040 Magdeburg	FS	Welding conditions for MAG [metal-active-gas] welding of high-alloy steels
(73)	Institute for General Electronics, Power Electronics, of the Magdeburg Technical University	Universitaetsplatz 5, 3024 Magdeburg	FS	Primary switch-mode power supply units for gas-shielded metal-arc welding
(73)	Institute for Manufacturing Processes and Tools of Dresden Technical University	Mommsenstr. 13, 8027 Dresden	FS	Development of knowledge-based advisory systems for welding parameters
(73)	Warnemuende/Wustrow Navigation College	Richard-Wagner-Str., 2530 Rostock	FS	Direct wiring of electronic components
(73)	Wismar Technical College	Philipp-Mueller-Str., 2400 Wismar	FS	Qualification of surface assembly techniques
(73) Dresden Technical University, Information Technology section	Mommsenstr 13, 8027 Dresden	FS	Optimization of bump systems of high packing density	

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(73) Rostock University, Naval Engineering section	Parkstr. 6, 2500 Rostock	Studies on production of optimistic welding techniques		
(73) Magdeburg Technical University, Metal-Processing Dept., Assembly Techn. section	Universitaetsplatz 2, 3040 Magdeburg	FS	Improvement in the economics of welding high-alloy work pieces	
(73)	ZIS Halle GmbH	Koethener Str. 33a, 4060 Halle	FS	Comparison of the evidential values of hot crack detection methods
(73)	Chemnitz Technical University, Surface Techn. chair	PF 964, 9010 Chemnitz	FS	Studies of injection processing techniques for mechanically resistant titanium materials
(73)	Chemnitz Technical University, Manufacturing Process and Production Means Section	Reichenhainer Str. 70, 9022 Chemnitz	FS	Material-sealing joints of porous sintered metals
(73)	ZIS Halle GmbH, Berlin Business Region	Wackenbergstr. 84-88, 1100 Berlin	FS	Demonstration of an expanded parameter selection for resistance spot welding
(73) ZIS Halle GmbH, Berlin Business Region	Wackenbergstr. 84-88, 1100 Berlin	FS	Determination and delimitation of the influence of MAG-welded connections	
(73)	ZIS Halle GmbH	Koethener Str. 33a, 4060 Halle	FS	Vertical welding using the MAG method
(73)	Institute for Materials and Production Techniques of Koethen Technical College	Bernburger Str. 52-57, 4370 Koethen	FS	Development of designs and work planning for welded manufacture
(73)	Wismar Technical College, Materials Techn./Materials Input Section	Wismar	FS	Prod. welding of non- and low-alloy cast steel tubes
(73)	Magdeburg Technical University, Institute for Flow Techniques and Thermodynamics	Universitaetsplatz 5, 3040 Magdeburg	FS	Studies of hardfacing with self-hardening Fe-Mn alloys
(73)	Institute for Systems Engineering of Koethen Technical College	Bernburger Str. 52-57, 4370 Koethen	FS	
(74) Experimental and Teaching Facility for Alcohol Production and Fermentation Techniques in Berlin	Erich Correns Institute for Polymer Chemistry	Kanstr. 55, 1530 Teltow	FS	Sulfatizing of celluloses
(74)	WTZ for Wood-Processing Industry	Zellscher Weg 24, 8027 Dresden	FS	Shape-retention by wood materials
(74)	WTZ for Wood-Processing Industry	Zellscher Weg 24, 8027 Dresden	FS	Material utilization of wood waste
(74)	FZB Umweltlabor GmbH	1199 Berlin	FS	Biotechnical methods for degrading pollutants
(75) German Committee for Steel Construction, regional association	Institute for Steel Construction Leipzig GmbH	Arno-Nitsche-Str. 45, D-7030 Leipzig	I Cooperation with Rhine-Westphalia Technical College Aachen, Institute for Steel Construction, Prof. Dr. Sedlacek	
(75)	Weimar College for Architecture and Construction	Marienstr. 13, 5300 Weimar	FS	Automation of drafting and design processes in steel construction

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(75)	Weimar College for Architecture and Construction	Marienstr. 13, 5300 Weimar	FS	Automation of drafting and design processes for steel connectors
(75)	Institute for Steel Construction Leipzig GmbH	Arno-Nietzsche-Str. 45, 7030 Leipzig	FS	Evaluation and determination of residual life of old steel structures
(75)	Institute for Steel Construction Leipzig GmbH	Arno-Nietzsche-Str. 45, 7030 Leipzig	FS	Development of specific software for planning in steel construction
(76) Research Association for Steel Forming, regional association	Freiberg Mining Academy, Metallurgy and Casting Section	Leipziger Str. 33, 9200 Freiberg	FS	Determination of edge stresses in die impressions
(76)	Research Center for Forming and Plastics Processing Techniques GmbH Zwickau	Scheringerstr. 1-3, 9541 Zwickau	FS	Cold massive forming, expanded application
(76)	Research Center for Forming and Plastics Processing Techniques GmbH Zwickau	Scheringerstr. 1-3, 9541 Zwickau	FS	Tool changes for drop forging presses
(79) Research Association for Road Traffic and Communications	Institute for Road Transportation and Passenger Traffic GmbH	Friedrich-Engels-Str. 2, D08060 Dresden	K	
(80) Research Organization for General Textiles, Permanent Committee of the General Association for the Textile Industry of the FRG—General Textile	Research Institute for Textile Techniques Chemnitz GmbH	Annaberger Str. 240, PSF 243, D-9010 Chemnitz	M	
(80)	Textilforschung Plauen GmbH	Morgenbergerstr. 41, D-9900 Plauen	M	
(80)	Textil-Service Greiz GmbH	Zeulenrodaer Str. 42, D-6600 Greiz	M	
(80)	Institute for Technical Textiles GmbH	PSF 411, D-8012 Dresden	M	
(80)	Thuringische Faser AG Schwarza	Breitscheidstr. 103, 6822 Rudolstadt-Schw.	FS	New sorption materials based on polyamide waste
(80)	Dresden Technical University, Section for Chemistry	Mommesenstr. 13, 8027 Dresden	FS	Use of electromagnetic fields in coloring processes
(80)	Institute for Technical Textiles GmbH	Hohe Str. 6, 8012 Dresden	FS	Influence of textile stamping on mechanical properties of reinforced tubes
(80)	Institute for Technical Textiles	PSF 411 Hohe Str. 6, 8012 Dresden	FS	Long-term behavior of geotextiles
(80)	Thuringische Faser AG Schwarza	Breitscheidstr. 97, 6822 Rudolstadt-Schw.	FS	Thermal load-carrying capability of synthetic fibers
(80)	Research Institute for Textile Techniques Chemnitz	Annaberger Str. 240, 9010 Chemnitz	FS	Replacement chlorinated hydrocarbons in textile testing
(80)	Thuringische Faser AG Schwarza	Breitscheidstr. 103, 6822 Rudolstadt-Schw.	FS	Dye reduction with aqueous liquors
(80)	Dresden Technical University, Textile and Clothing Dept.	Mommesenstr. 13, 8027 Dresden	FS	New types of knitting structure for reinforcement of high-performance fibers

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(80)	Textil-Service Greiz GmbH	Zeulenrodaer Str. 42, 6600 Greiz	FS	Waste water pollution from heavy metals in wool dyeing
(80)	Chemnitz Technical University, Textile and Leather Techn. Section	Reichenhainer Str. 70, 9022 Chemnitz	FS	Development of foundations for automatic feeding of machines
(80)	Dresden Technical University, Highly Polymerized Materials and Textile Chemistry Dept.	Mommstr. 13, 8020 Dresden	FS	Dye kinetics in wool
(80)	Dresden Technical University, Textile and Garment Techn. discipline	Mommstr. 13, 8027 Dresden	FS	
(83) Research Association for Ultraprecision Techniques, regional association	Carl Zeiss Jena GmbH—Technological Center for Optics and Precision Engineering	Carl-Zeiss-Str. 1, 6900 Jena	K Working contacts so far established with: Berlin Technical University, FhG Institute for Production Techn. Aachen, FhG Institute for Prod.-Techn. and Automation Stuttgart, FhG Institute for Production Facilities of [word omitted], Construction Enterprise Berlin	
(83)	Carl-Zeiss Jena GmbH—Enterprise for Development of Scientific Equipment	Carl-Zeiss-Str. 1, D-6900 Jena	K Established of working contacts with Laser-Center Hanover, regional association	
(86) Research Association for Process Engineering, regional association	Dresden Technical University	Mommstr. 13, 8027 Dresden	FS	Non-uniformities of high-efficiency submicron particulate filters
(86)	Section for Equipment and Systems Development of Magdeburg Technical College	PF 124, 124 Magdeburg	FS	Mechanics of fluids and heat transfer in fluidized beds
(87) Consultation and Research Office for Shipping Containers, regional association	Transportkonsult International Berlin GmbH	Frankfurter Allee 216, 0-1130 Berlin	K Cooperation agreement	
(87)	Research and Consultation Center for Packaging	Reisstr. 42, D-8017 Dresden	K	
(88) Joint Committee on Galvanizing, regional association (GAV)	Institute for Materials Research and Application Techn. GmbH	Karl-Marx-Str. Postfach 44, 8080 Dresden	FS	Influence factors in hot dip galvanizing
(88)	Institute for Steel Construction Leipzig GmbH	Arno-Nietzsche-Str. 45, 7030 Leipzig	FS	Fire-galvanizing of Si-containing steels
(89) Working Group for Heat Treatment and Materials Techniques, regional association	Chemnitz Technical University	PF 964, 9001 Chemnitz	FS	Combination of heat treatment methods for steels
(89)	Freiberg Mining Academy	Gustav-Zeuner-Str. 5, 9200 Freiberg	FS	Thermal stability in laminated composites of hard materials
(91) Research Association for Tools and Materials, regional association (FGW)	Association for Production Techniques and Development mbH	Am Bad 2, D-6080 Schmalkalden	F Joint projects with possibility of support are being worked out	
(91)	Association for Production Techniques and Development mbH	Am Bad 2, 6080 Schmalkalden	FS	Hard material laminates on drills for wood processing

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(91)	Association for Production Techniques and Development mbH	Am Bad 2, 6080 Schmalkalden	FS	Nonpolluting hardening of workpiece parts
(91)	Association for Production Techniques and Development mbH	Am Bad 2, 6080 Schmalkalden	FS	Sharpening of hard material coatings on circular saw blades
(91)	Association for Production Techniques and Development mbH	Am Bad 2, 6080 Schmalkalden	FS	Wear differences in tool cutting
(91)	Association for Production Techniques and Development mbH	Am Bad 2, 6080 Schmalkalden	FS	Acoustic analysis for finding crack formation in circular saw blades
(91)	Association for Production Techniques and Development mbH	Am Bad 2, 6080 Schmalkalden	FA	Plasma-hardfacing of cutting knives
(91)	Association for Production Techniques and Development mbH	Am Bad 2 6980 Schmalkalden	FS	Hard material coating of synthetic processing tools
(92) Association of German Machine Tool Factories, regional association	Heckert-Chemnitz Werkzeugmaschinen GmbH	Jagdschaenkenstr. 17, D-9030 Chemnitz	M Member since Oct 1990; Advice on possibility of promoting joint research	
(92)	Magdeburg Technical University	Universitaetsplatz 5, 3010 Magdeburg	FS	Pedestal components of steel/reaction resin concrete for machine tools
(92) Dresden Technical University, Institute for Machine Tools	Mommstr. 13, 8027 Dresden		FS	Viscous coating element for numerical control axes
(93) Organization for Research, Techniques, Standardization and Training of Young Professionals in Cellulose and Paper Industry	ZEPA Engineering GmbH	Pirnaer Str. 31-33, 8312 Heidenau	FS	Industrial waste gypsum as paint pigment/Paper recycling
(93)	ZEPA Engineering GmbH	Pirnaer Str. 31-33, 8312 Heidenau	FS	Rheological and physical-chemical behavior of additives
(93)	Dresden Technical University	Duererstr. 26, 8019 Dresden	FS	Print color removal from old paper with deinking process
(94) Association of German Cement Works, regional association	Institute for Cement in Construction Material Service GmbH	Junkerstr. 27, D-4500 Dessau	K	
(94)	Cement Plant and Mechanical Engineering GmbH Dessau	Brauereistr. 13, 4500 Dessau	I Information contacts, interest expressed in acting as intermediary for third-party projects	
(95) Research Association for Brick Industry	Institute for Architectural and Heavy Ceramics GmbH Weimar	Erich-Weinert-Str. 7 b, 5300 Weimar	Efficiency comparison of brick prefab unit coverings	
(95)	Institute for Architectural and Heavy Ceramics GmbH Weimar	Erich-Weiner-Str. 7b, 5300 Weimar	FS	Bloom on visible brick-work
(96) Research Association for Galvanization	Freiberg Nonferrous Metals GmbH, Materials and Technical Center	Lessingstr. 41, D-9200 Freiberg	K	

Research Association (#) and Connection (according to list)	Company/Institute	Address	Abb. of Connections According to Legend	Topics, Special Measure, Joint Research
(97) Research Association for Measurement and Sensor Techniques, regional association, Dresden through K. Schwabe Research Institute Meinsberg	Geraete- und Reglerwerke Teltow GmbH	Oderstr. 74/76, D-1530 Teltow	K Establishment of contact planned	
(97)	WF GmbH	Ostendstr. 1-14, D-1160 Berlin	K Informed in Dec 1990 about support possibility, establishment of contact/membership recommended	
(97)	Dresden Center for Microelectronics GmbH	Grenzstr. 28, D-8080 Dresden	I	

Legend

The list of connections between AIF member association and enterprises or institutes in the new Federal Laender:

Abbrev.	Connection
K	Existing contacts
I	Information or exchange of scientists
F	Joint or coordinated research
FS	Proposed or approved research projects within the framework of the Special Measure Joint Research program
M	Membership by enterprises/Institutes in AIF member associations
E	Additional recommendations

Overview of Research Associations

Number	Research Association	Short Form
1	Research Association for Drive Technology, regional association (FVA)	Drive Technology
2	German Asphalt Institute, regional association	Asphalt Institute
3	Research Association for Automobile Technology, regional association (FAT)	Automobile Technology
4	Computer and Development Institute for Electronic Data Processing in Construction—RIB, regional association	Construction
5	Research Association for Garment Industry, regional association	Garment Industry
6	German Concrete Association, regional association	Concrete
7	Research Association of the Rhineland Pumice Industry, regional association Neuwied	Pumice Industry
8	Testing Institute for Inland Shipbuilding, regional association, Research Institute for Shallow Water-Hydrodynamics	Inland Shipbuilding
9	German Research Association for Sheetmetal Processing, regional association (DFB)	Sheetmetal Processing
10	Science Support by the German Brewers' Association, regional association	Brewers
11	Experimental and Teaching Institution for Brewery in Berlin	Brewery
12	German Brown Coal Industry Association, regional association	Brown Coal
13	DECHEMA German Association for Chemical Equipment, Chemical Technology and Biotechnology, regional association	Chemical Equipment
14	Research Association for Printing Machinery, regional association	Printing Machinery
15	German Research Association for Printing and Reproduction Technology, regional association	Printing and Reproduction Technology

Overview of Research Associations (Continued)

Number	Research Association	Short Form
16	Association for the Research Institute for Pure Metals and Metal Chemistry, regional association	Pure Metals and Metal Chemistry
17	Study Association for Application Technology of Iron and Steel, regional association	Iron and Steel
18	VDEh Association for Support of Iron Research mbH	Iron Research
19	Research Association for Iron Works Slags	Iron Works Slags
20	Research Association for Electrical Engineering at ZVEI, regional association	Electrical Engineering
21	Association of German Enamel Professionals, regional association	Enamel Professionals
22	EGKM—German Scientific Association for Petroleum, Natural Gas and Coal, regional association	Petroleum, Natural Gas and Coal
23	Research Group of the Food Industry, regional association	Food Industry
24	Research Association for Exploration of Geophysics	Exploration of Geophysics
25	Research Association for Precision Instruments, Micro- and Clock Technology, regional association	Precision Instruments, Micro- and Clock Technology
26	Research Association for Precision Engineering and Optics, regional association	Precision Engineering and Optics
27	District Heat Research Institute in Hanover, regional association	District Heat
28	Research Association for Fireproofing, regional association	Fireproof
29	International Research Association for Feed Technology, regional association	Feed Technology
30	Research Association for the Porous Concrete Industry, regional association	Porous Concrete Industry
31	DVGW German Association for the Gas and Water Industry	Gas and Water
32	Gas Heating Institute Essen, regional association	Gas Heat
33	Association of German Casting Professionals, regional association	Casting Professionals
34	Research Association of Gypsum Industry, regional association	Gypsum Industry
35	Technical Association of the German Glass Industry, regional association	Glass Industry
36	Research Association for Technical Glass, regional association	Technical Glass
37	VGB Research Foundation (Research Foundation of the VGB Technical Association of Major Power Plant Operators) regional association	Major power plant operators
38	Testing Institute for the Yeast Industry, regional association	Yeast industry
39	Association of Supporters of Research in the Field of Heating and Ventilation and AC Technology Stuttgart	Heating, Ventilation and AC Technology
40	Research Association for High Voltage and High Power Technology, regional association (FGH), P.O. Box 810169	High Voltage and High Power Technology
41	German Association for Wood Research, regional association (DGfH)	Wood Research
42	Association for Technical Wood Questions, regional association	Technical Wood Questions
43	Research Council for Refrigeration Technology, regional association	Refrigeration Technology
44	Research Association for Lime and Mortar, regional association	Lime and Mortar
45	"Lime-Sand" Research Association, regional association	Lime-Sand
46	Joint Committee for Cold Forming, regional association	Cold Forming
47	German Rubber Association, regional association	Rubber
48	German Ceramic Association, regional association	Ceramic Association
49	Research Association for the Cosmetic Industry, regional association	Cosmetic Industry
50	Research Association for Synthetics, regional association	Synthetics
51	Association for Support of the Institute for Synthetics Processing in Industry and Trade at the Rhineland-Westphalia Technical College in Aachen, regional association	Synthetics Processing

Overview of Research Associations (Continued)

Number	Research Association	Short Form
52	Support Organization for the South German Synthetics Center, regional association	Synthetics Processing
53	Institute for Business Cybernetics, regional association	Food Technology and Packaging
54	Industrial Association for Food Technology and Packaging, regional association	
55	Interest Organization for Leather Research and Hide Damage Control of the Association of German Leather Industry, regional association	Leather Research and Hide Damage Control
56	German Association for Logistics, regional association	Logistics
57	Research Association for Air and Drying Technology, regional association	Air and Drying Technology
58	Research Organization for Mechanical Engineering, regional association	Mechanical Engineering
59	Association for Supporting Marine Engineering, regional association (GMT)	Marine Engineering
60	Founders' Association for Metals—Association for Supporting Metal Research	Metals
61	Research Association for Musical Instruments, regional association	Musical Instruments
62	Research Association of the Natural Stone Industry, regional association	Natural Stone
63	German Research Association for Surface Treatment, regional association (DFO)	Surface Treatment
64	Paper Technology Foundation for Research and Training in Paper Production and Paper Processing	Paper Production and Paper Processing
65	Association for Supporting Private German Agricultural Plant Culture, regional association (GFP)	Plant Culture
66	Research Institute for Pigments and Lacquers, regional association	Pigments and Lacquers
67	Research Association for Quality Assurance, regional association	Quality Assurance
68	Research Association for Programming Languages for Production Facilities, regional association	Programming Languages
69	Research Institute for Rationalization, regional association	Rationalization
70	Research Center of German Shipbuilding, regional association	Shipbuilding
71	Research Association for Applied Lock, Metal Fittings and Preventive Security Technology, regional association	Lock, Metal Fittings Security Technology
72	Experimental and Research Institute for Shoe Manufacture, regional association	Shoe manufacture
73	Research Association for Welding and Cutting, regional association	Welding and Cutting
74	Experimental and Teaching Institute for Alcohol Production and Fermentation Technology in Berlin	Alcohol Production and Fermentation Technology
75	German Committee for Steel Construction, regional association	Steel Construction
76	Research Association for Steel Forming, regional association	Steel Forming
77	Hard Coal Mining Association	Hard Coal Mining
78	Research Association for the Stoneware Association, regional association	Stoneware Association
79	Research Association for Road Traffic and Communications	Road Traffic and Communications
80	Research Organization for General Textiles, Permanent Committee of the General Association for the Textile Industry of the FRG—General Textiles	General Textiles
81	Peat Research GmbH	Peat Research
82	Research Association for Ready-Mix Concretes, regional association (FTB)	Ready-Mix Concretes
83	Research Association for Ultraprecision Technology, regional association	Ultraprecision Technology
84	German Association for Combustion Research, regional association	Combustion Research
85	Research Association for Combustion Engines, regional association	Combustion Engines
86	Research Association for Process Technology, regional association	Process Technology

Overview of Research Associations (Continued)

Number	Research Association	Short Form
87	Consultation and Research Office for Shipping Containers, regional association	Shipping containers
88	Joint Committee on Galvanization, regional association (GAV)	Galvanization
89	Working Association for Heat Treatment and Materials Technology, regional association	Heat Treatment and Materials Technology
90	Research Institute for Thermal Protection, regional association, Munich	Thermal Protection
91	Research Association for Tools and Materials, regional association (FGW)	Tools and Materials
92	Association of German Machine Tool Factories, regional association	Machine Tool Factories
93	Organization for Research, Technology, Standardization and Training of Young Professionals in the Cellulose and Paper Industry	Cellulose and Paper Industry
94	Association of German Cement Works, regional association	Cement Works
95	Research Association for the Brick Industry	Brick Industry
96	Research Association for Zinc, regional association	Zinc
97	Research Association for Measurement and Sensor Technology, regional association, Dresden through the K. Schwabe Research Institute Meinsberg	Measurement and Sensor Technology
98	German Research Association for Application of Microelectronics, regional association through VDMA	Microelectronics
99	Association for Transportation Service Industry and Logistics, regional association	Transportation Service Industry and Logistics

Applied Research Institutes' Programs

92WS0450C Berlin APPLIED RESEARCH INSTITUTES OF THE NEW LAENDER IN DETAIL in German 1991 pp 1-157

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[Text]

Foreword

The necessary economic upswing in the new laender requires rapid formation of a competitive, middle-sized industry. Experience in the old laender shows that additional jobs and a highly dynamic competition are created principally by small and medium-sized enterprises.

One decisive precondition for the fulfillment of this requirement is constant innovation of productions and production methods based on effective R&D activity. The variety of efforts by the federal government and all participants in research support are aimed at a rapid increase in the effectiveness of the R&D potential in the new laender.

The reorganization of science and research, begun under the conditions of social market economy, is now accompanied by drastic manifestations of collapse. Due to an insufficient order level, the teams which have spun off from the large companies are having trouble staying alive. Understandably, short-term survival efforts dominate right now in the producing sector. The search for market segments with promise for the future is only slowly getting under way.

To implement Article 38 of the unification agreement, a whole series of proven methods and programs for research

support was put into effect with the active cooperation of the AiF as well. Additional ones are to be started soon. A great deal of transparency is desired in the identification process which is developing at present in the research community of the new laender. It must lead to a deeper understanding of the requirements and possibilities of maintaining and establishing R&D in the new laender.

In order to continue, supplement and specify the AiF booklet, "Institutionen industreinaher Forschung und Entwicklung in the neuen Bundeslaendern," [Institutions for Applied R&D in the New Laender] of 10 January 1991, the following volume is meant to contribute to the process of merging the R&D in the old and the new laender. This will increase the efficiency of the intended support.

The booklet is to serve as the guide for institutes and enterprises primarily in the old laender in order to obtain information about the profile as well as the personnel and material-technical base of applied R&D establishments. Thus, the high level of cooperation between enterprises and research institutions in the new laender already achieved, particularly with AiF member associations, will be further expanded. As many as 67 member associations already have connections with establishments in the new laender; 46 are working on joint research projects. There is a very dynamic development of new structures and versatile forms of cooperation.

The booklet undertakes the attempt to show the current number and situation of applied R&D facilities. At the same time, the data can also serve as a foundation for a planned evaluation which is to be undertaken in cooperation between the Trust Agency and the AiF.

This information booklet includes two parts:

1. A list of 157 applied research institutes—arranged in a matrix according to economic branches and the new laender

2. One-hundred and fifty seven short descriptions of applied research institutes in the new laender.

The information was worked out in agreement with the facilities which have expressed their interest in a compiled

publication. All institutions known to the AiF were contacted, but not all have replied.

The authors hope that an additional foundation may thereby have been laid for maintaining efficient R&D potentials. They would be grateful for additional stimuli to reach the abovementioned goal.

The president of AiF; Prof. Dr. Dr. Otto H. Schiele

1. List of 157 Applied Research Institutions—Arranged According to Economic Branches and the New Laender

Laender/Industry	Berlin	Brandenburg	Saxony-Anhalt
Power Economy and Water Supply	1 EWU Eng. Berlin	39 If Kraftw. Vetschau	
Mining	2 UWG Berlin	40 ZI Physics Potsdam	
Quarrying Minerals and Earths, Fine Ceramics, Glass Industry			49 Dessau
Chemical Industry and Petroleum Processing	3 IFZ Biotech. Berlin; 4 ZI Chemistry Berlin; 5 FZB Bio. Berlin; 6 Biopharm Berlin	41 Polymer Teltow; 42 Biomed. Schoenwal.	50 If Lacke, Magdeburg
Synthetics, Rubber and Asbestos Processing			
Iron and Nonferrous Metal Production and Processing	7 Metallurg, Berlin; 8 STEB Berlin		51 Powd. metal. Thale
Casting, Steel Forming			
Steel, Mechanical Engineering, Motor Vehicle Construction	9 Rail Vehicle Berlin; 10 BU Berlin		52 FER-Ing. Magdeburg; 53 MIS-Serv. Magdeburg; 54 ZIS Halle; 55 Fluid Halle; 56 Trockn. Gatersleb.; 57 SKL Eng. Rosslau
Wood, Paper and Printing Industry	11 Innotech Berlin; 12 Recontie Berlin		
Electrical, Precision Engineering and Optics	13 EFN, Berlin; 14 Inst. f. Image processing, Berlin; 15 ZFE-EAW Berlin; 16 Inst. f. Info Berlin; 17 Aurotech Berlin; 18 Spec. instr. Berlin; 19 Inst. f. Aut. Berlin; 20 AWG Berlin; 21 Elec. high volt. Berlin; 22 Elect. phy. Berlin; 23 IE Fertig. Berlin; 24 Konges Berlin; 25 Telmec Berlin; 26 EASTMED Berlin; 27 Fukom Berlin; 28 IWG-PAK Berlin; 29 Umatec Berlin		
Iron, Sheetmetal and Metal Goods, Musical Instruments, Sports Equipment, Toys and Jewelry			
Food and Semi-Luxury Consumables Industry	30 WTZ Grains Berlin	43 Grains Bergholz; 44 ZI Foodstuffs Bergholz; 45 Milk sc. Oranienb.; 46 Feed prod. Paulinenaue; 47 Veg. Grossbeeren	58 Meat prod. Magdeburg; 59 Fruit a. veg. Magdeburg; 60 OeHMI Magdeburg; 61 Saale-Sa. Halle; 62 Seed cult. Bernburg; 63 APZ Bernburg; 64 Messtron Holleben; 65 Genetics Gatersleb.; 66 Refrig. Magdeburg
Leather, Textile and Garment Industry			67 Dienstl. Weissenf.
Construction Industry and Others	31 Botec Berlin; 32 Traffic Autom. Berlin; 33 IVB Verk. Berlin; 34 Eng. constr. Berlin; 35 ISQ Constr. Berlin; 36 Zukunft-V. Berlin; 37 Sero Berlin; 38 Transport Berlin	48 Shipbuilding Potsdam	

Laender/Industry	Saxony	Thuringia	Mecklenburg-West Pomerania
Energy Industry and Water Supply	68 Env. tech. Dresden; 69 Ecosystem Dresden; 70 IG Water Dresden; 71 DBI Gas Leipzig; 72 Energy Sc. Leipzig; 73 Water Tech. Leipzig; 74 Energy utility Leipzig; 75 DB Institut Freiberg		150 Geotherm. Neubrand.
Mining	76 Rock Mech, Leipzig; 77 Raw materials, Dresden	127 Potash Sondersh.	Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry
78 Ceramics Meissen; 79 Eng. ceram. Meissen; 80 Ind. Park Bad Muskau	128 WTI Jena; 129 Const. ceram. Weimar; 130 Proc. tech. Saalfeld		
Chemical Industry and Petroleum Processing		131 Microbio Jena	
Synthetics, Rubber and Asbestos Processing	81 Synth. Leipzig; 82 IFT Polym. Dresden		
Iron and Nonferrous Metal Production and Processing	83 Mat. Res. Dresden; 84 Nonf. metals Freiberg		
Casting, Steel Forming			
Steel, Mechanical Engineering and Motor Vehicle Construction	85 Takraf IFF Leipzig; 86 Hydraul. Leipzig; 87 Steel const. Leipzig; 88 Automation Leipzig; 89 Food tech. Dresden; 90 FER Assemb. Dresden; 91 IKLA Dresden; 92 Synth. tech. Chemnitz; 93 GERFEMA Chemnitz; 94 Cetex Chemnitz; 95 Form. tech. Chemnitz; 96 Forming Zwickau; 97 Agritech. Neustadt	132 GFE Schmalk.	
Wood, Paper and Printing Industry	98 Contacta Leipzig; 99 WTZ Holz Dresden; 100 ZEPA Heidenau		
Electrical, Precision Engineering and Optics	101 Sinus Leipzig; 102 Med. res. Dresden; 103 Systems tech. Dresden; 104 Plasma Dresden; 105 ZMD Mar. Dresden; 106 ZMD-FE Dresden; 107 Electronic Dresden; 108 Medic. tech. Dresden; 109 Mechanics Chemnitz; 110 Busin. prom. Chemnitz; 111 In. Schwabe Meinsberg	133 CIS Erfurt; 134 TZ Optik Jena; 135 Measuring equipment, Jena; 136 Microscopes Jena 137 ZFE Jena; 138 Prec. const. Jena; 139 Photography, Jena; 140 Crystal Jena; 141 WT Equipment, Jena; 142 Anal. mech. Jena; 143 Prod. mech. Jena; 144 Astro equipment, Jena; 145 Semiconductors, Jena; 146 Opt. med. Jena	151 Incor Rostock
Iron, Sheetmetal and Metal Goods, Musical Instruments, Sports Equipment, Toys and Jewelry	112 Musical instr. Zwota	147 Design Sonneberg	
Food and Semi-Luxury Consumables Industry	113 Lactoform Dresden; 114 Fruit res. Dresden		152 Potato res. Gr.-Luesew.; 153 Plant cult. Guelzow
Leather, Textile and Garment Industry	115 Techn. text. Dresden; 116 Textile tech. Chemnitz; 117 Leather tech. Freiberg; 118 AIH Auerbach; 119 Text. res. Plauen; 120 MaTex Limbach	148 Tex. serv. Greiz	
Construction Industry and Others	121 Baufa Leipzig; 122 Undergr. const. Leipzig; 123 Packag. Dresden; 124 Road transp. Dresden; 125 Transp. logist. Dresden; 126 Mun. econ. Dresden	149 Const. mat. Weimar; 154 CiS Rostock; 155 Shipb. Rostock; 156 RWI Rostock; 157 Ship's eng. Warnem.	

2. 157 Brief Descriptions of Applied Research Institutes in the New Laender

(1) EWU ENGINEERING-GMBH

Storkower Str. 134, 0-1055 Berlin, Tel.: 43 40

1. Industry: Energy Industry and Water Supply
2. Legal form, year founded: GmbH i.G., 1990

3. Managing director: Dipl. Engr. Andreas Gressmann, Guenter Schoebel, PhD. in Econ. and Dipl. Engr.

4. Total employees, of whom R&D personnel (persons): 57, 50

5. 1991 R&D budget (thousand DM): 3,500

6. Field of work (research and activity profile):

- Energy and heating concepts for businesses, as well as studies and variants for solving heating problems

- Procedures and methods for reducing environmental pollution, particularly elimination of contaminants from flue gas
- Study of existing hazardous contamination and development of cleanup concepts
- Development of conversion variants for existing heating facilities to nonpolluting energy sources
- Development of application variants for decentralized heat generating facilities, particularly with heat-power cogeneration (BHKW)
- Variant studies for using alternative and secondary energy with special consideration of application facilities for low-temperature heat
- Variant studies for the most effective design of heat distribution and application facilities

7. Cooperation with enterprises and institutes in the old laender:

UVE Berlin Working Group for District Heating, regional association of the VDEW Association of Block-Type Thermal Power Plant Authorities and Operators, Berlin

8. International Cooperation: none

(2) UWG SOCIETY FOR ENVIRONMENTAL AND BUSINESS GEOLOGY MBH

Invalidenstr. 44, 0-1040 Berlin, Tel.: 2 36 38 55

1. Industry: Mining
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Erler, Dr. Kamps
4. Total employees, of whom R&D personnel (persons): 140, 40
5. 1991 R&D budget (thousand DM): 2,000
6. Field of work (research and activity profile):

—Environmental-geological research on tolerance potentials

- Hydrogeological research
- Migration studies in waste dumps
- Environmental damage by means of aerial image interpretation

—Utilization of alternative sources of energy—Geothermal heat

—Engineering-geological research activity

—Environmental analysis

7. Cooperation with enterprises and institutes in the old laender: Federal Environment Agency Juelich Nuclear Research Institution

8. International Cooperation:

Institutes in East European countries, particularly USSR.

(3) IFZ BIOTECHNOLOGICAL RESEARCH AND DEVELOPMENT ASSOCIATION MBH

Alt-Stralau 52-54, 0-1017 Berlin, Tel.: 5 50 72 34

1. Industry: Chemical Industry and Petroleum Processing
2. Legal form, year founded: GmbH i.G., 1990
3. Managing director: Hildegard Toussaint, Dr. Peter Lietz
4. Total employees, of whom R&D personnel (persons): 97, 72
5. 1991 R&D budget (thousand DM): 3,100
6. Field of work (research and activity profile):

Application-oriented biotechnology research and consulting for the environmental protection, food and light industry as well as agriculture, with the following focal points:

- Development and application of technical enzymes
- Cultivation and selection of microorganisms
- Undertaking of microbiological and chemical-analytical studies including tracing of foreign substances in food, agricultural raw materials and additives and waste products
- Extensive technical-technological evaluation and service for food-technological and bioengineering production processes
- Development of complex solutions to eliminate waste products and waste water as well as soil cleanup
- Hydromechanical design of agitating fermenters
- Evaluation and growing concepts for replenishing raw materials

7. Cooperation with enterprises and institutes in the old laender: Amafilter Membrantrenntechnik GmbH ITU-GmbH Oekolimna GmbH

8. International Cooperation: Cultor Ltd., Finland Research Institute for the Food Industry, CSFR.

(4) CENTRAL INSTITUTE FOR INORGANIC CHEMISTRY

Rudower Chaussee 5, 0-1199 Berlin, Tel.: 6 74 56 86

1. Industry: Chemical Industry and Petroleum Processing
2. Legal form, year founded: Public Law Establishment, Land Berlin, 1971
3. Managing director: Prof. Manfred Meisel, Dr. of Natural Science
4. Total employees, of whom R&D personnel (persons): 321, 270
5. 1991 R&D budget (thousand DM): 16,000

6. Field of work (research and activity profile):

- Synthesis and description of phosphates, phosphate substitutes, organic phosphoric acid and phosphoric acid derivatives as initial products for complexation agents, biocides, wood protectives, flotation agents, heterogeneous catalysts, adhesives in the glue technology, flameproof finishes, release agents, lubricants, etc.
- Basic studies of silicate and aluminate systems for the application fields of water glass, molecular sieves, new organic and inorganic compounds, flocculants, antiperspirants, aluminum hydroxide deposition
- Basic research and material developments derived from it (primarily ceramics, glass, flameproof materials and composites) for classic applications, as heavy-duty ceramic materials, as implantation material in human medicine, as operational materials in microelectronics, high-frequency technology, sensors and environmental technology, service for high-temperature reactors in the glass, steel and chemical industry)
- Technological studies on production of thin, glass, glass-ceramic and ceramic layers, for preparation of powders and bulks for various ceramic shaping procedures

7. Cooperation with enterprises and institutes in the old laender: Twelve establishments in commercial industry 23 research institutions, including higher education institutions.

8. International Cooperation: Institute for General and Inorganic Chemistry, Moscow Institute for Silicate Chemistry, Leningrad Institute for Inorganic Chemistry of the SAV, Bratislava and another 22 research institutions in the East and 13 in the West.

(5) FZB BIOTECHNIK GMBH I.G.

Alt-Stralau 62, 0-1017 Berlin, Tel.: 5 50 12 23

1. Industry: Chemical Industry and Petroleum Processing
2. Legal form, year founded: GmbH, 1990 (1959)
3. Managing director: Prof. Dierck-H. Liebscher, Dr. of Natural Science and Medicine
4. Total employees, of whom R&D personnel (persons): 196, 150
5. 1991 R&D budget (thousand DM): 20,400

6. Field of work (research and activity profile): Applied, product and basic research for new development of biotechnology methods, rationalization of procedures and facilities as well as manufacture of special bioproducts in the fields of:

- microbiology/genetics: strain search, strain optimization, strain description from technological aspects
- fermentation technology: isolation of formation of

microbial products or biomasses, bioregulation, process control, scale change

- reprocessing technology: Isolation and purification of extra-cellular and intracellular products
- enzyme technology/biocatalysis: Enzymes of particular specificity, enzyme systems with high selectivity for chemical conversion, product forms and procedures for application of biocatalysts
- analytical chemistry: Chemical, biochemical, toxicological and microbiological analytical chemistry

7. Cooperation with enterprises and institutes in the old laender: Cooperation with four institutes and eight companies in the industry.

8. International Cooperation: Cooperation with institutes in Austria and the USSR.

(6) PHARMACOLOGICAL RESEARCH ASSOCIATION BIOPHARM

Alfred-Kowalke-Str. 4, 0-1136 Berlin, Tel.: 51 63-0

1. Industry: Chemical Industry and Petroleum Processing
2. Legal form, year founded: GmbH, 1990 (1976)
3. Managing director: OMR Prof. Dr. Erhard Goeres, Heinrich Rau
4. Total employees, of whom R&D personnel (persons): 111, 68
5. 1991 R&D budget (thousand DM): 8,730

6. Field of work (research and activity profile):

- Pharmacological, pharmacokinetic (radioactively marked and unmarked substances) and toxicological studies of various animal species and tissue cultures, isolated organs and in vitro development and introduction of new pharmaceuticals
- Studies of suitability/non-objection of substances and agents
- Studies of pharmacological safety
- Bioavailability studies
- Handling of new licensing, relicensing, registration applications, professional information
- Synthesis and analysis of original active substances

7. Cooperation with enterprises and institutes in the old laender: Three companies in the pharmaceutical industry.

8. International Cooperation: none.

(7) SYSTEMS RESEARCH INSTITUTE METALLURGY GMBH

Karl-Liebkecht-Str. 34, 0-1026 Berlin, Tel.: 2 34 27 46

1. Industry: Iron and Nonferrous Metal Production and Processing
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. M. Schwandtke

4. Total employees, of whom R&D personnel (persons):
84, 41

5. 1991 R&D budget (thousand DM): 2,145

6. Field of work (research and activity profile):

- Material and energy-saving rolling techniques for producing metal sheets and bands and structural steel, as well as improvement in quality
- Flexible computer-supported exploration and evaluation of reprocessing dumps, waste dumps, pollutant-contaminated soils, mine dumps, geological depots with respect to their valuable materials or pollutant contents
- Waste disposal of special polluting residual materials from metallurgic production
- Measurements, expert opinions and consultation on air purification according to the Federal Anti-Emission Law
- Consultation, planning and studies on exhaust collection and purification of waste gases including projection
- REFA [Association for Labor Studies] Training and Continuing Education program for work studies and management organization for humanizing work

7. Cooperation with enterprises and institutes in the old laender: Systems Research Institute GmbH Duesseldorf, Systems Technology GmbH Duesseldorf, REFA Land Organization Berlin-West, Labor Office Berlin-West, Kloeckner Huette Bremen UBW GmbH Berlin-West.

8. International Cooperation: none.

(8)STEB-STAHL-TECHNOLOGIE UND ENGINEERING BERLIN GMBH

Karl-Liebkecht-Str. 34, PSF 811, 0-1026 Berlin, Te;.: 2 33 68 13

1. Industry: Iron and Nonferrous Metal Production and Processing

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Hans-Ruediger Dorst

4. Total employees, of whom R&D personnel (persons):
6, 3

5. 1991 R&D budget (thousand DM): 300

6. Field of work (research and activity profile):

Applied and technological research in the field of steel production:

- Increase in the proportion of scrap in converter steel production while assuring high productivity and low primary energy consumption
- Improvement in environmental protection by avoiding/recycling byproducts
- Development of solutions to avoid dioxin formation in the process sequence for raw iron/raw steel

- Working out basic engineering for conversions/expansions/new construction in the fields of raw iron/raw steel/ladle metallurgy/continuous casting
- Concepts and information about specific equipment components

7. Cooperation with enterprises and institutes in the old laender: Korf Lurgi Stahl Engineering GmbH, Frankfurt/Main

8. International Cooperation: Vitkovice-Konzern, Ostrava, CSFR

(9) INSTITUTE FOR RAIL VEHICLES GMBH

Adlergestell 598, 0-1183 Berlin, Tel.: 6 81 02 87

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr.-Engr. Heinz Kunicki

4. Total employees, of whom R&D personnel (persons):
136, 64

5. 1991 R&D budget (thousand DM): 4,000

6. Field of work (research and activity profile):

—Working out development strategies, innovative process research, product and procedure development, construction and testing of model and pilot plants, production structures and technologies in the fields of:

- Rail and road vehicles
- Mechanical engineering and drive technology
- Steel construction
- Electrical/electronic drive technology

—Specialization in the fields of:

- Mechanical Engineering and steel construction
- Product and investment goods design
- Calculation and strength testing of supporting frameworks
- Aerodynamics and thermodynamics
- Reliability testing of apparatus and components
- Quality testing
- Acoustic, oscillation, fire protection, thermodynamic and climate testing
- Development of large-scale synthetic components

7. Cooperation with enterprises and institutes in the old laender: Federal German Railways BZA Minden.

8. International Cooperation: none.

(10) IBU INSTITUTE FOR BUSINESS ADMINISTRATION AND MANAGEMENT CONSULTING

Eichbuschallee 51, 0-1195 Berlin, Tel.: 6 32 99 11

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Joachim Niemann
4. Total employees, of whom R&C personnel (persons): 85, 75
5. 1991 R&D budget (thousand DM): 5,895
6. Field of work (research and activity profile):

- Business management and ergonomic consulting for medium-sized enterprises with respect to founding and reprivatising companies, budget concepts, financial planning, work structuring and organization solutions, strategic management and efficiency increase programs
- Electronic data processing consulting for the Federal Ministry of Economics on data processing solutions, data processing strategies, software solutions and hardware equipment
- Medium-sized industry research for the Federal Ministry of Economics and the Economics Ministries of the new laender by working out impact analyses and scientific studies
- Continuing education for general business administration, labor, tax and economic law, marketing and logistics, labor studies and operating organization as well as data processing

7. Cooperation with enterprises and institutes in the old laender: Hewlett Packard GmbH Deutschland, Boeblingen Softwarehaus ORDAT GmbH und Co., Giessen PK-Software GmbH, Rinteln Fritz Guss GmbH, Albstadt Institute for Applied Psychology and Market Research GmbH, Berlin-Zehlendorf Labor Science Research Institute Berlin-West

8. International Cooperation: none

(11) INNOTECH-HOLZTECHNOLOGIEN GMBH

Hannoversche Str. 17, 0-1040 Berlin, Tel.: 2 82 36 57

1. Industry: Wood, Paper and Printing Industry
2. Legal form: year founded: GmbH i. Gr., 1990
3. Managing director: Thomas Stautmeister
4. Total employees, of whom R&D personnel (persons): 10, 9
5. 1991 R&D budget (thousand DM): 1,263
6. Field of work (research and activity profile):

- Development of a universal solution for the computer-integrated wood/furniture manufacturing industry by developing parameterizable interfaces and the use of a system of distributed databases for linking and including standard software modules
- Development of a computer-supported, graphics-oriented software tool for factory study, simulation and planning for standard design of the flow of material and information based on relational product

and processing machine data bases

- The use of expert systems for factory planning, apparatus dimensioning and status diagnosis tasks
- Development of financing and methodology models for innovative handling of the USSR market.

In the long term, the establishment of a production-related CAD center for product development and design is being pursued.

7. Cooperation with enterprises and institutes in the old laender: German Association for Wood Research, regional association, Federal Organization of the Wood and Synthetic-Processing Trade, Wiesbaden.

8. International Cooperation: Polytechnic Institute Kiev.

(12) RECONTIE-INGENIEURBUERO HOLZ-GMBH

Berliner Str. 5, 0-1113 Berlin, Tel.: 4 81 38 16

1. Industry: Wood, Paper and Printing Industry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr.-Engr. Wolfgang Kreissig
4. Total employees, of whom R&D personnel (persons): 16, 10
5. 1991 R&D budget (thousand DM): 200
6. Field of work (research and activity profile):

- Projects in applied research, particularly in the field of maintenance and repair of historic wood structures and development of new products in wood construction
- Basic research involving testing the preservability of wood and the material behavior of wood
- Development and introduction of new methods in wood construction
- Testing of nondestructive testing methods in old wood structures
- Studies of engineering theory and experimental studies of material and component behavior

7. Cooperation with enterprises and institutes in the old laender: Darmstadt Technical College, Institute for Steel Construction and Material Mechanics Science Bergische University Wuppertal.

8. International Cooperation: V.A. Kucherenko (ZNI-ISK), USSR Cooperation with the CIB-W18 Timber Structures Group.

(13) DEVELOPMENT ASSOCIATION FOR COMMUNICATIONS TECHNOLOGY MBH—EFN

Edisonstr. 63, 0-1160 Berlin, Tel.: 63 81 24 32

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990 (1961)
3. Managing director: Mr. Busche

4. Total employees, of whom R&D personnel (persons): 520, 480

5. 1991 R&D budget (thousand DM): 38,100

6. Field of work (research and activity profile):

—Applied research (concentrated on broadband communication), product research and development for commercial communications technology with the principal areas of:

- Switching technology
- Transmission technology (concentrated to development of multichannel digital line equipment for coaxial cable)
- Radio technology
- Design of highly integrated customer-specific circuits

—Hardware and software side adaptation of SEL products to the communications networks of the Post/Telecom of the five new laender and to special networks in transportation, energy industry, medical service, banks, insurances, etc.

7. Cooperation with enterprises and institutes in the old laender: Research and development section of SEL AG.

8. International Cooperation: Institutes for Communications Technology of Riga and Leningrad, RONIIS, LONIIS.

(14) INSTITUTE FOR IMAGE PROCESSING (IBV)

Kurstr. 33, 0-1086 Berlin, Tel.:

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: Public law establishment, 1990 (1969)

3. Managing director: W. Osten, PhD in Nat. Science

4. Total employees, of whom R&D personnel (persons): 29, 23

5. 1991 R&D budget (thousand DM): 2,595

6. Field of work (research and activity profile):

—Process solutions for visual inspection and quality control with the subtasks of movement analysis, surface inspection and laser measurement techniques; interference pattern analysis and reconstruction; visual 3-D sensor systems for nondestructive evaluation, measurement and reconstruction of surface profiles and bodies, development of knowledge-based feature acquisition,

—Application-related complete image processing solutions with the aspects of hardware (special processors, linked networks) and software (user interfaces, libraries),

—Complete project handling based on coordinated task record books:

- Problem analysis
- Process selection and development
- Systems-technical supplementation with commercially available components
- Laboratory testing
- System installation for the user

—Activity areas not related to image processing are included by cooperation agreement

7. Cooperation with enterprises and institutes in the old laender: Fraunhofer Society Universities of Braunschweig and Saarbruecken Volkswagen AG, Mercedes-Benz.

8. International Cooperation: Institutes and universities in the USSR, CSFR, Greece and Denmark.

(15) CENTER FOR RESEARCH AND DEVELOPMENT OF THE EAW BERLIN GMBH

Storkower Str. 115, 0-0155 Berlin, Tel.: 4 38 80

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Peter Schmidt, Dr. of Techn. Science

4. Total employees, of whom R&D personnel (persons): 200, 140

5. 1991 R&D budget (thousand DM): approx. 6,000

6. Field of work (research and activity profile):

- Analytic measurement technique for water/waste water
- Pressure gauge techniques
- Flow-measuring techniques
- Stored-programmable automatic control engineering
- Power sources
- CAD software technology
- Unix systems
- Real-time computers
- Model construction for laboratories and functions
- Printed circuit board assembly
- Environmental requirement testing
- Weak point analysis
- Information agency/Database searches

7. Cooperation with enterprises and institutes in the old laender: VDI/VDE Berlin Association for Mathematics and Data processing, Darmstadt AEG and other institutes and companies in the industry.

8. International Cooperation: Institutes in the USSR and other Eastern European countries.

(16) INSTITUTE FOR INFORMATION SCIENCE AND COMPUTER TECHNOLOGY

Rudower Chaussee 5, 0-1199 Berlin, Tel.: 6 74 51 95

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: Public law establishment, 1972

3. Managing director: Prof. Dr. Gerhard Merkel

4. Total employees, of whom R&D personnel (persons): 179, 93

5. 1991 R&D budget (thousand DM): 4,500

6. Field of work (research and activity profile):

- Reliable information systems
- Management of product-descriptive data
- Formal specification for distributed data processing tasks
- Programming environments for parallel processing systems
- Bioinformation, dynamic networks, modeling and simulation of physical-technical processes
- Communications technologies

7. Cooperation with enterprises and institutes in the old laender: Association for Promotion of a German Research Network, regional association, Berlin GMD Fokus, Berlin GMD FIRST, Berlin GMD Systems Technology, Darmstadt GMD Information Technical Infrastructures, St. Augustin Berlin Technical University, Institute for Machine Tools and Production Technology Berlin Technical University, Institute for Evolution Technology and Bionics Dortmund University, Information Science Dept. German Cardiac Center, Berlin.

8. International Cooperation: LAAS, Toulouse; KZIRT of the Bulgarian Academy of Sciences, Sofia; KFKI of the Hungarian Academy of Sciences, IERT of the Latvian Academy of Sciences, Riga; ICT Academia Sinica, Peking; Institute for Cybernetics, Kiev; University of Michigan, Medical Center.

(17) AUROTECH AUTOMATISIERUNGSTECHNIK GMBH

Romain-Rolland-Str. 135-141, 0-1121 Berlin, Tel.: 4792-0

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form: year founded: GmbH, 1990

3. Managing director: Ulrich Wolff, Wolrad Leeder

4. Total employees, of whom R&D personnel (persons): 143, 25

5. 1991 R&D budget (thousand DM): 600

6. Field of work (research and activity profile):

- Development of automation solutions for loading, handling and interlinking of machines
- Development of control technology (remote radio control, FPS systems)
- Development and production of electrical engineering drive systems
- Construction of special machinery.

7. Cooperation with enterprises and institutes in the old laender: Fa. Alpha-Rehatechnik Berlin.

8. International Cooperation: ICPE Bucharest Tchermet-Automatika Moscow.

(18) ISM INGENIEURBUERO FUER SPEZIALM-ESSTECHNIK

Rudower Chaussee 6, 0-1199 Berlin, Tel.: 6 74 46 51

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Helmut Schlawatzky

4. Total employees, of whom R&D personnel (persons): 7, 7

5. 1991 R&D budget (thousand DM): Approx. 200

6. Field of work (research and activity profile):

- Laser technology, optoelectronics, sonography
- Process control and distributed systems
- Electronic data gathering and processing

The most important areas are:

- Consulting, preparation of studies and development of unique problem solutions
- Development, acquisition and construction of complete measuring apparatus including complex computer-supported equipment
- adjustment and adaptation of lasers to special measurement tasks as well as design and production of supplementary modules
- Studies of customer-specific tests in company laboratories
- Production of process and problem-specific hardware and software as well as development of additional local electronics
- Contract development of components and equipment all the way to a prototype

7. Cooperation with enterprises and institutes in the old laender: none

8. International Cooperation: none

(19) INSTITUTE FOR AUTOMATION BERLIN

Rudower Chaussee 5, 0-1199 Berlin, Tel 6 74 50 98

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form: year founded: Public Law Establishment, Land of Berlin, 1988

3. Managing director: Prof. Dr. Hans Fuchs

4. Total employees, of whom R&D personnel (persons): 120, 96

5. 1991 R&D budget (thousand DM): 4,293

6. Field of work (research and activity profile):

—Research and technology transfer in the field of automated control systems, diagnostic methods and real-time processing, as well as robots with the concentration on:

- Sensors for robot systems and mechanical engineering (particularly force moment sensors, collision sensors)
- Intelligent grippers
- Simulation and real-time image processing for mobile robots (environmental protection)
- Workshop programming of industrial robots and numerically controlled machines
- Optical surface test procedures
- Measurement of acoustic emissions for monitoring and diagnosis of cutting manufacturing processes
- Consistency control of fresh concrete
- Control of multiphase current-asynchronous motors
- Process questions on calendar techniques

—Application-oriented basic research for local automation of production, particularly,

- Innovative methods in process control
- Robots and flexible automation
- Diagnosis of mechanical manufacturing processes

7. Cooperation with enterprises and institutes in the old laender: Cooperation with three Fraunhofer institutes, six universities and six cooperation partners in industry.

8. International Cooperation: Cooperation with institutes in Sweden, USSR, Bulgaria and CSFR.

(20) CENTER FOR SCIENTIFIC INSTRUMENT ENGINEERING

Rudower Chaussee 6, 0-1199 Berlin, Tel.: 6 74 29 81

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: Public Law Establishment, 1956

3. Managing director: Prof. Norbert Langhoff, Dr. of Techn. Sci.

4. Total employees, of whom R&D personnel (persons): 1,328, 419

5. 1991 R&D budget (thousand DM): 16,050

6. Field of work (research and activity profile):

- Magnetic resonance procedures
- Ultraprecision technology
- Laser technology and ultrashort-time spectroscopy
- X-ray spectrometry
- Process analysis measurement technology
- Bioprocess and analysis measurement technology
- Crystal growth and diagnosis
- Plasma and ion beam technology
- Special technological services

- Training services in the fields of engineering research technology
- Product development for industry
- Development and application of computer-supported technologies

7. Cooperation with enterprises and institutes in the old laender: about 30 enterprises and scientific establishments.

8. International Cooperation: Chrompack, the Netherlands Kings College, London.

(21) INSTITUTE TEST FACILITY FOR HIGH-PERFORMANCE ELECTRICAL ENGINEERING

Leninallee 376, 0-1140 Berlin, Tel.: 5 50 99 21

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH i. A., 1990 (1956)

3. Managing director: Prof. Heinz Haenisch, Dr. of Engr.

4. Total employees, of whom R&D personnel (persons): 145, 70

5. 1991 R&D budget (thousand DM): 4,000

6. Field of work (research and activity profile):

- Studies of problems involving the need for short transmission paths in energy transmission and distribution facilities and equipment
- Increase in reliability of energy transmission facilities and equipment
- Development of new test procedures and associated measurement systems for high-power testing of energy transmission and distribution facilities and equipment
- Development of complex test methods to cut down the time for testing the life of energy transmission and distribution facilities and equipment

7. Cooperation with enterprises and institutes in the old laender: PEHLIS Test Facility Organization ALPHA Test Facility Organization FGH Mannheim.

8. International Cooperation: CESI/Italy International Electrotechnical Commission (IEC), Geneva International High-Voltage Conference (CIGRE), Paris.

(22) CENTRAL INSTITUTE FOR ELECTRON PHYSICS

Hausvogteiplatz 5-7, 0-1086 Berlin, Tel.: 20 37 70

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: Public Law Establishment, 1969

3. Managing director: Dr. C.G. Schulz

4. Total employees, of whom R&D personnel (persons): 580, 500

5. 1991 R&D budget (thousand DM): 24,000

6. Field of work (research and activity profile):

Works on basic physical problems in the fields of plasma physics, solid state physics and liquid crystal physics; develops physical-technical solutions for acoustic, performance, maximum-frequency and optoelectronic applications as well as for new light sources and laser applications; preliminary research for new plasma physics/plasma-chemical technologies for non-polluting procedures and products with the research concentrated on:

- Foundations of semiconductor physics
- Electroluminescence
- Photovoltaics
- Fusion-oriented plasma physics
- Low-temperature plasmas
- Gas discharge physics
- Maximum frequency communications electronics
- Applied solid state physics

7. Cooperation with enterprises and institutes in the old laender: Fraunhofer Institutes in Aachen, Stuttgart and Freiburg Max-Planck Institutes, nine universities as well as 12 enterprises and establishments.

8. International Cooperation: Physics institutes in the USSR, CSFR, Poland, Yugoslavia, Vietnam, Mongolia, Great Britain, France, Italy, Austria and Sweden.

(23) INSTITUTE FOR INFORMATION SCIENCE IN DESIGN AND PRODUCTION

Kurstr. 33, 0-1086 Berlin, Tel.: 20 37 23 94

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: Public Law Establishment, Land of Berlin, 1990 (1969)

3. Managing director: Prof. Alfred Iwainky, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons): 50, 45

5. 1991 R&D budget (thousand DM): 6,000

6. Field of work (research and activity profile):

Planning and control of discrete technical systems with cooperating processes, integration of processes from earlier stages in the production chain, computer-supported processing and highly automated generation of computer-aided schematics:

- Computer-supported compilation and generation of documents
- CAD, in particular computer-supported modeling and analysis of 3-D objects
- Control and design of competing processes
- Integration of computer-supported operational processes
- Rapid digital signal processing

- Requirement engineering and consulting on above fields
- Training and continuing education

7. Cooperation with enterprises and institutes in the old laender: Bosch-Siemens Haushaltgeraete GmbH, Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Oxbridge Information Systems Ltd., Association for Process Control and Information Systems mbH, Control Data SDRC and another seven university establishments.

8. International Cooperation: Leningrad Institute for Information Science of the Academy of Sciences of USSR, Institute for Cybernetics of the Academy of Sciences of USSR, Oxbridge Information Systems Ltd. and Arthur Anderson, among others.

(24) IWG-KONGES GMBH

Gensler Str. 13, 0-1092 Berlin, Tel.: 37 64 07

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. M. Stoppa, Dipl. Engr. H. Steinhagen

4. Total employees, of whom R&D personnel (persons): 54, 38

5. 1991 R&D budget (thousand DM): approx. 1,500

6. Field of work (research and activity profile):

Design, construction and sale of products and system solutions in mechanical engineering, precision engineering and electronics:

- Precision engineering and optical equipment for medical technology, photo technology and general equipment technology (specializing in small and mini-scale engineering)
- Equipment technology for detection and prevention of environmental damage, particularly the addition and removal of media, as well as measurement and control of flow, temperature, pressure, force and mass
- Security technology for nuclear power plants, final storage sites, particularly disruption alarm and evaluation units

7. Cooperation with enterprises and institutes in the old laender: PRIME, Computer GmbH.

8. International Cooperation: none.

(25) IWG-TELMEC GMBH

Gensler Str. 13, 0-1092 Berlin, Tel.: 3 76 48 79

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. M. Stoppa, Dipl. Engr. H. Scheuermann

4. Total employees, of whom R&D personnel (persons): 56, 10

5. 1991 R&D budget (thousand DM): approx. 600

6. Field of work (research and activity profile):

Development and application of technologies and production of goods and system solutions in mechanical engineering, electronics and plastics processing:

- Products in scientific instrument engineering
- Special machine construction and sample production

7. Cooperation with enterprises and institutes in the old laender: TechnoMedical Herne.

8. International cooperation: none.

(26) IWG-EASTMED GMBH

Gensler Str. 13, 0-1092 Berlin, Tel.: 3 76 53 71

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Phys. N. Poehner

4. Total employees, of whom R&D personnel (persons): 20, 16

5. 1991 R&D budget (thousand DM): approx. 500

6. Field of work (research and activity profile):

- Development, production and sale of products and system solutions in medical, electronic and precision engineering of instruments as well as automation technology with electronic, optoelectronic, optical, precise mechanical apparatus and motor-driven functional groups
- Development and production of optoelectronic sensor technology, infrared technology, CCD applications and application of semiconductor lasers

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(27) IWG-FUKOM GMBH

Koepenicker Str. 325 b, 0-1170 Berlin, Tel.: 6 50 42 01

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. M. Stoppa, Dr. G. Moeckel

4. Total employees, of whom R&D personnel (persons): 51, 35

5. 1991 R&D budget (thousand DM): 3,000

6. Field of work (research and activity profile):

Development and sale of products and system solutions in radio, communications and automation technology as well as commercial activity within the framework of the overall functions:

—R&D for radio transmitting and receiving technology in the frequency range from shortwave to X-band for the following components:

- Antennas, transmitters and receivers (broad-/narrow band)
- Signal Processing (analog/digital)
- (De-) modulators (analog/digital)
- Computer-controlled systems
- Mobile radio, radio data transmission, beeper systems

—R&D for passive position-finding systems

7. Cooperation with enterprises and institutes in the old laender: Plath GmbH Becker Flugfunk GmbH.

8. International cooperation: none.

(28) IWG-PK GMBH

Koepenicker Str. 325 b, 0-1170 Berlin, Tel.: 55 46 65 52

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. M. Stoppa, Dr. S. Lenk

4. Total employees, of whom R&D personnel (persons): 20, 14

5. 1991 R&D budget (thousand DM): 1,500

6. Field of work (research and activity profile):

Development, production and sale of products and system solutions in process automation and data communications technology:

—Developments for process control for the processing industry by development and application of:

- intelligent sensor technology and actuator-specific interface components
- local operator hardware and software
- process control and computer engineering
- analog and digital signal processing
- optical and radio signal monitoring

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(29) IWG-UMATEC GMBH

Gensler Str. 13, 0-1092 Berlin, Tel.: 3 76 42 29

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. M. Stoppa, Dipl. Engr. P. Frehse

4. Total employees, of whom R&D personnel (persons): 60, 45

5. 1991 R&D budget (thousand DM): 3,500

6. Field of work (research and activity profile):

Development, manufacture and sale of products, procedures, services and system solutions for the fields of environmental protection, radiation protection, safety and automation technology and planning and establishment of monitoring points and local monitoring networks:

- Development, production and sale of electronic instrument engineering products, including system and user software
- Development, production and sale of equipment and components in small-scale automation technology for local-operator data gathering and control
- Efficient laboratory studies for radiation protection and chemistry
- Acceptance of complex projects for establishing local and national monitoring and transmission networks

7. Cooperation with enterprises and institutes in the old laender: FAG Kugelfischer Georg Schaefer KGaA PHOENIX Elektrizitaetsgesellschaft RMS Analytische Instrumente GmbH Antteknika GmbH RES Rheinmetall EDV Systems GmbH.

8. International cooperation: none.

(30) SCIENTIFIC-TECHNICAL-ECONOMIC CENTER FOR THE GRAIN-PROCESSING INDUSTRY

Mozartstr. 9-10, 0-1141 Berlin, Tel.: 5 24 31 11

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, Land of Berlin, 1962

3. Managing director: Dipl. Engr. Wilfried Reinicke

4. Total employees, of whom R&D personnel (persons): 64, 42

5. 1991 R&D budget (thousand DM): 3,400

6. Field of work (research and activity profile):

Technology in the grain storage industry, mixed feed preparation and mill industry, with special emphasis on safety technology and reduction of environmental stress.

- Maintenance of quality in freshly harvested cereals using cooling, drying and heat pumps
- Energy reduction in the process of crushing and pelletizing (energy recovery)

- Twist-crushing wheat and rye and opening up the aleurone layer in wheat
- Explosion protection in fodder concentrate blending plants
- Environmental protection

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Contractual cooperation with the Soviet Union and Bulgaria in the field of explosion protection is very limited.

(31) BOTEC AUTOMATION GMBH FUER FERTIGUNGSTECHNIK

Plauener Str. 163, PSF 212, 0-1092 Berlin, Tel.: 37 83 30 54

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Peter Apel, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons): 4, 3

5. 1991 R&D budget (thousand DM): 300

6. Field of work (research and activity profile):

Development and application of visual inspection systems (video sensors) for quality control of manufacturing processes.

- Equipment development and production of complete image processing systems for industrial monitoring and test projects
- application services
- consulting and information
- service
- training

Sale of electronic equipment, systems and components:

- video sensor systems from the VIBO product series
- identification equipment
- barcode and clear text recognition systems
- mobile data gathering equipment

7. Cooperation with enterprises and institutes in the old laender: BOTEC electronic GmbH, Haidgraben 3, W-8012 Ottobrunn/Munich LASOR Laser Sorter GmbH, Rudolf-Diesel-Str. 24, W-4811 Oerlinghausen.

8. International cooperation: none.

(32) VERKEHRSAUTOMATISIERUNG BERLIN GMBH

Markgrafendamm 24, 0-1017 Berlin, Tel. 4 92 11 80

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Wilfried Naumann
4. Total employees, of whom R&D personnel (persons): 115, 100
5. 1991 R&D budget (thousand DM): 9,000
6. Field of work (research and activity profile):
 - Intelligent system solutions and process automation for railroads and commuter transportation
 - Generation of user software and implementation of complete project management from idea to introduction of pilot solution and servicing of permanent operations

7. Cooperation with enterprises and institutes in the old laender: SNV West Berlin IFB West Berlin.

8. International cooperation: European transportation associations.

(33) IVB INGENIEURSGESELLSCHAFT VERKEHR BERLIN GMBH

Markgrafendamm 24, Postfach 403, 0-1017 Berlin, Tel.: 4 92 27 00

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Rainer Obst
4. Total employees, of whom R&D personnel (persons): 151, 131
5. 1991 R&D budget (thousand DM): 11,109
6. Field of work (research and activity profile):

Passenger transportation and infrastructure:

—Traffic development planning, application concepts for public commuter transportation, development and design of transportation networks and facilities, traffic organization.

—Freight transportation and logistics.

Waste removal for rural areas and conurbations, planning of turnover processes at carrier interfaces, hazardous materials transportation, combined cargo traffic, city logistics:

—Transportation information technology

Economic evaluation of operational processes, office communication, computer-supported business management, ergonomic studies:

—Traffic with East Europe

Studies, expert opinions, prognoses:

—Additional training and transfer of know-how

Future-oriented continuing education—seminars, train-the-trainer programs, meetings and conferences, expert advice and transfer of expertise, fairs and exhibitions.

7. Cooperation with enterprises and institutes in the old laender:

BVC Berliner Verkehrs-Consult, DAV German Foreign Trade and Transportation Academy Bremen, German Railroad, Fraunhofer Association and another nine companies and establishments.

8. International cooperation: European Community as well as institutes in the USSR, Poland, CSFR, Hungary, Romania and Bulgaria.

(34) INSTITUTE FOR CONSTRUCTION ENGINEERING

Plauener Str. 163-165, 0-1092 Berlin, Tel.: 3 78 30

1. Industry: Construction Industry and Other
2. Legal form, year founded: Public Law Establishment, 1990
3. Managing director: Prof. Gerhard Spaethe, Dr. of Nat. Sci.
4. Total employees, of whom R&D personnel (persons): 92, 82
5. 1991 R&D budget (thousand DM): 5,800
6. Field of work (research and activity profile):
 - Material testing
 - Component testing, model statistics
 - Building monitoring
 - Theoretical computer-oriented studies
 - Expert opinions for industry and authorities
 - Cooperation in establishment and introduction of Euronorms
 - Applied research work for the industry

7. Cooperation with enterprises and institutes in the old laender: Institute for Construction, Federal Institute for Materials Research and Testing, Federal Association for Sand-Lime-Brick Industry, SICOM GmbH (STRAGAB-Bau AG), NUKEN Karlsruhe Technical College, and others.

8. International cooperation: Cooperation with RILEM, CEB and CIB ITC Industrie Technologie AG Daerlingen, Switzerland 10 institutes in the Eastern European space, which work in the engineering statics field.

(35) ISQ-BAU GMBH I.G.; INSTITUTE FOR CONSTRUCTION SAFETY AND QUALITY

Blenheimstr. 34, 0-1140 Berlin, Tel.:

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Engr. Michael Persike

4. Total employees, of who R&D personnel (persons): 3, 2

5. 1991 R&D budget (thousand DM): 450

6. Field of work (research and activity profile):

- Development of complete structural solutions for retrofitting heating in industrially built housing units
- Development of a specialized mixing unit for preparing selected construction materials for building renovation
- Solutions in principle for planning and technology of modernized light brick construction methods to modernize traditionally built brick and brickwork buildings

7. Cooperation with enterprises and institutes in the old laender: Berlin Building Academy Kassel General College several planning bureaus and construction and renovation associations.

8. International cooperation: none.

(36) ZUKUNFTSINSTITUT VERKEHR/VERKEHRSENTWICKLUNG GMBH

Markgrafendamm 24, PF 403, 0-1017 Berlin, Tel.: 4 92 27 20

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Hansjoachim Bischof

4. Total employees, of whom R&D personnel (persons): 45, 36

5. 1991 R&D budget (thousand DM): 5,500

6. Field of work (research and activity profile):

—Fields of work for future-relevant alternative solutions centered around:

- economics, regional development and traffic
- city—traffic—environment
- innovative technologies, technologies and systems in passenger and freight traffic
- traffic and business management

—Active work with respect to:

- studies, strategies and decision-making help for medium- and long-term plans
- strength, weakness and competition analyses
- value analyses, project management

7. Cooperation with enterprises and institutes in the old laender: Research and consulting companies in the economy, science and transportation.

8. International cooperation: Austrian Traffic Science Association, Institute for Traffic Sciences, Budapest Institute for Complex Transportation Problems, Moscow, and others.

(37) INSTITUTE FOR SECONDARY RAW MATERIAL INDUSTRY GMBH I. Gr.

Niederbarnimstr. 3, 0-1035 Berlin, Tel.: 5 80 01 26/5 89 30 86

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Hauck

4. Total employees, of whom R&D personnel (persons): 40, 28

5. 1991 R&D budget (thousand DM): 1,300

6. Field of work (research and activity profile):

- Working out national economic or regional concepts for waste management, waste studies and draft evaluation projects
- Providing technical advice and operating analyses on waste and legal advice regarding waste
- Issuing expert opinions
- Preparation, submission and accompaniment of projects and undertakings in waste management
- storage and preparation of information, data and data-technical processing for the entire secondary raw material and waste sector

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(38) TRANSPORTCONSULT INTERNATIONAL BERLIN GMBH

Frankfurter Allee 216, 0-1130 Berlin, Tel.: 5 25 26 20

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Dietrich Witt, Dipl. Engr. Dieter Lange

4. Total employees, of whom R&D personnel (persons): 43, 32

5. 1991 R&D budget (thousand DM): 2,800

6. Field of work (research and activity profile):

TCIB brings railroad-related consulting and engineering services to the field of transportation. In the areas of:

- Transportation industry/transportation planning
- Railroad logistics and technology
- Project management

A comprehensive range of railroad-related consulting and engineering services is offered. The focal points are, among others:

- Studies for the development of transportation agreements and strategy concepts for developing passenger and freight traffic in the new laender and between the FRG and Eastern and Southern Europe
- Regional and branch-related transportation concepts
- Design of freight traffic centers
- Dispatch and accounting projects
- Logistic solutions for hazardous materials and waste disposal transports

7. Cooperation with enterprises and institutes in the old laender: DE Consult Haas Consult, among others.

8. International cooperation: Participation in UIC [International Railroad Union] projects, railroad projects in Spain.

(39) ENGINEERING ENTERPRISE FOR POWER PLANT, ENERGY AND ENVIRONMENTAL TECHNOLOGY (IfK)

Am Kraftwerk, 0-7544 Vetschau, Tel.: 20 15

1. Industry: Energy Industry and Water Supply
2. Legal form, year founded: Branch of Vereinigte Energiewerke AG, 1963
3. Managing director: Mr. Hartig, Mr. Reichenbach
4. Total employees, of whom R&D personnel (persons): 838, 462
5. 1991 R&D budget (thousand DM): 40,000
6. Field of work (research and activity profile):

—Increasing the efficiency level of power production while reducing CO²:

- Process optimization for heat-power cogeneration
- Utilization of waste heat
- Coal drying
- Combined processes
- Fluidized bed furnace

—Energy concepts for territories, municipalities and enterprises under the special conditions of the new laender

—Methods for storing electric energy (accumulator)

—Development and application of alternative energy sources

—Methods and technologies for utilizing brown coal ashes

—Expansion of the application possibilities for steam fluidized bed drying, particularly for reprocessing waste products (sludges)

—Establishment and operation of pilot plants for above-mentioned activity profile.

7. Cooperation with enterprises and institutes in the old laender: RWE Energie AG, Rheinbraun AG and other leading companies in the industry.

8. International cooperation: Institutes in East European countries as well as Spain, Ireland and Denmark

(40) CENTRAL INSTITUTE FOR PHYSICS OF THE EARTH

Telegrafenberg, 0-1561 Potsdam, Tel.: 31 03 68

1. Industry: Mining
2. Legal form year founded: Public Law Establishment, 1969
3. Managing director: Prof. Dr. E. Hurtig
4. Total employees, of whom R&D personnel (persons): 332, 310
5. 1991 R&D budget (thousand DM): approx. 15,000
6. Field of work (research and activity profile):

- Study on spatial and chronological development of global and regional geophysical parameters and field of the earth (gravitational field, radiation field, geomagnetic telluric and geothermal fields, seismic regime), geodynamic processes and structures of the earth using the results of scientific observation programs;
- Study of processes in the earth's interior, which take place in varying scales of time and dimension and are of fundamental importance to the understanding of the earth's composition and earth development since its creation;
- Researching the composition, structure and material content of the earth's crust including its dynamic, as a foundation for the evaluation of possibilities and risks for its use by people, study of exchange relationships between technogeneous influences (materials and energy transportation) and the geological underground, its structures, its properties and its condition;
- Study of geoscientific processes in near-surface regions and their reciprocal relationships with natural procedures under endogeneous and exogeneous as well as anthropogeneous influences, including geocological processes;
- Research to develop and further develop geodetic and geophysical equipment for observatory use

7. Cooperation with enterprises and institutes in the old laender: Cooperation with five universities or colleges as well as another 10 institutes

8. International cooperation: Cooperation with more than 70 institutes in the USSR, the Eastern European nations, and China, France, the United States, India, Sweden, etc.

Cooperation with more than 10 data centers in the USSR, China, United States, Belgium, France, Sweden and the Eastern European countries.

(41) ERICH CORRENS INSTITUTE FOR POLYMER CHEMISTRY TELTOW

Kantstr. 55, 0-1530 Teltow, Tel.: 460

1. Industry: Chemical Industry and Petroleum processing

2. Legal form, year founded: Public Law Establishment, 1949

3. Managing director: Prof. Dr. Burkart Philipp

4. Total employees, of whom R&D personnel (persons): 353, 241

5. 1991 R&D budget (thousand DM): approx. 11,000

6. Field of work (research and activity profile):

—Fundamental and application-oriented research on the synthesis, chemical modification, physical structure formation, and definition as well as the application of natural and synthetic polymers

—Theoretically oriented work, such as for modeling polymerization processes and degradation processes, on the behavior of charged macromolecules in solutions and on the structure of semicrystalline solid state polymers

—Expansion of application orientations for polymers in the utilization fields of ecology and medicine

—Focused research in the areas of:

- Polymer colloid research
- Synthesis of new polymers and development of new ways to synthesize
- Formation and definition of higher organized polymer structures, particularly thin polymer films

7. Cooperation with enterprises and institutes in the old laender: Cooperation with 11 enterprises in the chemical industry and 12 universities and research establishments.

8. International cooperation: Cooperation with institutes in England, Switzerland, Finland, Sweden, Austria, the United States, USSR and CSFR.

(42) BIOMEDICAL RESEARCH INSTITUTE GMBH

Hauptstr. 62, 0-1291 Schoenwalde, Tel.: Muehlenbeck 2 81

1. Industry: Chemical Industry and Petroleum Processing

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Erich Kuchling

4. Total employees, of whom R&D personnel (persons): 28, 9

5. 1991 R&D budget (thousand DM): 1,500

6. Field of work (research and activity profile):

—Fecal matter protection: Acute, subacute, chronic toxicity, carcinogenicity; biological degradability, immunogenicity

—Environmental protection

- Water and waterway analysis
- Microbiological quality, waste water analysis
- Analysis of contaminated sites

—Health protection

- Food hygiene
- Stability and sterility
- Processing and quality analysis
- Feed quality, animal health and protection

7. Cooperation with enterprises and institutes in the old laender: Giessen State Medical, Food and Veterinary Analysis Institute Analytikum GmbH Berlin, Federal Ministry of Health Berlin.

8. International cooperation: Institute for Biomodels, Moscow Institute for Organic Synthesis Riga, Pushkino Academy of Biological Sciences and others.

(43) INSTITUTE FOR GRAIN PROCESSING (IGV)

Arthur-Scheunert-Allee 40-41, 0-1505 Bergholz-Rehbruecke, Tel.: 2 52 1.

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: regional association 1990 (1960)

3. Managing director: Dipl. Engr. Peter Kretschmer

4. Total employees, of whom R&D personnel (persons): 142, 96

5. 1991 R&D budget (thousand DM): 8,631

6. Field of work (research and activity profile):

The Institute for Grain Processing regards itself as a non-profit technology transfer center for the food industry.

Its principal tasks are:

—R&D focusing on biotechnology and ecology as well as technology transfer for general benefit

- Food research
- Raw material research for food, feed and technical use
- Ecology/biotechnology/environmental cleanup

—Scientific-technical services, with emphasis on residue analysis in food, and quality assurance

- Analysis
- Electron microscopy

- Quality assurance systems
- Information/documentation

—Training and continuing education focusing on the baking profession

—Eastern European tasks focusing on small and medium-sized enterprises becoming established and catching up

7. Cooperation with enterprises and institutes in the old laender: Detmold Federal Research Institute for Grain, Potato and Fat Research, and 23 other institutes and enterprises.

8. International cooperation: Research institutes in the Eastern European nations as well as Holland and Belgium.

(44) CENTRAL INSTITUTE FOR NUTRITION

Arthur-Scheunert-Allee 114-116, 0-1505 Bergholz-Rehbruecke, Tel.: 80

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, 1946

3. Managing director: Prof. Dr. Helmut Haenel

4. Total employees, of whom R&D personnel (persons): 408, 288

5. 1991 R&D budget (thousand DM): 10,300

6. Field of work (research and activity profile):

- Assessment of consumption behavior as well as food and health condition of population groups including risk groups, with nutrition-physiological education measures
- Influencing the exchange of energy material through nutritive measures, particularly with respect to the "metabolic syndrome"
- Detection of structure-effect principles in food systems and possibilities of influencing them
- Assessment of correlations between protein and lipid material exchange, environmental influence and food
- Effect mechanisms of ballast substances in prevention and therapy of gastrointestinal and systemic diseases
- Development of mathematical interpretation models for assessment and description of food reactions and consumer behavior as well as for the sensor system

7. Cooperation with enterprises and institutes in the old laender: Lucas Meyer, Hamburg; Confectionery Association; Federal Research Institutes in Kiel, Detmold, Karlsruhe; Fraunhofer Society; Institute for Packaging and Food Technology; Institutes for Environmental Chemistry and Ecotoxicology, and other enterprises.

8. International cooperation: Cooperation with 16 institutes in the USSR, Poland, Hungary, Cuba, Great Britain, France and India.

(45) DAIRY INSTITUTE

Sachsenhausener Str. 7, 0-1400 Oranienburg, Tel.: 6 10

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, Land of Brandenburg, 1959

3. Managing director: Dr. Joachim Lange

4. Total employees, of whom R&D personnel (persons): 86, 42

5. 1991 R&D budget (thousand DM): 5,023

6. Field of work (research and activity profile):

- Dairy process engineering (basic research, development of procedures and products)
- Dairy chemistry and microbiology (biotechnological, biochemical and microbiological basic research, development of procedures, analysis, culture optimization and development)
- Environmental technology and research (analysis, waste water reprocessing, material recycling, less wasteful processing techniques, packaging design, ecological strategies)
- Business management

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(46) PAULINENAUE INSTITUTE FOR FEED PRODUCTION

0-1551 Paulinenaue, Tel.: 2 71 - 2 75

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, 1957

3. Managing director: Prof. Dr. Helmut Thoens

4. Total employees, of whom R&D personnel (persons): 217, 59

5. 1991 R&D budget (thousand DM): 5,600

6. Field of work (research and activity profile):

- Cultivation research for grass growing, particularly cultivation of hybrid feed grasses
- Development of foundations and methods for ecologically correct grassland and swamp management, differentiated according to location and plant inventory
- Solutions for pasture utilization of extensive grasslands, taking various locations, production facilities, animal species and subspecies into account
- Development of field and crop solutions for ecologically and qualitatively beneficial feed agriculture

- Use of domestic grasses as "supplementary raw materials" for non-agricultural utilization
- Assessment of effects of management measures, progress in procedures, exogeneous factors, on feed quality, among others
- Development of quality-improving, environmentally safer and cost-saving procedures and solutions for harvest, preservation, storage and preparation of feed

7. Cooperation with enterprises and institutes in the old laender: Institute for Crop Farming at the Friedrich-Wilhelm-University Bonn, Institute for Grassland and Feed Cultivation Research of the FAL, Braunschweig-Voelkenrode Chair for Grassland and Feed Growing of the Christian-Albrechts-University, Kiel.

8. International cooperation: 10 institutions in the USSR, CSFR.

(47) GROSSBEEREN INSTITUTE FOR VEGETABLE PRODUCTION

Theodor-Echtermeyer-Weg, 0-1722 Grossbeeren, Tel.: 80

1. Industry: Food and Semi-Luxury Consumables Industry
2. Legal form, year founded: Public Law Establishment, Land of Brandenburg, 1991 (1951)
3. Managing director: Prof. Georg Vogel, Dr. of Sci.
4. Total employees, of whom R&D personnel (persons): 316, 236
5. 1991 R&D budget (thousand DM): 8,921
6. Field of work (research and activity profile):

Outdoor vegetables:

- Development of scientific foundations for non-polluting, controlled cultivation
- Demonstration of important external factors, particularly nitrogen and water, under various soil and weather conditions in the form of models as a basis for an environmentally safe process scheme for integrated cultivation
- Accompanying business management studies including counseling

Greenhouse vegetables:

- Closed, environmentally acceptable, culture procedures for soilless growing of vegetables and ornamentals in the greenhouse
- Controlled plant feeding to improve the internal quality of hydroponically grown vegetables
- Computer-supported cultivation and yield control based on yield models
- Accompanying business management studies including counseling

7. Cooperation with enterprises and institutes in the old laender: 10 institutes and university establishments.

8. International cooperation: Cooperation with scientific establishments in the Netherlands, Belgium, Italy, Poland, Hungary, the Soviet Union and the United States.

(48) POTSDAM EXPERIMENTAL SHIPBUILDING INSTITUTE GMBH

Marquardter Chaussee 100, 0-1572 Potsdam-Bornim, Tel.:

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Wolfgang Selke, Dr. Manfred Mehmel
4. Total employees, of whom R&D personnel (persons): 76, 56
5. 1991 R&D budget (thousand DM): 2,774
6. Field of work (research and activity profile):

A product line for applied research in the field of hydromechanics and a product line for development (ships' hulls, marine engines, installations, ships' equipment and facilities and diversification):

- Expert opinions, model tests and calculations in the field of hydromechanics
- Development of methods, programs, equipment and devices for traditional and new forms of tasks in hydromechanics
- Predetermination, evaluation and optimization of hydrodynamic properties of shipbuilding products by means of routine experiments, ship and propeller hydrodynamics, measurements and analyses of large-scale models and numerical hydrodynamics

7. Cooperation with enterprises and institutes in the old laender: Research Institute for Inland Shipbuilding Duisburg, regional association, Hamburg Research Institute for Shipbuilding, Research Institute for Hydraulic Engineering.

8. International cooperation: CTO Gdansk, Poland BSHC Varna, Bulgaria ZNII Krylov Leningrad, USSR ICEPRONAV Galati, Romania.

(49) INSTITUTE FOR CEMENT, DIVISION OF CONSTRUCTION MATERIAL SERVICE GMBH

Junkerstr. 27, Postfach 201, 0-4500 Dessau, Tel.: 75 80

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Rolf Ilgner, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons):
105, 70

5. 1991 R&D budget (thousand DM): 6,088

6. Field of work (research and activity profile):

- Environmental protection in the special fields of emissions, pollution, noise, workplace pollutant concentrations, ventilation and dust-removal technology, heating technology, waste economy and contamination, eluate determination and pollutant analysis, determination of gaseous, liquid and solid pollutants, study of fuels and combustible waste products
- Construction material testing and construction damage diagnosis in the special fields of chemical, mineralogical and granulometric analysis, construction material testing, concrete testing, construction material application testing, damage diagnosis and development of cleanup concepts, thermal insulation in construction, asbestos studies

7. Cooperation with enterprises and institutes in the old laender: Research Association for Lime and Mortars, regional association, Research Institute for the Cement Industry, VDZ, regional association, Deutsche Babcock Energie- und Umwelttechnik AG UMAT Umweltanaly-sengerate GmbH Gruber, Titze & Partner, International Management Consultants, et al.

8. International cooperation: Contacts in effect until 1990: VUSH, Brno, CSFR NIIZement, Moscow, USSR SZICTI, Budapest, Hungary.

(50) INSTITUTE FOR LACQUERS AND PAINTS,
REG. ASSN.

Fichtestr. 29, 0-3014 Magdeburg, Tel.: 4 80 52

1. Industry: Chemical Industry and Petroleum Processing

2. Legal form, year founded: regional association with legal status, 1990

3. Managing director: Dr. Karl-Heinz Daehre

4. Total employees, of whom R&D personnel (persons):
60, 54

5. 1991 R&D budget (thousand DM): 3,500

6. Field of work (research and activity profile):

Development of essential preconditions for innovation projects in the eastern German lacquer industry:

- Innovation of coating materials
- Application of paints
- Testing and evaluation of paints
- Environmental analysis
- Lacquer sludge recycling
- Quality assurance (QSS)
- Technology transfer

- Research work on passive corrosion protection with paints
- Training and continuing education

7. Cooperation with enterprises and institutes in the old laender: Fa. Herberts GmbH, Fa. W. Woerwag GmbH, German Research Association for Surface Treatment, regional association, C. Vincentz-Verlag Hannover Research Institute for Pigments and Lacquers, regional association.

8. International cooperation: none.

(51) THALE IRON AND STEEL WORKS AG, PC
ENGINEERING POWDER METALLURGY

Parkstr. 1, 0-4308 Thale, Tel.: 70

1. Industry: Iron and Nonferrous Metals Production and Processing

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. Rolf Mueller

4. Total employees, of whom R&D personnel (persons):
34, 12

5. 1991 R&D budget (thousand DM): 2,775

6. Field of work (research and activity profile):

—Development work in the field of powder metallurgy

- Metal powder—injection—molding
- Sintered metal friction bearing research
- Isostatic press technology

—Completion of test projects in the test laboratory accredited by the Federal Institute for Materials Testing

—Small production of special powder-metallurgical parts

7. Cooperation with enterprises and institutes in the old laender: Cooperation with colleges and companies, for example Clausthal-Zellerfeld Technical University, Aachen Technical College, Sintermetallwerk Koebsoege, Kloeckner-Ferromatik, BASF, etc.

8. International cooperation: none.

(52) FER-INGENIEURBUERO FUER AUTOMATIS-
IERUNG GMBH MAGDEBURG

Bleckenburgstr. 25, 0-3011 Magdeburg, Tel. 4 42 81-84

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990 (1971)

3. Managing director: Dr. Engr. Klaus Hieckmann, Dipl. Econ. Bodo Vollmer

4. Total employees, of whom R&D personnel (persons):
190, 150

5. 1991 R&D budget (thousand DM): 9,246
6. Field of work (research and activity profile):
 - Automation of typical mechanical engineering processes
 - Development of control and communications technology, switching circuit and printed circuit board designs as well as environmental technology
 - Industrial image recognition, logistics/Production planning & control, CAD/Technology
 - Work organization
 - Training and continuing education
 - Consulting
7. Cooperation with enterprises and institutes in the old laender: TZN Research and Development Center Unterluesch GmbH, Association for Project Management Hamburg, Krupp Industrietechnik Essen, Technology and Professional Education Center Paderborn, Association for Systems Technology and Software Development GmbH, Braunschweig, and others.
8. International cooperation: none.

(53) MIS INGENIEUR-SERVICE MAGDEBURG GMBH

Schwiesastr. 4, 0-3018 Magdeburg, Tel.: 27 83 14

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Guenter Paulke
4. Total employees, of whom R&D personnel (persons): 94, 25
5. 1991 R&D budget, (thousand DM): approx. 3,500
6. Field of work (research and activity profile):
 - Research work for process research and quality assurance in mechanical engineering
 - Projection, machine diagnosis and Refa [Work Study Association] work
 - Mechanical production and repair of machine tools
 - Industrial marketing of equipment and materials for small and medium-sized mechanical engineering enterprises
7. Cooperation with enterprises and institutes in the old laender: Fa. Wegener, Dortmund and other companies.
8. International cooperation: none.

(54) ZIS HALLE GMBH

Koethener Str. 33a, 0-4060 Halle, Tel.: 81 50

1. Industry: Steel, Mechanical Engineering, Motor Vehicle Construction
2. Legal form, year founded: GmbH, 1990

3. Managing director: Prof. Dr. Engr. Guenter Thieme
4. Total employees, of whom R&D personnel (persons): 330, 108
5. 1991 R&D budget (thousand DM): 9,224
6. Field of work (research and activity profile):

ZIS Halle GmbH is an independent scientific enterprise for all tasks in welding technology, thermal separation, thermal surface treatment and neighboring procedures:

- Technological research for all welding techniques, development of practical applications, construction of model solutions
- Training and continuing education in all fields of welding technology according to valid DIN guidelines
- Large and small pre-qualifications according to DIN 18.000 for all areas of industry
- Quality assurance
- Commercial and repair welding of ultramodern facilities in welding technology (laser welding, laser cutting, electron beam welding, etc.)

7. Cooperation with enterprises and institutes in the old laender: Federal Institute for Materials Research Berlin, SLV Duisburg Association for Mathematics and Data Processing mbH Isotopentechnik. Dr. Sauerwein GmbH Haan SLV Berlin.

8. International cooperation: approximately 10 welding institutes in Eastern European countries and China.

(55) FLUID-INGENIEURTECHNIK GMBH

Leninallee 90, PSF 713, 0-4020 Halle/Saale, Tel.: 85 60

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Hans Spengler
4. Total employees, of whom R&D personnel (persons): 148, 85
5. 1991 R&D budget (thousand DM): 5,100
6. Field of work (research and activity profile):
 - Development, trial and testing of pumps, hydrodynamic and strength studies of pump components; design of runners and peelers in pumps
 - Development of fans and turbo compressors including calculation of complete compression levels as well as testing and trials
 - Application studies for regenerative energy facilities
 - Planning and realization of energy recovery facilities, automatic test benches and ultrasound cleaning facilities
 - Execution of special laser cutting technologies

7. Cooperation with enterprises and institutes in the old laender: WILO-Werk Dortmund KSB AG, Frankenthal EMU GmbH, Hof Rega Energiesysteme Gehrden.

8. International cooperation: Lawrence Pumps Inc., USA Sundstrand Cooperation, USA.

(56) INSTITUTE FOR TECHNICAL DRYING GMBH

Bahnhofstr. 4, 0-4325 Gatersleben, Tel.: 3 05

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Klaus Keller, Dr. of Agr. Sci.

4. Total employees, of whom R&D personnel (persons): 15, 5

5. 1991 R&D budget (thousand DM): approx. 400

6. Field of work (research and activity profile):

Technological development and machine engineering for agricultural feed drying techniques:

- Process engineering
- Technology
- Energy and environmental technology
- Business management
- Consulting

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Working group of European Drying Enterprises CIDE, Paris and other institutes and companies in the industry.

(57) SKL ENGINEERING ROSSLAU GMBH

K.-Liebknecht-Str, 38, 0-4530 Rosslau, Tel.: 3 60

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Prof. Dr. Engr. Rudolf Sperber

4. Total employees, of who R&D personnel (persons): 259, 187

5. 1991 R&D budget (thousand DM): 8,019

6. Field of work (research and activity profile):

- Product developments for diesel engines
- Development, design and planning for machines and equipment, accessories, measurement technology, testing of materials and operating supplies including consulting, as well as information on diesel engine construction
- Experimental component studies

- Reducing the burden on the environment, increasing fuel economy and reliability

7. Cooperation with enterprises and institutes in the old laender: Hartmann und Partner Management—Beratung GmbH, Krupp MaK Maschinenbau GmbH Motoren- und Turbinen-Union Friedrichshafen GmbH (MTU), Chair for Internal Combustion Engines and Motor Vehicles of Munich Technical University (LVK).

8. International cooperation: Central Research Institute for Diesel Engines (ZNIDI) Leningrad, USSR Shanghai Research Institute for Marine Diesel Engines (SMDERI), Shanghai, China H. Cegielski Machine Building, Poznan/Poland Diesel Engine Research Institute of the CDK AG Prague/CSFR Association for Internal Combustion Engines and Measurement Technology mbH, Prof. H. List, Graz/Austria.

(58) INSTITUTE FOR THE MEAT INDUSTRY

Liebknechtstr. 35, PSF 1828, 0-3010 Magdeburg, Tel.: 3 37 11

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, 1959

3. Managing director: Dr. of Sci. Christoff Gastmann

4. Total employees, of whom R&D personnel (persons): 65, 42

5. 1991 R&D budget (thousand DM): 4,039

6. Field of work (research and activity profile):

- Strategies for adjustment to market policies
- Meat quality, current utility value and marketing
- Product research including quality assurance and use of non-traditional additives
- New and additional development of procedures, including biotechnology and environment (primarily waste water), as well as adjustment development when adopting/using new methods and technology
- Analysis of the residue studies
- Foundations for preparing legal regulations and for central ordinances/decisions
- business consulting, business analyses, technological testing of equipment, chemical and microbiological food studies, expert opinions, etc.

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(59) RESEARCH INSTITUTE FOR FRUIT AND VEGETABLE PROCESSING

Nicolaistr. 5, 0-3018 Magdeburg, Tel.: 22 21 12

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, Land of Saxony-Anhalt, 1958

3. Managing director: Dr. Ernst Wittstock

4. Total employees, of whom R&D personnel (persons): 42, 27

5. 1991 R&D budget (thousand DM): 2,800

6. Field of work (research and activity profile):

- Quality and food safety
- Environmental protection, waste water
- Studies on alternative plant use
- Business management-economic projects
- Determination of byproducts and pollutants in plant products
- Informational events and seminars

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(60) OeHMI RESEARCH AND ENGINEERING TECHNOLOGY GMBH

Berliner Chaussee 66, 0-3050 Magdeburg, Tel.: 5 87-0

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Peter Transfeld

4. Total employees, of whom R&D personnel (persons): 43, 35

5. 1991 R&D budget (thousand DM): 3,500

6. Field of work (research and activity profile):

- Food and environmental laboratory; Chemical and physical analysis of products and substances; Development of methods of analysis
- Food research (vegetable oils and fats) and environmental research for small and medium-sized enterprises; Engineering bureau
- Development, planning, realization and startup of facilities for food production, environmental and energy technology

7. Cooperation with enterprises and institutes in the old laender: Krupp Maschinentechnik, Hamburg; Extechnik, Hamburg; Westfalia Separator, Oelde; Koerting, Hanover; ATM, Vlotho; Uhde, Dortmund; ABR, Bottrop; Umweltlabor Joerrissen, Hamburg.

8. International cooperation: Lochem BV, Netherlands NPO Mechanical Engineering, USSR. (61) SAALE-SAATEN-GMBH HALLE I.A.

Leninallee 131, 0-4020 Halle/Saale, Tel.: not known

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Mr. Christian Kittel

4. Total employees, of whom R&D personnel (persons): 241, 36

5. 1991 R&D budget (thousand DM): approx. 500

6. Field of work (research and activity profile):

- New cultivation of high-yielding and yield-stable quality varieties of grains and legumes, particularly double-stalk WG, spelt and naked oats, preparation for growing starch wheat, grain feed and green peas
- Value tests, regional variety tests and demonstration comparisons
- Student internships, including theses advisory for the Martin-Luther University in Halle-Wittenberg

7. Cooperation with enterprises and institutes in the old laender: Pflanzenzucht Dr. Franch, Oberlumpurg, and other nursery companies.

8. International cooperation: Byelorussian Research Institute for Crops, Shodlino at Minsk Farming Station Krukanice/CSFR (oat growing), Farming Station Horna Streda/CSFR (pea growing) PBI Cambridge.

(62) BERNBURG-BIENDORF SEED CULTIVATION GMBH

Hauptstr. 8, 0-4351 Biendorf, Tel.: Bernburg 27 91

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Eberhard Koch

4. Total employees, of whom R&D personnel (persons): 127, 22

5. 1991 R&D budget (thousand DM): 186

6. Field of work (research and activity profile):

—Cultivation of peas, corn, spring barley, grasses, wheat and winter grain.

- Peas for feed and for table quality
- Corn for the purpose of seed stock production
- Spring barley for brewery and feed applications

—Agronomic and by-product-oriented definition of the pea genotypes native to the territory of the new laender for the purpose of expanding the genetic base for utilizing the pea as a renewable raw material

—Development of cultivation methods in order to improve resistance and quality with respect to specific and special consumer value properties

7. Cooperation with enterprises and institutes in the old laender: Free University Berlin Institute for Applied Genetics.

8. International cooperation: none.

(63) APZ ANHALTINISCHE PFLANZENZUCHT GMBH

Mitschurinstr. 22, PF 5, 0-4351 Bernburg-Strenzfeld, Tel.: 82 31

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Prof. W. Kappel, Dr. of Nat. Sci., W. Klaus

4. Total employees, of whom R&D personnel (persons) 53, 42

5. 1991 R&D budget (thousand DM): 3,000

6. Field of work (research and activity profile):

Cultivation, augmentation and management of agricultural seed stock, particularly corn, wheat and barley:

- high resistance to disease-causing germs and environmental influences
- improved heat and drought tolerance
- application range of new highly productive and resistance corn and grain varieties
- technical-technological possibilities for regeneration and augmentation

7. Cooperation with enterprises and institutes in the old laender: Nickerson Pflanzenzucht.

8. International cooperation: Institutes in France, Yugoslavia, Hungary, USSR.

(64) MESSTRON—INSTRUMENTATION, TANK CONSTRUCTION AND WASTE DISPOSAL GMBH

Suedstr. 6, 0-4101 Holleben-Benkendorf, Tel.: 61 32 64 (Halle)

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Gert Krueger

4. Total employees, of whom R&D personnel (persons): 32, 10

5. 1991 R&D budget (thousand DM): 600

6. Field of work (research and activity profile):

Development of a procedure with world-market possibilities to extract starch from rye, overcome the viscosity degradation of the rye flour suspension with enzymes

and refine the starch with modern equipment as compared with the flooding facility used until now:

- suspension of flour
- enzymatic viscosity degradation
- solid-liquid separation by means of decanter
- sifting
- drying by means of vacuum blade, vacuum rollers and atomization drying
- grinding

7. Cooperation with enterprises and institutes in the old laender: Koellnflockenwerke Elmshorn Christian-Albrechts University Kiel, Institute for Human Nutrition and Food Science.

8. International cooperation: none.

(65) INSTITUTE FOR GENETICS AND CULTIVATED PLANT RESEARCH

Corrensstr. 3, 0-4325 Gatersleben/Saxony-Anhalt, Tel.: 50

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, 1990 (1943)

3. Managing director: Prof. Klaus Muentz, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons): 464, 93

5. 1991 R&D budget (thousand DM): 14,200

6. Field of work (research and activity profile):

- Maintenance, expansion, definition and evaluation of material in the global range of cultivated plants (gene bank)
- Research of methods for gene transmission in combination with suitable cell and tissue culture methods in sample plants for important cultivated plants
- Research on the regulation of seed protein expression and seed protein formation
- Research on the regulation of gene expression for bacilli and yeasts
- Research on mechanisms of virus multiplication in plant cells
- Research on the dependence of plant productivity on photo respiration in photosynthesis
- Research on cell-genetic foundations for the heredity of changes in inherited characteristics through mutations

7. Cooperation with enterprises and institutes in the old laender: Max-Planck Institutes for Cultivation Research, Cologne, and for Molecular Genetics, Berlin Gene Center Berlin Behring Werke AG, Marburg Juelich Nuclear Research Institute GmbH Cooperation with six universities.

8. International cooperation: Cooperation with institutes in Switzerland, the United States, Japan, USSR, Finland.

(66) INSTITUTE FOR COOLING AND REFRIGERATION INDUSTRY GMBH

Badestr. 2, 0-3029 Magdeburg, 0-3029 Magdeburg, Tel.: 3 36 61

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990 (1949)

3. Managing director: Dr. Rainer Hoffmann, Mr. Karl-Heinz Fritzsche

4. Total employees, of whom R&D personnel (persons): 52, 10

5. 1991 R&D budget (thousand DM): 700

6. Field of work (research and activity profile):

—Research and development services in the field of refrigeration treatment of food.

- Cool-down and freezing processes
- Refrigerated and freezer storage methods
- Production of deep-frozen products
- Freeze-drying
- Technology of ice cream production
- Chemical and microbiological analysis

—Planning services for the food industry.

7. Cooperation with enterprises and institutes in the old laender: Institute for Honey Research Bremen Reinhold und Mahla Muenchen, and others.

8. International cooperation: Institutes in the Eastern European countries, particularly the USSR and Poland.

(67) DEVELOPMENT AND SERVICE GMBH

Am Muehlberg 9, 0-4850 Weissenfels, Tel.: not known

1. Industry: Leather, Textile and Garment Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Reinhard Keller

4. Total employees, of whom R&D personnel (persons): 36, 10

5. 1991 R&D budget (thousand DM): 200

6. Field of work (research and activity profile):

Applied R&D in the fields of:

—Automation of production processes:

- laser and water jet technologies for the cutting process
- handling technologies, manipulators
- numerical control

—Software development for CAD systems

—Materials studies

—Procedure development for the shoe industry

7. Cooperation with enterprises and institutes in the old laender: Testing and Research Institute for Shoe Production in Pirmasens.

8. International cooperation: none.

(68) EvU—DEVELOPMENT OF ENVIRONMENTAL TECHNOLOGY GMBH I.G.

Schneebergstr. 33, 0-8019 Dresden, Tel.: 5 24 11

1. Industry: Energy Industry and Water Supply

2. Legal form, year founded: GmbH, 1991

3. Managing director: Mr. Reinhard Koch

4. Total employees, of whom R&D personnel (persons): 22, 3

5. 1991 R&D budget (thousand DM): 1,581

6. Field of work (research and activity profile):

—Systems engineering and equipment

- in the field of waste water treatment: up to 10 TEWG including p and N elimination and more extensive waste water purification (carrier fixation)
- in the field of water treatment: slow sand filtration, ground water enrichment with quasi-continuous elimination of primary soil deposition from sand basins, using carrier fixation of microorganisms for water reprocessing

—Research and development tasks

- Further development of products
- Process development
- Production profiling

7. Cooperation with enterprises and institutes in the old laender: Institute for Environmental Technology, Dortmund.

8. International cooperation: none.

(69) ECOSYSTEM SAXONIA, ASSOCIATION FOR ENVIRONMENTAL SYSTEMS MBH

Thomas-Muentzer-Platz 5, 0-8019 Dresden, Tel.: 5 24 11

1. Industry: Energy Industry and Water Supply

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. of Nat. Sci. Klaus-Peter Lange

4. Total employees, of whom R&D personnel (persons): 10, 6

5. 1991 R&D budget (thousand DM): 600

6. Field of work (research and activity profile):

—Environmental counseling, planning and applied research for the regions

- industrial and municipal waste water and sludge treatment
- contamination assessment and cleanup
- waste management

With the emphasis on:

- process analyses and environmental audits for the industry
- process development and determinations for waste water and sludge treatment as well as related areas
- expert opinions
- environmental compatibility tests

—Development of procedures in waste water and sludge treatment in studies close to the user:

- for eliminating pollutants from industrial waste water by combining physical-chemical and biological levels of processing, the use of immobilization as well as bioreactor development for extensive nutrient elimination from waste waters with unfavorable composition
- for optimization of sludge treatment and disposal

For these purposes laboratory and semi-industrial facilities and the corresponding monitoring technology are available.

7. Cooperation with enterprises and institutes in the old laender: DMT-Institute for Mining Research, as well as planning enterprises.

8. International cooperation: ECOSYSTEM-GROUP, particularly with ORANJEWOUD B.V. for the field of contamination assessment and cleanup as well as waste management, Institute for Biochemistry and Physiology of Microorganisms of the Academy of Sciences of the USSR, Pushkino.

(70) ENGINEERING ASSOCIATION FOR WATER AND DISPOSAL

Otto-Wagner-Str. 3, 0-8060 Dresden, Tel.: 5 24 11

1. Industry: Energy Industry and Water Supply

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. Friedrich

4. Total employees, of whom R&D personnel (persons): 8, 3

5. 1991 R&D budget (thousand DM): 350

6. Field of work (research and activity profile):

- Waste water and sludge analysis, basic studies, procedure establishment, projection

- Development of procedures for degrading organic substances in waste waters, sludges and cognate material systems
- Development of procedures for clear improvement of the drainage behavior of the abovementioned material systems
- Development of procedures for eliminating waste
- Service, operation, optimization of plants

7. Cooperation with enterprises and institutes in the old laender: Institute for Domestic Water Supply.

8. International cooperation: none.

(71) DBI GAS UND UMWELTTECHNIK GMBH

Torgauer Str. 114, 0-7024 Leipzig, Tel. 2 37 24 00

1. Industry: Energy Industry and Water Supply

2. Legal form, year founded: GmbH, 1991

3. Managing director: Dipl. Engr. Dieter Herbst, Dipl. Engr. Manfred Pustal

4. Total employees, of whom R&D personnel (persons): 150, 20

5. 1991 R&D budget (thousand DM): approx. 1,000

6. Field of work (research and activity profile):

- Consulting and development of energy concepts
- Planning and construction of gas delivery systems
- Environmental analysis and environmental technology
- Corrosion protection
- Natural gas conversion in municipalities and companies

7. Cooperation with enterprises and institutes in the old laender: Vereinigte Elektrizitaetswerke Westfalen AG, Dortmund Ruhr-Gas AG, Essen Engler-Bunde Institute at Karlsruhe Technical University as well as other institutes and companies.

8. International cooperation: Institutes and enterprises in the Eastern European countries and in Great Britain and France.

(72) INSTITUTE FOR ENERGETICS GMBH

Torgauer Str. 114, 0-7024 Leipzig, Tel.: 2 39 30

1. Industry: Energy Industry and Water Supply

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. Wolfgang Brune

4. Total employees, of whom R&D personnel (persons): 657, 426

5. 1991 R&D budget (thousand DM): 24,000

6. Field of work (research and activity profile):

- Strategic and operational energy supply and application concepts commissioned by power companies, authorities, municipalities and companies, taking energy, ecological and economic demands into account
- Applied research and scientific-technical engineering for environmental protection, energy and systems technology as well as cleanup of contaminated sites
- Corrosion protection, component monitoring and damage investigation, including testing of materials for steam generators and pipelines
- Load carrying for regional power companies and major consumers, effective output regulation and control in power plants and closed supply grids, regulation of voltage and idle power in supraregional grids
- Automation solutions for modern process control; design, construction and startup of simulators for energy and industrial facilities
- Consulting about operation, destructive and nondestructive testing, failure investigation for materials
- Process-engineering solutions to transportation and final storage of radioactive waste
- Building automation and security and efficient energy utilization in buildings

7. Cooperation with enterprises and institutes in the old laender: seven enterprises, five institutes.

8. International cooperation: Atomenergoremont, Moscow VNIAM, Moscow EdF, Paris/VNIAM Moscow/IE, etc.

(73) INGENIEURBUERO WASSERTECHNIK LEIPZIG GMBH

Am Wasserwerk, 0-7027 Leipzig, Tel.: 8 41 91

1. Industry: Energy Industry and Water Supply
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Hans-Juergen Oette
4. Total employees, of whom R&D personnel (persons): 62, 46
5. 1991 R&D budget (thousand DM): approx. 2,500
6. Field of work (research and activity profile):
 - Development tasks for increasing performance in existing water treatment facilities and for the cleanup and maintenance of water and waste water grids
 - Planning tasks for parts of plants and complete facilities for water supply and waste water treatment and for disposal sites and cleanup of contaminated sites, including construction services as well as monitoring and automation technology
 - Preparation and implementation of water supply and waste water pipe cleanup, including leak detection and water loss analyses
 - Completion of water, waste water and sludge analyses

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Nordic Construction Company (NCC), Sweden.

(74) ASSOCIATION FOR ECONOMIC ENERGY UTILIZATION GMBH i. A.

Torgauer Str. 114, 0-7024 Leipzig, Tel.: 2 37-32 01

1. Industry: Energy Industry and Water Supply
2. Legal form, year founded: GmbH i.A., 1990
3. Managing director: Dr. Engr. Michael Kubessa
4. Total employees, of whom R&D personnel (persons): 135, 88
5. 1991 R&D budget (thousand DM): 4,000
6. Field of work (research and activity profile):
 - Development of strategies for efficient energy conversion and use, as well as energy supply concepts for laender, cities, communities and selected supply areas
 - Compilation of energy statistics and analytical processing of them
 - Expert opinions, studies and reports on energy-economic problems
 - Market analyses for facilities, equipment and services relevant to energy
 - Development, coordination and management of research and support programs for efficient energy use
 - Development of concrete problem solutions for rationalizing and modernizing energy conversion and application facilities

7. Cooperation with enterprises and institutes in the old laender: Research Institute for Energy Industry at the Munich Technical University Fraunhofer Society Umwelt-Energie-Technik GmbH Munich, etc.

8. International cooperation: EC General Directorate for Energie, Brussels Institute for Energy Industry (EGI), Budapest Government Monitoring of Energetics and Energy Safety Technology (AEEF), Budapest Institute for Municipal Science, Copenhagen.

(75) GERMAN FUEL INSTITUTE GMBH FREIBERG/SAXONY

Halsbruecker Str. 34, 0-9200 Freiberg/Sa., 0-9200 Freiberg/Sa., Tel.: 5 30

1. Industry: Energy Industry and Water Supply
2. Legal form, year founded: GmbH, 1956
3. Managing director: Prof. Horst Brandt, Dr. Engr.
4. Total employees, of whom R&D personnel (persons): 549, 484
5. 1991 R&D budget (thousand DM): 17,500

6. Field of work (research and activity profile):

- Raw material evaluation with respect to processing and application
- Agglomeration of fuel and raw materials
- Planning and preparation for gas and steam turbine combination power plants with integrated coal gasification
- Pre-qualification for gasification materials (coals, environmentally damaging byproducts) by means of a semi-industrial test facility
- Planning and design of production and regulation facilities according to conventional and dense power technology
- Delivery of special equipment and monitoring technology for dense power production technology
- Pollution and waste analyses, supply and disposal concepts and their implementation
- Hazard assessment for air, soil and water as well as environmental compatibility studies with conclusions for technical measures
- Transportation, interim and final storage of radioactive and toxic waste products in the geological subsoil and above ground, including waste disposal from sites with technical nuclear facilities

7. Cooperation with enterprises and institutes in the old laender: Cooperation with 11 industrial enterprises in the fuel industry.

8. International cooperation: Cooperation with fuel and energy institutes in Eastern Europe, USSR, Australia, China, India, Japan, France, Austria, Sweden, Switzerland and South Africa.

(76) INSTITUTE FOR ROCK MECHANICS GMBH I. G.

Friederikenstr. 60, 0-7030 Leipzig, Tel.: not known

1. Industry: Mining
2. Legal form, year founded: GmbH, 1991
3. Managing director: Dr. Engr. Wolfgang Menzel
4. Total employees, of whom R&D personnel (persons): 15, 13
5. 1991 R&D budget (thousand DM): 1,700
6. Field of work (research and activity profile):
 - Studies of rock mechanics, laboratory experiments in rock mechanics and geotechnical measurements
 - Expert opinions and consulting in the field of rock mechanics and geotechnology, for mining mineral raw materials, for preservation of mines and pits, for utilizing underground cavities and deposit site horizons for storage, deposit and final repository purposes both in tunnel and rock building
 - Participation in environmental compatibility tests
 - Generation of analyses and prognoses regarding mining damage

7. Cooperation with enterprises and institutes in the old laender: Federal Institute for Geosciences and Raw Materials, Hanover, and other institutes and companies.

8. International Cooperation: none.

(77) ROHSTOFF CONSULTING DRESDEN

Oscar-Roeder-Str. 3, 0-8036 Dresden, Tel.: 2 32 50

1. Industry: Mining
2. Legal form, year founded: GmbH, 1990
3. Managing director: Prof. Jung, Dr. of Nat. Sci.
4. Total employees, of whom R&D personnel (persons): 80, 40
5. 1991 R&D budget (thousand DM): 2,000
6. Field of work (research and activity profile):
 - Accepts research work in the field of raw material economy and raw material technology of solid mineral raw materials
 - Accepts projects in environmental protection and regional planning in the mining-operating field
 - Research work to solve process problems in the field of mineral raw materials based on laboratory, material and technological studies

7. Cooperation with enterprises and institutes in the old laender: Stephan Schmidt KG, Dornburg and other companies.

8. International cooperation: none.

(78) INNOVATION CENTRE CERAMICS MEISSEN GMBH

Ossietzkystr. 37 a, 0-8250 Meissen, Tel.: 81 11

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. (Econ) Rudolf Dutschke
4. Total employees, of whom R&D personnel (persons): 243, 40
5. 1991 R&D budget (thousand DM): 3,789
6. Field of work (research and activity profile):
 - Research in process engineering for fine ceramics, construction ceramics, kiln furniture, ceramic paints, decorative techniques as the corresponding technological fields, solutions for assuring environmental protection
 - New and further developments of materials for ceramic systems with particular orientation toward special technological conditions

—Technical consulting and support for:

- Process innovations
- Quality assurance systems
- Energy-saving measures
- Solutions for assuring environmental protection
- Product innovations

—Technical support during process and product introduction

—Studies of raw materials and finished products (accredited test laboratory)

—Analyses of environmental burdens and waste products

—Information system specializing in the field

7. Cooperation with enterprises and institutes in the old laender: Institute for Nonmetal Materials Clausthal-Zellerfeld Didier-Werke AG Wiesbaden-Biebrich.

8. International cooperation: Instytut Szkla i Ceramiki, Warsaw (Poland) Institut VUJK Karlovarsky Porcelan, Karlovy Vary (CSFR) WNIIF Leningrad, Kan. Krushchena 17 (USSR).

(79) SAXON ENGINEERING CERAMICS GMBH, DIVISION FOR RESEARCH, DEVELOPMENT, TESTING AND MONITORING

Ossietzkystr. 37 a, 0-8250 Meissen, Tel.: 81 11

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Claus Richter

4. Total employees, of whom R&D personnel (persons): 25, 23

5. 1991 R&D budget (thousand DM): 1,910

6. Field of work (research and activity profile):

- Study of individual procedural steps in ceramic technology—both generally and with regard to specific features of the material
- Development of the ceramic process for applied components as a whole
- Component development and prototype production for operational testing
- Production of small series of simple products
- Materials development for specific application cases
- Conversion of new developments in materials to small-scale technology; process and component development
- Recycling byproducts of individual process levels in ceramic technology

7. Cooperation with enterprises and institutes in the old laender: Didier-AG Wiesbaden, Juelich Nuclear

Research Institute PLR Juelich, as well as another six enterprises and establishments.

8. International cooperation: Mol Nuclear Research Center, Belgium EC's BRITE EURAM program UN's Cuba program.

(80) BAD MUSKAU BUSINESS AND INDUSTRIAL PARK GMBH

Heideweg 2, 907582 Bad Muskau, Tel.: 2 73

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Mr. Heinz Werner

4. Total employees, of whom R&D personnel (persons): 100, 67

5. 1991 R&D budget (thousand DM): 3,253

6. Field of work (research and activity profile):

- Development of methods and technical solutions for pretreatment and manufacture of raw materials for glass melting and other uses, new melting procedures including testing, environmental protection technology
- Analytical services, scientific-technical counselling and information about the status of technology and market situations, as well as patent, design, trade mark and licensing rights
- Expert opinion activity in the fields of safety technology, environmental protection and workplace health, as well as the technical condition of glass melting facilities
- Planning, projection, implementation and startup of new investments and redesigns, including energy source replacement, of heating systems for glass melting facilities, ceramic furnaces and auxiliary facilities
- Studies of energetics and technological process optimization for glass melting facilities and stress-relieving ovens for glass, with solution variants and the elimination of technological and heating-related process disturbances

7. Cooperation with enterprises and institutes in the old laender: Cooperation with the Firma Dr. F. Sporenberg, Umweltschutz und Verfahrenstechnik GmbH, Bochum.

8. International cooperation: none.

(81) SYNTHETICS CENTER LEIPZIG

Erich-Zeigner-Allee 44, 0-7031 Leipzig, Tel.: 47, 40 41

1. Industry: Synthetics, Rubber and Asbestos Processing

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. H. Patzschke

4. Total employees, of whom R&D personnel (persons): 65, 60

5. 1991 R&D budget (thousand DM): 4,400

6. Field of work (research and activity profile):

—Test techniques and quality assurance

- Development of special testing methods, test services
- Reports of technical processing parameters

—Transfer of technology and know-how

- Manufacture and application of technical, high-precision, formed parts and research work for environmental and medical technology
- Synthetics processing, material selection, tool development

—Advanced education and retraining

7. Cooperation with enterprises and institutes in the old laender: South German Synthetics Center, Wuerzburg Institute for Synthetics Processing of Rhine-Westphalia Technical College in Aachen, Synthetics Institute for Medium-Sized Businesses NRW.

8. International cooperation: The managing director of the Synthetics Center is vice president of the SPE Central Europe—German-Speaking Countries.

(82) INSTITUTE FOR POLYMER TECHNOLOGY

Hohe Str. 6, 0-8010 Dresden, Tel.: 4 65 80

1. Industry: Synthetics, Rubber and Asbestos Processing

2. Legal form, year founded: Public Law Establishment, Land of Saxony, 1949

3. Managing director: Prof. H.J. Jacobasch, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons): 239, 94

5. 1991 R&D budget (thousand DM): 12,000

6. Field of work (research and activity profile):

- Chemistry, colloid chemistry and structure formation in highly viscous/highly concentrated systems; synthesis, modification and combination of polymers by means of reactive extrusion in the molten mass, reaction kinetics, on-line data gathering
- Theory and investigation methods of interfacial phenomena, electrical phenomena at phase boundaries, adsorption events, characteristics and modification of fiber surfaces
- Chemical and physical surface modification of polymers; ionic functionalization, surface reactions, modification with polyelectrolyte complexes, separation systems, chemically resistant modified diaphragms, modified fluoropolymers

- Synthetic analysis; definition of polymers and polymer systems by means of highly developed methods and equipment in selected fields
- Modification and recycling of polymers
- Processing of polymer materials
- Thread formation and compound-forming processes from the aspect of high-performance polymers, technology and environment
- Undertaking of advanced training and qualification measures

7. Cooperation with enterprises and institutes in the old laender: The most important universities, institutes and companies in the industry.

8. International cooperation: Institutes and companies in Holland, Belgium, Switzerland, Austria, the United States, Canada, the USSR, Poland, CSFR.

(83) INSTITUTE FOR MATERIALS RESEARCH AND APPLICATION TECHNOLOGY GMBH

Karl-Marx-Str., PSF 44, 0-8080 Dresden, Tel.: 58 70

1. Industry: Iron and Nonferrous Metals Production and Processing

2. Legal form, year founded: GmbH, 1990 (1956)

3. Managing director: Prof. Wegerdt, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons): 314, 263

5. 1991 R&D budget (thousand DM): 17,544

6. Field of work (research and activity profile):

—Applied research in the principal areas of:

- Metallic materials
- Synthetics
- Component and product studies
- Corrosion protection
- Materials use
- Software development

—Materials research, materials information and materials-related quality assurance, design, calculation and testing of components and products

—Information and consulting services regarding technical engineering in the material sectors of steel, cast iron materials, nonferrous metals and their alloys, welding fillers, thermoplastics, pressure setting plastics, elastomers and adhesives, particularly for the Karl-Marx University

7. Cooperation with enterprises and institutes in the old laender: Fraunhofer Society German Synthetics Institute, Darmstadt Rhine-Westphalia Technical Monitoring Association, Essen Stahl- und Markt-GmbH Bad Rappenau Polydata GmbH Aachen.

8. International cooperation: Cooperation with 10 institutes in the USSR, CSFR and Poland, as well as steel industry companies in the EC countries.

**(84) FREIBERG NONFERROUS METALS GMBH—
MATERIALS AND TECHNOLOGY CENTER**

Lessingstr. 41, 0-9200 Freiberg, Tel.: 7 50

1. Industry: Iron and Nonferrous Metal Production and Processing

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. Joachim Schlegel

4. Total employees, of whom R&D personnel (persons): 220, 80

5. 1991 R&D budget (thousand DM): 19,000

6. Field of work (research and activity profile):

- Development of materials and production methods for metals and composite materials
- Chemical-metallurgical process engineering/environmental technology/recycling of residue (development of technologies, testing of pilot facilities, process documentation, material services)
- chemical and physical studies of materials, ores and smelter products
- Services as an accredited laboratory for the determination of inorganic, toxic and organic components in water, soil and sludge samples according to DIN regulations
- Development and execution of apparatus and special equipment
- Production of high-grade special semi-finished goods and anodized aluminum components

7. Cooperation with enterprises and institutes in the old laender: Contacts with about 80 companies, contracts with approximately 25 companies.

8. International cooperation: With all important centers of the nonferrous industry in the Eastern European countries. In Western Europe, for example with Reynolds Aluminium, Holland.

(85) TAKRAF IFF GMBH

Anton-Zickmantel-Str. 50, 0-7034 Leipzig, Tel.: 4 99 40

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Dieter Reisner

4. Total employees, of whom R&D personnel (persons): 354, 60

5. 1991 R&D budget (thousand DM): 4,800

6. Field of work (research and activity profile):

- Product development and construction, including product design for crane, excavator and conveyor construction for piece goods and bulk cargo, as well as motor and equipment components, load suspension

devices, lifting gears, TUL equipment and strip mining equipment

- Determination of loadbearing capability under static and fatigue stress in our own testing and monitoring complex with modern equipment, as well as projects using experimental test methods with practical use of the products, including derivation of product-related calculation methods
- Development, introduction and servicing of product-related software solutions
- Planning of complex technological manufacturing processes and takeover of all coordination tasks in the implementation, industrial design and labor economy.
- Production and startup of special technical equipment, experimental facilities and product prototypes
- Patent and literature searches, proprietary right registrations at home and abroad, work with the body of technical regulations

7. Cooperation with enterprises and institutes in the old laender: Mannesmann DEMAG Wetter und Offenbach Darmstadt Technical College.

8. International cooperation: Patent offices and service agencies in several countries, in particular for the standardization of calculations and safety of cranes.

**(86) HYDRAULIK LEIPZIG GMBH-TECHNICAL
CENTER**

PF 267, Dr. Kurt-Fischer-Str. 33, 0-7010 Leipzig, Tel.: 71 59-0

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1991

3. Managing director: Manfred Luepke

4. Total employees, of who R&D personnel (persons): 130, 104

5. 1991 R&D budget (thousand DM): 6,000

6. Field of work (research and activity profile):

- Development of elements and systems in hydraulics/pneumatics (preliminary research, applied research, product development, process development, rationalization solutions)
- Work on projects in special hydraulic and pneumatic technology (high-pressure hydraulics, customer-specific solutions)
- Constructive development and further development of electro-hydraulic and electronic elements and sensors, including hydraulic-specific measurement technology, diagnostic measurement technology and intelligent measuring systems
- Testing and certification of hydraulic and pneumatic products
- Operation of a training center for users of hydraulics and pneumatics

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(87) LEIPZIG INSTITUTE FOR STEEL CONSTRUCTION GMBH

Arno-Nietzsche-Str. 45, 0-7030 Leipzig, Tel.: 8 84 10

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Prof. Golembiewski, Dr. of Engr.

4. Total employees, of whom R&D personnel (persons): 88, 24

5. 1991 R&D budget (thousand DM): 1,700

6. Field of work: (research and activity profile):

For the field of steel construction, work is under way on projects in the following areas of concentration:

- Construction mechanics/stability
- Experimental tests
- Product development
- Computer-supported work
- Protection against corrosion and fire
- Planning and construction
- Information and training courses

7. Cooperation with enterprises and institutes in the old laender: about 10 institutions and university establishments.

8. International cooperation: IVBH Zuerich, etc.

(88) AUTOMATISIERUNGSTECHNIK GMBH

Schoenauer Str. 113, PSF 49, 0-7064 Leipzig, Tel.: 4 98 10

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Frithjof Arlt

4. Total employees, of whom R&D personnel (persons): 247, 169

5. 1991 R&D budget (thousand DM) 5,230

6. Field of work (research and activity profile):

Applied research for the automation of manufacturing processes:

- Development and construction of special equipment, robot application, software design and operation
- Determination of working loads, stability calculations; experimental stability studies, study of the oscillation behavior, machine-acoustical studies

- Automation of machines and facilities, development and production of electronic equipment for automation and rationalization at customer request
- Electronic equipment for control of milking facilities, processes in self-propelled agricultural machinery and other machines and installations

7. Cooperation with enterprises and institutes in the old laender: Robot-Automation Rolf Peters GmbH Syke Ess und Grimm Hamburg Joint research with LBF Darmstadt Joint research with the Ottobrunn Industrial Plant Management Association and the Munich Technical University MAN Nutzfahrzeuge AG Munich/Nuremberg Bayerische Motorenwerke AG Munich Audi AG Ingolstadt, etc.

8. International cooperation: none.

(89) ENGINEERING BUREAU FOR FOOD TECHNOLOGY

Dorotheenstr. 14, 0-8020 Dresden, Tel.: 47 58 11

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990 (1982)

3. Managing director: Dr. Engr. Hans-Juergen Steiger

4. Total employees, of whom R&D personnel (persons): 43, 36

5. 1991 R&D budget (thousand DM): 2,100

6. Field of work (research and activity profile):

- New solutions in process engineering, for example in the fields of grain processing, baking, meat processing and gastronomic processes, selected processes in confectionery processing and packaging technology, as well as other types of procedures
- Applied research and development/construction of new machine-technical solutions, both for specific application in food processing and process engineering and for machine-technical solutions applied in a multivalent manner, such as drive technology components, including design
- Studies and computer-supported process descriptions of process-technological and machine-technical problems, particularly in the areas of thermodynamics, machine dynamics, machine acoustics/noise
- Applied R&D for specific process engineering/sensor technology, primarily for the above areas of processing and process engineering.
- Automation engineering solutions for procedures, machinery, processing lines and facilities in food technology/process engineering, as well as analogous application areas

7. Cooperation with enterprises and institutes in the old laender: Member of the Working Group for Grain Research CE-Design Siemens.

8. International cooperation: none.

(90) FER-MONT ASSOCIATION FOR ASSEMBLY TECHNOLOGY MBH

Strehlener Str. 14, PSF 14, 0-8012 Dresden, Tel.: not known

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH i.A., 1991

3. Managing director: Dr. Engr. K. Trinsinger

4. Total employees, of whom R&D personnel (persons): 72, 30

5. 1991 R&D budget (thousand DM): 1,800

6. Field of work (research and activity profile):

- Rationalization of assembly processes
- Design of special machinery, installations and tools
- Product design based on assembly automation
- Development and introduction of new assembly methods and technologies
- Development and introduction of complex, computer-supported business-management tasks, particularly production organization, product planning and control and rationalization of materials and information processes
- Technological planning for complete production areas with emphasis on storage and transportation technology, assembly technology, surface treatment and coloring technology
- Further development and introduction of laser monitoring procedures, adjustment to actual operation
- Further development and introduction of specific measurement processes in the field of computer photogrammetry

7. Cooperation with enterprises and institutes in the old laender: Bremer Werkzeug- und Maschinenbau GmbH, Markiersysteme Otto Borries KG, Leinfelden-Echterdingen Robert Bosch GmbH Stuttgart.

8. International cooperation: Avtopromsborka Minsk, USSR Pavlodar Assembly Mechanisms USSR.

(91) INSTITUTE FOR VENTILATION AND REFRIGERATION TECHNOLOGY GMBH I.G.

Berthold-Brecht-Allee 20, 0-8019 Dresden, Tel.: 34 98-0

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH i.Gr., 1990

3. Managing director: Prof. Guenter Heinrich, Dr. of Engr., Dr. Engr. Peter Koenig, Dr. of Nat. Sci. Ralf Herzog

4. Total employees, of whom R&D personnel (persons): 148, 130

5. 1991 R&D budget (thousand DM): 7,250

6. Field of work (research and activity profile):

Basic research, applied research, engineering, information processing and transfer:

- Support for science and research as well as for the level of scientific-technical development in the specialties of refrigeration technology, cryotechnology as well as air conditioning and environmental technology
- Development of methods and processes for realistic and economic implementation and utilization of acquired research results and their practical testing by means of concrete projects
- Development and implementation of environmental protection technologies, environmental energy use, energy saving in cooling, heating and ventilation and water saving

7. Cooperation with enterprises and institutes in the old laender: Fraunhofer Society, Max-Planck Institute, Essen Technical University, Hanover Technical University, Munich Technical University, AEROTECH Frankfurt/Main Hoechst, Frankfurt/Main Integral, Flensburg Kraftanlagen, Heidelberg Linde TVT, Munich.

8. International cooperation: 10 enterprises and institutes, among them IIF, Paris; Johnson Controls, Holland, Stork, Holland; Sulzer, Switzerland.

(92) AUTOMATISIERUNGS- UND KUNSTSTOFFTECHNIK GMBH CHEMNITZ

PSF 1001, Paul-Gruner-Str. 56, 0-9048 Chemnitz, Tel.: 5 80 21

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1991

3. Managing director: Dipl. Engr. Joerg Rohland

4. Total employees, of whom R&D personnel (persons): 86, 54

5. 1991 R&D budget (thousand DM): 1,800

6. Field of work (research and activity profile):

- Design of numerical control-equipped facilities in automation technology for injection molding machinery up to 4,000 KN and presses from 2,500 to 16,000 KN, including control projects in numerical control drive technology
- Modeling and, derived from that, control algorithms for partial process-engineering phases in injection molding processes
- Energy optimization in the injection molding process
- Development of hydraulic circuits
- Hardware and software development of microcomputer controllers
- Complex modernization and automation measures for injection molding machinery, forming presses and their environment

- Complex measures to assure quality of the various parts produced with injection molding machinery and forming presses
- Factory planning for the synthetic and metal-processing industry

7. Cooperation with enterprises and institutes in the old laender: Info Orga company, Bayreuth Wittmann Robot-Systeme company, Schwaig bei Nuremberg WAP Planungsgesellschaft mbH, Systems Technology, Muehlheim.

8. International cooperation: Wittmann Kunststoffgeraete company, Vienna.

(93) ASSOCIATION FOR RATIONALIZATION, R&D IN MECHANICAL ENGINEERING MBH (GER-FEMA)

Karl-Marx-Allee 4, 0-9010 Chemnitz, Tel.: 65 20

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction
2. Legal form, year founded: GmbH, 1990 (1956)
3. Managing director: Prof. Armin Russig, Dr. of Nat. Sci.; Roman Thum, Dr. of Econ.
4. Total employees, of whom R&D personnel (persons): 750, 500
5. 1991 R&D budget (thousand DM): 47,500
6. Field of work (research and activity profile):

Technology, product and software development for efficient production in the metal-processing industry, rationalization of operations, business consulting:

- Development of machine tools, handling and transportation installations, tools, appliances, environmental and waste disposal technology, mechanical and electronic components
- Research of materials use
- Monitoring, inspection, testing of components and machines
- Development and use of cutting, stripping and surface-refining procedures
- Planning of parts manufacture and assembly, industrial engineering (logistics), production planning and control systems (PPS), quality assurance systems (CAQ)
- CAD, CAP and CAM user software
- Manufacture of parts, components and machinery

7. Cooperation with enterprises and institutes in the old laender: approx. 30-40 business enterprises and other private-economy users, as well as 10 university and other public institutions.

8. International cooperation: Information-exchange relations with development establishments, manufacturers and users of machine tools and flexible production systems in Eastern Europe, until now with the function

of advisory bureau of the CEMA for flexible automation and for establishing computer-integrated enterprises.

(94) CHEMNITZER TEXTILMASCHINENENTWICKLUNG GMBH

PSF 811, 0-9010 Chemnitz, Altchemnitzer Str. 11, 0-9048 Chemnitz, Tel.: 575-0

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Peter Sproed
4. Total employees, of whom R&D personnel (persons): 100, 65
5. 1991 R&D budget (thousand DM): 7,590
6. Field of work (research and activity profile):

- Planning and development of textile and special machinery, of automation facilities as well as machinery with related technology, with the associated drive and control technology, including software
- Solution of rationalization tasks in light industry, particularly in the textile, garment and chemical fiber industry, including machine-building of rationalization means
- Undertaking of theoretical and monitoring studies of machine dynamics, elimination of noise and oscillation
- Industrial design for in-house developments and for customer projects, including model-making
- Basic research for new types of textile machine concepts, new textile production methods, environmental protection concepts and energy recovery concepts
- Consulting and expert opinions.

7. Cooperation with enterprises and institutes in the old laender: W. Schlafhorst AG & Co, Moenchengladbach ZSK Stickmaschinen GmbH, Krefeld.

8. International cooperation: Saurer Textilmaschinen AG ARbon/Switzerland Hamel AG, Arbon/Switzerland.

(95) FORMTECH CHEMNITZ, INGENIEUR- UND VERKAUFSBUERO GMBH I.G.

Hainstr. 100, 0-9072 Chemnitz, Tel.: 49 60

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Dieter Schnitzler
4. Total employees, of whom R&D personnel (persons): 13, 10
5. 1991 R&D budget (thousand DM): 800
6. Field of work (research and activity profile):

R&D and application in the fields of forming technology, process design and laser technology; consulting, management and trade in scientific-technical services; product services with laser technology:

- Forming technology, particularly rolling, drawing, massive forming (cold and hot)
- Process design, especially process analysis, process automation, process monitoring and quality assurance, statistical data evaluation, measurement technology
- Laser technology, mainly application for industrial use

7. Cooperation with enterprises and institutes in the old laender: Brankamp System Prozessautomation GmbH Institute for Production Planning and Production Technology GmbH Institute Dr. Foerster.

8. International Cooperation: none.

(96) CENTER FOR FORMING TECHNOLOGY GMBH ZWICKAU

Scheringerstr. 1, 0-9541 Zwickau, Tel.: 81 90

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH 1990 (1953)

3. Managing director: Dr. Engr. Lothar Roetz

4. Total employees, of whom R&D personnel (persons): 250, 232

5. 1991 R&D budget (thousand DM): 13,800

6. Field of work (research and activity profile):

- Basic research, applied research, technical and structural development, model construction, assembly, and startup of complex solutions in selected fields of forming and dividing as well as materials research, material conversion and coating
- Design, construction and testing of cutting and forming tools, modular automation technology, forming machinery and special machinery, as well as production cells and production phases as prototype or operating pattern with electronic, pneumatic and hydraulic controls, including technical software, CAD solutions, science-based technical systems in the forming and dividing technology, data bases
- Design concepts and drafts, work environment design, information and configuration models, product research, machine studies and measurement technology
- Development of studies and trend analyses, information supply, literature and patent research, licensing
- Advisory and expert activity, training
- Organization of professional meetings, colloquia, etc.

7. Cooperation with enterprises and institutes in the old laender: Research Association for Sheetmetal Processing, and contacts with three more AIF member

associations, Institutes for Forming Technology of the universities of Hanover, Dortmund, Stuttgart and Darmstadt Fraunhofer Society.

8. International cooperation: Belgian and German companies within the framework of the EC's BRITE/EURAM program. Contacts with seven research establishments in the USSR, Poland, CSFR, Hungary and Bulgaria.

(97) INGENIEURBETRIEB AGRITECHNIK GMBH

Berghauserstr. 1, PF 57, 0-83355 Neustadt/Saxony, Tel.: 7 25 67

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Harald Bayn

4. Total employees, of whom R&D personnel (persons): 170, 60

5. 1991 R&D budget (thousand DM): 1,420

6. Field of work (research and activity profile):

- Applied R&D and consulting for agricultural processes and agritechnology (concentration: hay, feed, grain and animal production), municipal technology, environmental technology
- Automation, including development and adaptation of sensor and actuator technology, hardware and software, testing and service technology
- Product development and research in special fields, such as plastics and elastomer use, hydraulics, drive technology, driver's cabs/operator's stands
- Technological and technical testing as well as measurement studies for processes and products, including technical expert opinions
- Technical calculations and durability certificates, particularly with respect to light construction, operational strength and optimal materials use
- Proprietary right facilities, invention registrations, trade mark work
- Model construction and production of components/products

7. Cooperation with enterprises and institutes in the old laender: MOBA-electronic GmbH, Mueller-electronic GmbH.

8. International cooperation: Gilibert, Faramans/France Institutes for inspection and testing in the USSR, CSFR, Hungary, Bulgaria, Poland.

(98) POLYGRAPH CONTACTA GMBH

Zweinaundorfer Str. 59, PSF 29, 0-7050 Leipzig, Tel.: 6 82, 10

1. Industry: Wood, Paper and Printing Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. Beschnitt
4. Total employees, of whom R&D personnel (persons): 103, 31
5. 1991 R&D budget (thousand DM): 2,500

6. Field of work (research and activity profile):

- Feasibility studies and calculations in measurement engineering, solution of drive problems, noise reduction processes, consulting and expert opinions for noise dissipation, oscillation calculation
- theoretical and experimental studies of various graphic arts processes (such as determination, evaluation and control of printing quality)
- Information transfer, primarily for the specifications of graphic machinery (printing machines, book-binding machines, cutting machines) and technology for the graphics industry, using on-line access to databases
- Optoelectronic sensors, technological application, solutions for automation in product lines using image-processing technology
- Marketing of printing products from the Beuth publishing company
- Patent registration, monitoring and counseling

7. Cooperation with enterprises and institutes in the old laender: Cooperation with five institutes.

8. International cooperation: none.

(99) SCIENTIFIC-TECHNICAL CENTER FOR THE WOOD-PROCESSING INDUSTRY GMBH (WTZ HOLZ GMBH)

Zellescher Weg 24, 9-8020 Dresden, Tel.: 4 66 20

1. Industry: Wood, Paper and Printing Industry
2. Legal form, year founded: GmbH, 1990 (1952)
3. Managing director: Docent Olaf Merker, Dr. of Techn. Sci.
4. Total employees, of whom R&D personnel (persons): 100, 60
5. 1991 R&D budget (thousand DM): 6,000
6. Field of work (research and activity profile):
- Performance of R&D work on technological problems in materials and energy use, measurement and control technology, environmental protection and work safety in manufacturing derived timber products and finished products from wood or timber products, including finishing/surface treatment and development of resources and utilization opportunities for wood (wood market research)

- Performance of materials and product testing (as a BAM [Federal Institute for Materials Testing]-accredited test laboratory and as an outside-monitoring, IfBt [Institute for Structural Engineering]-accredited test station for the field of structural engineering), as well as emission and pollution measurements (as accredited test station according to Articles 26 and 28 of the Federal Pollution Control Law). Mechanical-physical as well as chemical-physical testing of raw materials, materials and end products
- Performance of advanced training arrangements to promote innovation; advanced training of leadership and professional forces in the legal and scientific-technical fields
- Documentation of professionally relevant literature

7. Cooperation with enterprises and institutes in the old laender: Federal Institute for Materials Research and Testing, Berlin, Fraunhofer Working Group for Wood Research—Wilhelm-Klauditz Institute Braunschweig Federal Institute for Forest and Wood Industry, Hamburg Trade Organization Institute for Labor Safety, St. Augustin.

8. International cooperation: Partnership establishments in Eastern Europe, primarily in the CSFR, Poland, Hungary and USSR.

(100) ZEPÄ ENGINEERING GMBH, BUSINESS SECTOR INSTITUTE FOR CELLULOSE AND PAPER HEIDENAU (IZP)

Pirnaer Str. 37, 0-8312 Heidenau, Tel.: 40 35 00

1. Industry: Wood, Paper and Printing Industry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Ruediger Ocken
4. Total employees, of whom R&D personnel (persons): 83, 64
5. 1991 R&D budget (thousand DM): 5,200
6. Field of work (research and activity profile):
- Basic research in cooperation with universities or academic institutes; applied research; product research; technological research in the fields of cellulose and paper production
 - Product and process development for cellulose, maximum-yield fiber materials, paper recycling, paper production, paper refining, environmental production in the cellulose and paper industry and comparable branches of industry, waste water purification
 - R&D services, information services, patent and proprietary right work, product quality testing, analytical studies, standardization work, experiments in laboratory, small-scale and semi-industrial pilot plants for: wood pulping (mechanical, chemical, thermal), old paper reprocessing, fiber material treatment, paper production, paper refining

7. Cooperation with enterprises and institutes in the old laender: Association of German Paper Factories, Bonn—Board of Directors for Research, Technology Paper Technology Foundation, Munich Fraunhofer Society, Wilhelm-Klauditz Institute, Braunschweig.

8. International cooperation: Institutes in the cellulose and paper industry in Finland, USSR, Poland, CSFR, Hungary, Bulgaria, Romania.

(101) SINUS MESSTECHNIK GMBH

Untere Eichstaedtstr. 12-14, 0-7027 Leipzig, Tel.: 6 83 32 22

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH 1990

3. Managing director: Egon Pietzsch, Gunther Papsdorf

4. Total employees, of whom R&D personnel (persons): 16, 10

5. 1991 R&D budget (thousand DM): 350

6. Field of work (research and activity profile):

- Scientific preparatory research on technical diagnostics, particularly roller bearing diagnostics
- Development and production of measuring equipment for measuring and analyzing nonelectric magnitudes (mechanical oscillations, nuclear radiation), which are primarily used for raw industrial application
- CAD design and production of circuit boards
- Manufacture and testing of electrical components

7. Cooperation with enterprises and institutes in the old laender: GAMMA Elektronik GMBH, Dachau.

8. International cooperation: none.

(102) VON ARDENNE-INSTITUTE FOR APPLIED MEDICAL RESEARCH GMBH

Zeppelinstr. 7, 0-8051 Dresden, Tel.: 37 82 51

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Prof. M. von Ardenne

4. Total employees, of whom R&D personnel (persons): 49, 24

5. 1991 R&D budget (thousand DM): 1,590

6. Field of work (research and activity profile):

- Basic biomedical research
- Experimental and clinical research on cancer multi-step therapy, especially the systemic variant, on oxygen multistep and therapy variants with moderate hyperthermia
- Clinical therapy applications of above therapy forms

- Biomedical technology; development, model construction and small-scale manufacture of special equipment for hyperthermia technique, temperature measurement in respiratory gas analysis and other special technology
- Information and consulting services

7. Cooperation with enterprises and institutes in the old laender: Robert Janker Clinic, Bonn.

8. International cooperation: none.

(103) VON ARDENNE SYSTEMS TECHNOLOGY GMBH

Plattelite 19, 0-8051 Dresden, Tel.: 37 82 51

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1991

3. Managing director: Dr. Peter Lenk

4. Total employees, of who R&D personnel (persons) 67, 38

5. 1991 R&D budget (thousand DM): 2,500

6. Field of work (research and activity profile):

—Development, projection, manufacture and scientific services, application-specific equipment for electron beam, plasma and vacuum coating technology.

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Bridgestone Corporation, Japan Kobe Steel Corporation, Japan Centro Sviluppo Materiali, Italy Maschinenfabrik Andritz, Austria Special Construction Bureau for Vacuum Technology, Riga Paton Institute, Kiev, USSR.

(104) RESEARCH ASSOCIATION FOR ELECTRON BEAM AND PLASMA TECHNOLOGY MBH

Zeppelinstr. 1, 0-8051 Dresden, Tel.: 37 82 51

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1991

3. Managing director: Prof. Dr. Siegfried Schiller

4. Total employees, of whom R&D personnel (persons): 73, 50

5. 1991 R&D budget (thousand DM): 6,700

6. Field of work (research and activity profile):

- R&D in the specialties of electron beam and plasma technology. One of the focal points is work on facilities for producing and controlling electron beams and plasmas through electrical and magnetic fields as well as possibilities for the most varied application

- Treatment and finishing of surfaces, especially production of thin films by means of vapor-depositing and sputtering
- Process research as well as process control and all issues connected with that, such as monitoring, quality control, reproducibility, scaling and profitability
- Qualification of scientists and engineers by means of active participation
- Crystallization point for applied research for medium-sized companies in the region

7. Cooperation with companies and institutes in the old laender: Vacuum technology, metallurgy, glass industry, packaging system, electronic, metal-processing industry.

8. International cooperation: Metallurgical companies in the United States and Japan.

(105) ZMD GMBH—Marketing/Design Division

Grenzstr. 28, PSF 34, 0-8080 Dresden, Tel.: 58 80

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990
3. Managing director: Mr. Hentschel
4. Total employees, of whom R&D personnel (persons): 118, 70
5. 1991 R&D budget (thousand DM): 9,777
6. Field of work (research and activity profile):

—Complete ASIC systems for gate-array design and standard cell design with automatic test set generation; reverse engineering (U320C20), as well as development of other special processors; user training in the field of switching circuit design

—Applied research in the field of ASIC design with a high degree of automation at the lower design level with focus on implementing automatic test set generation as well as JTAG boundary scan technology

- Preparation of self-developed comfortable design systems under broadly applied operating systems (maintenance and broader use of existing company know-how)
- Work to increase design safety
- Improvement in automatic testing of ASICs—JTAG standard, self-test of RAM/ROM/PLA

—Experience in non-trivial reverse engineering—such as by changing the basic technology

7. Cooperation with enterprises and institutes in the old laender: Technisat, TPS SICAN, Hanover.

8. International cooperation: ELWRO Wroclaw, Poland INTER-EVM, USSR.

(106) ZMD GMBH—R&D Division

Grenzstr. 28, PSF 34, 0-8080 Dresden, Tel.: 58 80

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990
3. Managing director: Prof. Dr. Junghans
4. Total employees, of whom R&D personnel (persons): 120, 120
5. 1991 R&D budget (thousand DM): 10,000
6. Field of work (research and activity profile):

R&D of chips and microsystems all the way to sample series (VLSI [Very Large Scale Integration] microsystem technology):

- Application and design of analog-digital microsystems and circuits in VLSI area, design of macrocells, processing of multi-user-chip services
- Design of microsystems circuits (technological variations for sensors, activators, EPROMs, 1.5-V technology, etc.), ASMICs, modeling of nonelectrical component functions in Si
- CAE [Computer-Aided Education] systems and computing technology, processes and algorithms for the design of microsystems (system simulation, logic synthesis, network and mixed-level simulation, etc.)
- Silicon technology for microsystems (specific technology modules at the 1.0 μm structure level, special procedure steps and technology complexes for sensor applications, process simulation of individual processes)
- Development of special procedure steps for highly integrated systems

7. Cooperation with enterprises and institutes in the old laender: Fraunhofer Institutes of the Microelectronics Association, as well as six companies in the industry.

8. International cooperation: IMEC/Belgium—ME developments in the 1- μm area MITEC/Belgium—ME developments in the 1- μm area Thomson & Nielsen Electronics/Canada—radiation sensors.

(107) ELECTRONIC GMBH DRESDEN-NEUSTADT

Am Lagerplatz 8, PF 969, 0-8060 Dresden, Tel.: 5 96 60

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Engr. Knop
4. Total employees, of whom R&D personnel (persons): 137, 79
5. 1991 R&D budget (thousand DM): 4,700
6. Field of work (research and activity profile):

—R&D of communications technology

—Development and small series production for:

- Medical technology
- Environmental technology
- Measurement technology

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(108) MEDIZIN- UND LABORTECHNIK ENGINEERING GMBH DRESDEN

Overbeckstr. 48, 0-8030 Dresden, Tel.: 59 70

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990 (1959)
3. Managing director: Dr. Dietrich Lorbeer
4. Total employees, of whom R&D personnel (persons): 98, 62
5. 1991 R&D budget (thousand DM): 7,455
6. Field of work (research and activity profile):

—Contract-based development and research for clients in medical and laboratory technical industry, as well as small and medium-sized companies in precision mechanics and electronics in the fields of:

- Biomedical electronics
- Analysis and measurement technology and basic laboratory technology
- Technology for stomatological practice and dental laboratories
- Separation technology/controls for centrifuges
- Radiological technology
- Artificial organs/implantable dosage systems
- Physiotherapy and rehabilitation

—Information service about standards, rules and regulations as well as testing and permit regulations for medical and laboratory technology

—Safety-engineering testing according to the Medical Equipment Ordinance

—Training and advanced education for manufacturers and operators of medical technology, including technology transfer

—Service for selected medical and technical laboratory products

—Undertaking of marketing tasks for outside companies

7. Cooperation with enterprises and institutes in the old laender: Bran + Luebber GmbH, Norderstedt Foss Heraeus, Hanau SECA Vogel & Halke GmbH, Hamburg Hewlett Packard, Frankfurt/Main Fraunhofer Institute for Microstructure Technology, Berlin-West VDE/VDI Technology Center, Berlin DIEHL Systems Technology, Nuremberg.

8. International cooperation: none.

(109) INSTITUTE FOR MECHANICS

Reichenhainer Str. 88, PSF 408, 0-9010 Chemnitz, Tel.: 5 61 47 26

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: Public Law Establishment, Land of Saxony, 1981
3. Managing director: Prof. Bodo Heimann, Dr. of Techn. Sci.
4. Total employees, of whom R&D personnel (persons): 203, 145
5. 1991 R&D budget (thousand DM): 5,824
6. Field of work (research and activity profile):

—Researching basic technological phenomena by utilizing the experimental and theoretical methods of modeling as well as mathematical and numerical solution methods in applied fields:

- Flow technology
- Solid state mechanics
- Fracture and micromechanics
- Dynamics/Diagnostics

—Distribution of results of basic scientific-technical research for the development of products, technologies and processes, principally for use in mechanical engineering, vehicle and facility construction and in processing and energy technology

7. Cooperation with enterprises and institutes in the old laender: approx. 20 university establishments and institutes.

8. International cooperation: Athens Technical University Institute for Atomic Energy Research, Budapest Academy of Sciences of the Republic of Bulgaria Institute for Mechanics and Biomechanics, Sofia Institute for Machinery, Moscow Institute for Theoretical and Applied Mechanics, Novosibirsk Institute for Thermal Physics, Novosibirsk Wroclaw Technical University

(110) SAECHSISCHE LANDESGEWERBEFOERDERUNGS-GMBH

Markt 5, Postfach 659, 0-9010 Chemnitz, Tel.: 66 00

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Guenter Schmidt, Dipl. Math.
4. Total employees, of whom R&D personnel (persons): 220, 120
5. 1991 R&D budget (thousand DM): approx. 7,000
6. Field of work (research and activity profile):

Technical engineering services in the field of technical consumer goods and the structures and technologies needed for it:

- Development and design
- Technology
- Test lab for equipment safety (GS [Tested Safety], EC reporting)
- Environmental compatibility and hazard evaluations
- Planning and cleanup
- Alternative energy technologies

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Cooperation with test labs, research institutes and municipal establishments in France, USSR, Poland, Hungary and CSFR.

(111) KURT SCHWABE RESEARCH INSTITUTE MEINSBERG

Postfach 73, 0-7305 Waldheim, Tel.: 30 71

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: Research Institute of the Research Association for Measurement and Sensor Technology, regional association, Dresden, member of the AiF, 1990 (1945)

3. Managing director: Prof. Heiner Kaden, Dr. of Nat. Sci.

4. Total employees, of whom R&D personnel (persons): 46, 25

5. 1991 R&D budget (thousand DM):

6. Field of work (research and activity profile):

- R&D in the field of chemical sensors, primarily of electrochemical sensors, for components of liquids and gases
- Development of electronic measurement equipment in connection with chemical sensors, electrochemical corrosion measurement equipment. Special fields: pH measurement, carbon dioxide and oxygen measurement, semiconductor sensors, corrosion measurement, marine probes
- Applied R&D all the way to industrial testing and prototype production

7. Cooperation with enterprises and institutes in the old laender: DECHEMA, Frankfurt/Main Institute for Physics of the University of the Bundeswehr, Munich Institute for Theoretical and Physical Chemistry of the Goethe University, Frankfurt/Main Daimler Benz AG, Frankfurt/Main Auergesellschaft GmbH, Berlin.

8. International cooperation: Ferrara University, Faculty for Chemistry, Aldo Dacco Corrosion Research Center, Italy, Ingold Messtechnik AG, Switzerland.

(112) INSTITUTE FOR MUSICAL INSTRUMENT BUILDING GMBH I.A.

Klingenthaler Str. 42, 0-96657 Zwota, Tel.: 34 81

1. Industry: Iron, Sheetmetal and Metal Goods, Musical Instruments, Sports Equipment, Toys and Jewelry

2. Legal form, year founded: GmbH i.A., 1990

3. Managing director: Dr. Engr. Peter Schubert

4. Total employees, of whom R&D personnel (persons): 29, 27

5. 1991 R&D budget (thousand DM): 1,900

6. Field of work (research and activity profile):

—Basic and applied research as well as participation in product and process developments in the fields of:

- Musical acoustics/psychoacoustics
- Measurement and test technology, quality diagnosis
- Materials research
- Process engineering and environmental protection (particularly noise abatement)

—Expert opinions, test and advisory activity in the above fields

—Contract research and introductory service in process-technology/technology for innovative solutions on behalf of small and medium-sized enterprises in the wood and metal-processing industry

—Development and small series manufacture of special measurement technology and unconventional small technical apparatus required to assure quality

7. Cooperation with enterprises and institutes in the old laender: Research Association for Musical Instruments, regional association, Federal Institute for Physics and Technology, Braunschweig Siegen Technology Center, GmbH W. Schreiber & Sons, Nauheim.

8. International cooperation: VUZORT Research Institute for Image and Sound Technology, Prague, NIK-TIMP Research Institutes, Moscow, Warsaw Music Academy.

(113) LACTOFERM GMBH

Wilhelm-Franke-Str. 67, 0-8020 Dresden, Tel.: 47 00 09

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Kirchhuelbel

4. Total employees, of whom R&D personnel (persons): 8, 7

5. 1991 R&D budget (thousand DM): 1,000

6. Field of work (research and activity profile):

Microbiological, biochemical and bioprocess engineering research in the fields of:

- Slime extraction from the mold fungus *Zytiostroma*
- Extraction of slime fungi cultures through solid substrate fermentation
- Development of a product to shorten the ripening time of hard cheese
- Selection of slime-forming lactobacilli with the goal of using these cultures in yogurt production and thus replacing other thickeners
- Fermentation of bifido bacteria with the goal of adding these cultures to other foods (yogurt) and thus increasing their dietary value

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(114) INSTITUTE FOR FRUIT RESEARCH

Pillnitzer Platz 2, 0-8057 Dresden, Tel.: 3 92 14

1. Industry: Food and Semi-Luxury Consumables Industry

2. Legal form, year founded: Public Law Establishment, Land of Saxony, 1951

3. Managing director: Prof. Dr. Schuricht

4. Total employees, of whom R&D personnel (persons): no data

5. 1991 R&D budget (thousand DM): no data

6. Field of work (research and activity profile):

- Microbiology—causes of soil exhaustion
- Phytopathology—stone fruit
- Orchard plant physiology—metabolism and development physiology, blossom formation, fruit growth, fruit quality
- Farming methods for fruit—new mechanization solutions for cutting, harvesting fruit and cultivating
- Fruit growing—apples, stone fruit, strawberries—with multiple resistance
- Biotechnology—cell culture, tissue culture as new elements of cultivation methodology
- Gene banks for fruit—varieties of *Malus*, *Prunus*, *Pyrus*, *Fragaria*

7. Cooperation with enterprises and institutes in the old laender: Universities in Bonn, Hanover and Hohnheim Federal Research Institute Arensburg.

8. International cooperation: Institutes in Eastern European countries, as well as Belgium, Denmark, France, Great Britain, Italy, the Netherlands, Norway, Austria, Switzerland and the United States.

(115) INSTITUTE FOR TECHNICAL TEXTILES GMBH

Hohe Strasse 6, PSF 411, 0-8012 Dresden, Tel.: 4 65 80

1. Industry: Leather, Textile and Garment Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. Hilmar Fuchs

4. Total employees, of whom R&D personnel (persons): 68, 59

5. 1991 R&D budget (thousand DM): 2,850

6. Field of work (research and activity profile):

- R&D work in the field of technical textiles
- Preparation of market studies and introduction arrangements for technical textiles
- Application technology work for technical textiles, primarily for small and medium-sized companies
- Performance of textile-physical and textile-chemical tests
- Development of reproducible test methods for special technical textiles
- Consultation services on the set of problems in the field of technical textiles
- Testing and operational development of special fiber materials and textile resources
- Research on standards, patents and literature, participation in standards committees
- Patent and licensing work

7. Cooperation with enterprises and institutes in the old laender: Institutes for Textile and Process Engineering in Denkdorf, Krefeld and Hohenstein, as well as the technical universities of Aachen, Stuttgart and Duisburg, as well as five companies in textile technology.

8. International cooperation: Lenzing company, Austria Technopromimport, Moscow Textile Research Institute in Sumperk (CSFR).

(116) RESEARCH INSTITUTE FOR TEXTILE TECHNOLOGY GMBH

Annaberger Str. 240, PSF 243, 0-9010 Chemnitz, Tel.: 5 70 90

1. Industry: Leather, Textile and Garment Industry

2. Legal form, year founded: GmbH, 1990

3. Managing director: Prof. Banke, Dr. of Engr.

4. Total employees, of whom R&D personnel (persons): 250, 226

5. 1991 R&D budget (thousand DM): 14,900

6. Field of work (research and activity profile):

—Leading establishment in the field of textile research in the eastern part of Germany—technology-oriented basic research and industry-related applied research in fiber and thread preparation, thread production, all the way to fabric formation and finishing.

—Special research fields are:

- Hardening and modification processes for nonwoven materials (such as water jet vortexing) and for knits (such as fiber meshing)
- Preparation and processing of textile waste (secondary textile raw materials), particularly by means of nonwoven and knitting methods
- Process engineering solutions to reduce environmental pollution from textile finishing processes, especially through technological avoidance or minimization of waste water pollution, by means of biotechnological processes, byproduct recovery and fabric cycles (water), among others
- Technological process optimization using science-based systems in the fields of spinning, sizing, double carpet weaving and finishing
- Technological solutions for new types of textile effects and designs as material or operational elements in the non-textile area

7. Cooperation with enterprises and institutes in the old laender: Institutes, which are represented on the research committee of the General Association of the Textile Industry of the FRG (General Textile, regional association); Companies in the textile industry, the textile machine-building industry and the textile resource industry.

8. International cooperation: Cooperation until now with the textile institutes in the countries of Bulgaria, Hungary, Poland, Romania, CSFR.

(117) RESEARCH INSTITUTE FOR LEATHER AND SYNTHETIC LEATHER TECHNOLOGY GMBH

Meissner Ring 1, 0-9200 Freiberg, Tel.: 42 41

1. Industry: Leather, Textile and Garment Industry
2. Legal form, year founded: GmbH i.G., 1991
3. Managing director: Prof. Guenter Reich, Dr. of Nat. Sci.
4. Total employees, of whom R&D personnel (persons): 200, 118
5. 1991 R&D budget (thousand DM): 7,000
6. Field of work (research and activity profile):

—Basic and applied research in the pre-competitive area and for industrial customers, among others (in these cases all the way to the production stage, if requested) as well as extensive services in the following fields:

- Environmental protection and ecology in the leather and synthetic weave production
- High-grade collagen refining
- Leather technology
- Heavily loaded polymer compounds and special foils
- Textile coatings for technical applications
- Leather substitutes

- Materials testing as well as chemical and instrument analysis (including environmental analysis)
- Development of testing methods concerning practical value

—Training at the integrated technical school to become

- Chemical-technical assistant
- Chemotechnician
- Tannery technician
- Synthetic leather technician
- Environmental protection technician

—Advanced education and retraining tracks

7. Cooperation with enterprises and institutes in the old laender: West German Tannery School, Reutlingen Testing and Research Institute for Shoe Production, Pirmasens Hoffmann and Kripper company.

8. International cooperation: Cooperation with institutes and companies in the USSR, CSFR, Poland, Hungary and Romania (for development of high-grade poromeric and nonporomeric synthetic leather) as well as India and the Association of Leather Research Establishments of the EC.

(118) AIH AUERBACHER INGENIEUR- UND HANDELS-GMBH

Tischelweg 5, 0-9162 Auerbachm Tel.: Amt Thalheim 5 45 22

1. Industry: Leather, Textile and Garment Industry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Karlheinz Hausteiner
4. Total employees, of whom R&D personnel (persons): 15, 7
5. 1991 R&D budget (thousand DM): 400
6. Field of work (research and activity profile):
 - Product research and technological research in the textile industry field, including test production
 - Development of technologies for hosiery production with test production
 - Engineering-technical services in the field of environmental protection, particularly the "eco-hosiery" pilot project
 - Services, representation and marketing primarily in textile and packaging technology
7. Cooperation with enterprises and institutes in the old laender: none.
8. International cooperation: none.

(119) TEXTILE-RESEARCH PLAUEN GMBH

Morgenbergstr. 41, PSF 674, 0-9900 Plauen, Tel.: 21 74 27

1. Industry: Leather, Textile and Garment Industry

2. Legal form, year founded: GmbH i.A., 1990
3. Managing director: Walter Mueller-Litz, Dr. of Nat. Sci.
4. Total employees, of whom R&D personnel (persons): 20, 17
5. 1991 R&D budget (thousand DM): 1,500
6. Field of work (research and activity profile):
 - Applied, technological and product research as well as technical laboratory studies in the fields of fiber use, weaving and sizing
 - Optimization of weaving—new technologies for weave formation, technological studies in the fields of pass and jacquard weaving
 - Foundations of process engineering in textile finishing, analysis and optimization of processes
 - Automation in garment technology—work preparation, handling, organization
 - Study of the properties of textile resources and refining chemicals with respect to their effect on the process engineering of the textile refining industry
 - Consulting activity and complex market studies for handling investments, assuring environmental protection, optimum material use, concerning technological questions, quality problems and product or technology innovation

7. Cooperation with enterprises and institutes in the old laender: Hohensteiner Institutes, Garment-Physiological Institute (textile testing), German Institute for Textile and Fiber Research, Denkendorf German Textile Research Center North-West, Krefeld Rhine-Lein Processing Association mbH, Neukirchen-Fluyn.

(120) INGENIEURBUERO MaTex GMBH

Pestalozzistr. 8, 0-9102 Limbach-Oberfrohna 1, Tel.: 61, 26

1. Industry: Leather, Textile and Garment Industry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Peter Drescher
4. Total employees, of whom R&D personnel (persons): 23, 17
5. 1991 R&D budget (thousand DM): 700
6. Field of work (research and activity profile):
 - Scientific-technical services in the specialty fields of:
 - Knitting/knitwear/textile testing
 - Finishing
 - Ready-to-wear
 - Including training courses and seminars
 - Textile testing according to national and international standards, testing of new yarns and silks, actual status of finishing techniques and technology

—Planning and implementation of technological and organizational concepts for new knitting capacities, for modern finishing techniques and for cutting, sewing and final makeup

—Pattern generation as well as small series of special product ranges with rib-circular knitting machines and new sewing techniques

—Production of miniature cutting templates

7. Cooperation with enterprises and institutes in the old laender: Schellenberger company, Obernburg.

8. International cooperation: Institutes in the USSR.

(121) BAUFA ENGINEERING GMBH

Zschortauer Str. 42, 0-7021 Leipzig, Tel.: 5 63 60

1. Industry: Construction Industry and Others
2. Legal form, year founded: GmbH, 1990
3. Managing director: Werner Schmidt, Dr. of Nat. Sci.
4. Total employees, of whom R&D personnel (persons): 98, 55
5. 1991 R&D budget (thousand DM): 6,000
6. Field of work (research and activity profile):

- Applied research for products and technologies; practice-related basic research in the fields of asbestos substitution and CFC reduction
- Replacement of the asbestos fibers in asbestos cement products, new particle-matrix combinations including new technologies and application-technical solutions for the new products
- Advanced development in the field of sandwich constructions, including assembly technologies and development of new products
- Participation in basic studies to increase the strength of wooden bonds and wood constructions
- Advanced development for window and door products, product as well as technological research
- Performance of experiments and tests (authorized test and consultation station of the Land Trade Institute, Bavaria)

7. Cooperation with enterprises and institutes in the old laender: Institute for Window Technology, Rosenheim Research Institute for Heat Protection, regional association, Munich LGA Bayern/Nuremberg.

8. International cooperation: none.

(122) INSTITUTE FOR ENGINEERING AND UNDERGROUND CONSTRUCTION LEIPZIG

Richard-Lehmann-Str. 19. 0-7030 Leipzig, Tel.: 3 91 35 15

1. Industry: Construction Industry and Others

2. Legal form, year founded: Public Law Establishment, 1953

3. Managing director: Dr. Engr. Olaf Selle

4. Total employees, of whom R&D personnel (persons): 117, 117

5. 1991 R&D budget (thousand DM): approx. 3,000

6. Field of work (research and activity profile):

—Professionally independent research, consultation, service and testing establishment in the specialty fields of:

- Construction engineering
- Geotechnology
- Urban technology
- Structural fire protection

—The institute's principal fields of work are:

- Theoretical and experimental construction mechanics
- Solidity and crack formation in civil engineering works
- Surface protection systems, joint sealants, fasteners
- Expert opinions on building sites for all types of construction, quality control of earth works
- Status reports, load-bearing behavior and reconstruction of foundations and supporting structures
- Geotechnics for waste dump construction and contamination cleanup
- Connection between urban development and development of the urban engineering infrastructure
- Municipal energy supply planning
- Planning and construction design of water and waste water grids, heating pipes and cable lines
- Fire-behavior of construction materials, components, structural designs and stored goods
- Evaluation and calculation foundations for fire emergencies

7. Cooperation with enterprises and institutes in the old laender: Rhine-Westphalia Technical College Aachen; Braunschweig Technical College, Institute for Construction Technology; Erwitte Fire-Testing Station; District Heat Research Institute, Hanover.

8. International cooperation: Research and planning facilities in the CSFR, in Hungary and the Soviet Union. Many years of working contacts with establishments in Budapest, Bucharest, Havana and Moscow.

(123) RESEARCH AND CONSULTING CENTER FOR PACKAGING GMBH

Hennigsdorfer Str. 16, 0-8017 Dresden, Tel.: 2 23 17 36

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH, 1990
3. Managing director: Chief engineer

4. Total employees, of whom R&D personnel (persons): 100, 70

5. 1991 R&D budget (thousand DM): 4,000

6. Field of work (research and activity profile):

—Applied research

- Determination and optimization of technical process properties of packaging materials (paper, cardboard, paperboard, foils, combination materials)
- Generation of foundations for partial technical processes such as glueing, separation, coating, etc.
- Generation of basic knowledge about mechanical and climate-related transportation demands

—Complex rationalization services

- Generation of development concepts for companies making packaging materials
- Rationalization of technical processes in companies producing packaging materials
- Work on basic and individual tasks on the set of problems named Ecology and Packaging
- Production of quality assurance systems and quality assurance handbooks according to ISO 9000 through 9004
- Test services for packaging materials, packaging means, transportation packaging and loading units
- Determination of packaging solutions including production of patterns and small series
- Information and documentation services within the framework of the Packaging information system

7. Cooperation with enterprises and institutes in the old laender: Paper-Technical Foundation, Munich; Fraunhofer Institute for Food Technology and Packaging, Munich and about 15 other trade companies as well as university establishments.

8. International cooperation: UNIDO contributions on packaging problems in the nations of Mongolia, Cuba, Brazil, China and the United Arab Emirates; Training services for the national of Korea, India, Cuba, Vietnam through UNIDO.

(124) INSTITUTE FOR ROAD TRANSPORTATION AND PASSENGER TRAFFIC-GMBH

Friedrich-Engels-Str. 2, 0-8060 Dresden, Tel.: 5 20 46

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Peter Franz
4. Total employees, of whom R&D personnel (persons): 92, 71
5. 1991 R&D budget (thousand DM): 3,500
6. Field of work (research and activity profile):

The following problem sets are studies for Karl-Marx-University in the sections Freight traffic, Passenger traffic and Factory-Internal traffic:

—Information processing for freight traffic:

- Industry and individual software
- Forwarding
- Vehicle disposal and use
- Operational and financial processes

—Public transportation

- Traffic policy strategies
- Resource management
- Traffic redevelopment
- Regional public transportation facilities and vehicles

—Environmental protection

- Waste disposal from companies
- Waste product utilization
- Environmental compatibility of waste products

—Planning

- Planning of construction and technical facilities
- Project realization

—Consulting and training services

- Business consulting
- Training

7. Cooperation with enterprises and institutes in the old laender: IVU Berlin-West; Rheinconsult, Duesseldorf; BOG, Koblenz; Fraunhofer Institutes; Dornier-Planungsberatung, Friedrichshafen.

8. International cooperation: none.

(125) INGENIEUR- UND BERATUNGS BUERO 'VERPACKUNGS- UND TRANSPORTLOGISTIK' DRESDEN (IBVT)

Heynahtsstr. 16, 0-8019 Dresden, Tel.: 33 51 00

1. Industry: Construction Industry and Other
2. Legal form, year founded: Private company, 1990
3. Managing director: Matthias Thiele, Econ. Engr.
4. Total employees, of whom R&D personnel (persons): 4, 3
5. 1991 R&D budget (thousand DM): 156
6. Field of work (research and activity profile):
 - Performs consulting, planning, studies, expert opinions and analyses on the use of packaging materials, packaging means and packaging machinery and equipment
 - Development, construction and design of complex packaging solutions
 - Generates trend, market and ecological studies

- Provides training and advanced training
- Provides testing of packaging materials, packaging means, loading units, issuing certificates in cooperation
- Hazard evaluation, testing and training

7. Cooperation with enterprises and institutes in the old laender: Dortmund University, Department of Logistics Tehnical Packaging Services Center, Dortmund ISEGA—Research and Study Association mbH, Aschaffenburg.

8. International cooperation: IMADOS, Prague (CSFR) ACI, Budapest (Hungary).

(126) INSTITUTE FOR MUNICIPAL ECONOMY DRESDEN GMBH I.A.

Winterbergerstr. 26, 0-8020 Dresden, Tel.: 2 32 61 13

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH i.A., 1990
3. Managing director: Karl Walter, Dr. Bernhard Metzner
4. Total employees, of whom R&D personnel (persons): 50, 7
6. Field of work (research and activity profile):
 - Continuation of long-term studies on water and materials budget in organized waste dump facilities for household waste and similar solid waste (percolating water studies, determination of the hazard potential for evaluating the necessity of cleanup, cleanup proposals for eliminating contamination)
 - Production of handbooks for the promotion of economic development in the kreises and municipalities of the five new laender as applied research
 - Applied research for implementing the requirements of environmental protection in the manufacturing trade and small and medium-sized industry
 - Analytic and technical evaluations from the results of waste analyses and chemical analyses
 - Process engineering approach to storage of waste products; supplementation or revision of the storage procedure
 - Use of research results for planning waste dumps
 - Consulting about the use of research results by municipalities and dump operators

7. Cooperation with enterprises and institutes in the old laender: Federal Institute for Geosciences and Raw Materials, Hanover Center for Energy, Water and Environmental Technology of the Chamber of Trade, Hamburg Technical University, Hamburg-Harburg Bergische University, Wuppertal Institute for Medium-Sized Industry Research, Bonn Datenfakteninformation Syke German Project Union, Essen.

8. International cooperation: none.

(127) KALI SUEDHARZ AG, POTASSIUM RESEARCH DIVISION

Am Schacht II, 0-5400 Sondershausen, Tel.: 4 40

1. Industry: Mining**2. Legal form, year founded: Business corporation, 1990 (1955)****3. Managing director: Chief engr. Claus Daehne, Dr. Nat. Sci, Dipl. Chemist****4. Total employees, of whom R&D personnel (persons): 120, 95****5. 1991 R&D budget (thousand DM): 7,500****6. Field of work (research and activity profile):**

- Geotechnical support and projects for the potassium mines which remain in production
- Geotechnical foundations for concepts, plans and implementation/operation (support and services) for potassium mines which are to be closed (safe-keeping or post-operation phase), including their use as dumps for special waste if environmental compatibility, public and mining safety is assured
- Solution of geotechnical problems connected with the salt dome by utilizing the given methods, technical equipment and personnel including scientific-technical services
- Physical-chemical foundations, mineralogy, analysis, mechanical and thermal process engineering, specializing primarily in processing the mineral salts of marine origin (salt deposits, salt lakes and their deposits, natural salt solution) and similar inorganic salts, and overcoming the environmental pollution connected with them
- Processes for refining or utilizing companion substances, particularly for the production of potassium and sodium sulfate through double conversion, magnesium compounds (oxides, hydroxides) through thermal MgCl₂ fission or precipitation processes

7. Cooperation with enterprises and institutes in the old laender: Institute for Subterranean Storage, Braunschweig Technical Monitoring Association Rhineland-Westphalia Mannesmann AG Kloeckner Industrieanlagen.

8. International cooperation: Cooperation with institutes of the Soviet potassium industry in Soligorsk, Beresniki and Leningrad.

(128) WTI GMBH—HEAT, TECHNOLOGY, INDUSTRIAL AUTOMATION

Goeschwitz Str. 22, 0-6905 Jena, Tel.: 7 20

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry**2. Legal form, year founded: GmbH, 1990****3. Managing director: Mr. Hunold****4. Total employees, of whom R&D personnel (persons): 430, 70****5. 1991 R&D budget (thousand DM): 1,800****6. Field of work (research and activity profile):**

- Development, planning, some delivery of glass smelter facilities, feeders, special furnaces, heated electrically or with gas
- Development work on energy optimization, emissions reduction, rendering waste products inert
- New and advanced development of heat recovery methods and facilities, such as glass heat transfer tubes as flue gas coolers

7. Cooperation with enterprises and institutes in the old laender: Horn company, Ploessberg, facilities for the glass industry Association for Environmental Technology mbH, Berlin Zippe Industrieanlagen GmbH, Wertheim DRAEGERWERK AG, Luebeck DCE Deutschland GmbH, dust removal technology, Duesseldorf.

(129) INSTITUTE FOR CONSTRUCTION AND HEAVY CERAMICS GMBH WEIMAR

Erich-Weinert-Str. 7 b, 0-5300 Weimar, Tel.: 31 56

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry**2. Legal form, year founded: GmbH, 1991****3. Managing director: Dr. Engr. Manfred Roehrs****4. Total employees, of whom R&D personnel (persons): 59, 38****5. 1991 R&D budget (thousand DM): 2,000****6. Field of work (research and activity profile):**

- Thermal process engineering, particularly optimal energy use, optimal drying and firing curves as well as process analyses and energy balances
- Raw materials and product development, especially geological evaluation of raw material deposits, investigation of deposits, identification of raw material quality, deposit servicing, development of construction and heavy ceramic products
- Research on the raw material deposits of construction and heavy ceramic clays in the territory of the new laender
- Laboratory studies
- Air purification (measuring station according to Articles 26, 28 of the MImSch law and the technical ordinance on air)
- Product testing for self-monitoring of roof tiles, building bricks, split tiles, Dutch klinker and selected concrete products
- Expert opinions on evaluation of deposits and raw materials in the field of minerals and earths as well as products made from them and their application

7. Cooperation with enterprises and institutes in the old laender: Federal Association of German Brick Industry, regional association, Technical Monitoring Association Southwest, regional association, Stuttgart Institute for Energy Process Engineering of Clausthal Technical University and several companies in the construction and heavy ceramics industry.

8. International cooperation: Participation in the Technical Commission TBE Business relations (bilateral) with partners in Austria, France, Italy, Sweden.

(130) PROCESS ENGINEERING INSTITUTE SAALFELD GMBH

Wittmannsgereuther Str., Postfach 359, 0-6800 Saalfeld, Tel.: not known

1. Industry: Quarrying and Processing of Minerals and Earths, Fine Ceramics, Glass Industry

2. Legal form, year founded: GmbH, 1990 (1949)

3. Managing director: Dr. Engr. Rolf Ebert

4. Total employees, of whom R&D personnel (persons): 100, 60

5. 1991 R&D budget (thousand DM): 3,600

6. Field of work (research and activity profile):

- Process engineering, environmental protection and reprocessing of contaminated matter based on the fluidized solids technique, reprocessing technologies for mineral raw materials and high temperature processes
- Processes for more efficient use of energy
- Development of plated, billet-shaped composite materials
- Test services and building diagnostics
- Scientific-technical services for Karl-Marx-University and municipalities in the field of construction materials industry as well as mechanical and construction engineering

7. Cooperation with enterprises and institutes in the old laender: Land Trade Institute, Bavaria Kabelmetall, Hanover Baustofflabor Dr. Loeffler, Hanover.

8. International cooperation: Ramboell & Hannemann A/S Virum, Denmark.

(131) INSTITUTE FOR MICROBIOLOGY AND EXPERIMENTAL THERAPY

Beutenbergstr. 11, 0-6900 Jena, Tel.: 8 50

1. Industry: Chemical Industry and Petroleum Processing

2. Legal form, year founded: Public Law Establishment, 1990

3. Managing director: Prof. Michael Oettel

4. Total employees, of whom R&D personnel (persons): 840, 600

5. 1991 R&D budget (thousand DM): 25,000

6. Field of work (research and activity profile):

- Physiology, biochemistry, molecular genetics and population genetics of streptomycetes, nonconventional yeasts, molds, etc. strain cell bank
- etiopathogenetic research in the fields of streptococcus infections and diseases conditioned by Picorna viruses
- development of fermentation methods for extracting rDNA products, ultrapurification of proteins
- Microbe ecology (mainly forest floors), studies of aquatic ecosystems, biological water cleanup, environmental analysis and reduction of microbial pollutants
- Physiology and molecular biology of the secondary raw material exchange of microorganisms, search for new microbial agents, microbial transformations with special consideration of steroids

7. Cooperation with enterprises and institutes in the old laender: Hoechst AG, Frankfurt Schering AG, Berlin Dr. Rentschler, Laupheim Association for Biotechnical Research, Braunschweig Medac company, Hamburg, and others.

8. International cooperation: Cooperation with microbiology institutes in the USSR, CSFR and the United States.

(132) ASSOCIATION FOR PRODUCTION ENGINEERING AND DEVELOPMENT SCHMALKALDEN/CHEMNITZ MGB

1. Industry: Steel, Mechanical Engineering and Motor Vehicle Construction

2. Legal form, year founded: GmbH, 1990

3. Managing director: Klaus Holland-Letz, Dr. Nat. Sci. Kurt Keller, Dr. Engr.

4. Total employees, of whom R&D personnel (persons): 199, 163

5. 1991 R&D budget (thousand DM): 8,600

6. Field of work (research and activity profile):

Basic and applied research in the field of tool engineering, product research and development of tools, technical research for production processes of tools, application research:

- Tool construction, tool development, including basic research, tool engineering, tool building, tool testing, services for the tool companies
- Production engineering, production processes for tool manufacture, rationalization and automation solutions, including control engineering, environmental technology

- Planning of complex manufacturing plants for the tool industry
- Coating and wear protection for tools, tool material use, non-polluting heat treatment techniques, materials testing

7. Cooperation with enterprises and institutes in the old laender: Research Association for Tool Materials and Tools, regional association, Remscheid Institute for Tools and Materials, Remscheid German Association for Surface Treatment, regional association, Duesseldorf Research Institute for Pure Metals and Metals Chemistry, Schwaebisch-Gmuend Institute for Solar Energy Research GmbH, Hanover Institutes for Machine Tools and Production Engineering of the Berlin Technical University Fraunhofer Institute for Layer and Surface Technology, Braunschweig.

8. International cooperation: none.

(133) CENTER FOR INTELLIGENT SENSORS CIS-GMBH

Rudolfstr. 47, 0-5010 Erfurt, Tel.: 5 80

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1991
3. Managing director: Dr. Krueger
4. Total employees, of whom R&D personnel (persons): 70, 65
5. 1991 R&D budget (thousand DM): 3,000
6. Field of work (research and activity profile):

—Laboratory and production line for wafer processing

- Technical individual and general processes for unipolar circuits (ASIC [application-specific integrated circuit] production) at the structural level to 1.5 μ m;
- technologies for CMGT and CSGT components as a basic method with necessary modifications for sensor development and monolithic sensor integration

—Laboratories for electronic and solid state physical analysis

- High-resolution measurement of basic semiconductor parameters (I-U-C definition), such as dependent on temperature;
- parameter extractions for simulation calculations and design services, etc.

—Laboratory and production lines for assembly and construction/connection technology

- Closed assembly lines for components in plastic and ceramic housings
- Flexible construction and connection technology modifiable for sensor development
- Naked-chip assembly on plastic and ceramic substrate, etc.

7. Cooperation with enterprises and institutes in the old laender: Cooperation with institutes and enterprises in microelectronics development and production.

8. International cooperation: none.

(134) TECHNOLOGY CENTER FOR OPTICS AND PRECISION ENGINEERING OF JENOPTIK CARL ZEISS JENA GMBH

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 83, 29 47

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: Business sector of Jenoptik Carl-Zeiss-Jena GmbH, 1991
3. Managing director: Klaus Merkel, Dr. of Engr.
4. Total employees, of whom R&D personnel (persons): 250, 140
5. 1991 R&D budget (thousand DM): approx. 3,000
6. Field of work (research and activity profile):

- Development of high-performance objectives for projection-lithographic microstructuring, for interferometric surface measurement and for photogrammetric recording technology, as well as all the internal optics of the optical medical technology manufactured by Jenoptik Carl Zeiss JENA GmbH, geodetic survey technology, photogrammetric evaluation technology, optical precision instruments and optical measurement and test technology
- Development of equipment for optical instruments, laser measuring systems, precision flatness measuring equipment and for optical measurement and test technology, workshop interferometers, centering apparatus, non-uniformity test equipment, wavefront analyzers
- Process development in the field of processing optical components and assembly of optical systems, computer-supported zonal correction polishing, ion beam processing of optical high-tech components, production of nanometer aspheres, computer-supported assembly
- Process development for precision microstructuring under the influence of the necessary purification technologies

7. Cooperation with enterprises and institutes in the old laender: European Space Org. (ESA), Max-Planck Society, CZ Oberkochen.

8. International cooperation: Soviet glass industry, Planar Minsk, Lomo Leningrad, state optical institute Leningrad.

(135) JENOPTIK CARL ZEISS JENA GMBH, SURVEY INSTRUMENT DIVISION

Hans-Beimler-Str. 23, 0-6905 Jena-Goeschwitz, Tel.: not known

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990 (1909)

3. Managing director: Mr. Oemler

4. Total employees, of whom R&D personnel (persons): 376, 68

5. 1991 R&D budget (thousand DM): 7,223

6. Field of work (research and activity profile):

—Development, engineering, production, sale of survey devices, in particular:

- Transits
- Leveling instruments
- Electrooptical survey equipment
- Survey equipment accessories

—R&D, based on mechanical-optical and electronic principles, of modular units all the way to complete systems, including mechanical-optical and electronic control instruments

—Hardware and software development

—Manufacture and testing of models, generation of production technologies and organization of mass-produced equipment

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(136) JENOPTIK CARL ZEISS JENA GMBH, MICROSCOPE DIVISION

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 8 30

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990 (1846)

3. Managing director: Mr. Bohn

4. Total employees, of whom R&D personnel (persons): 865, 87

5. 1991 R&D budget (thousand DM): 14,027

6. Field of work (research and activity profile):

- Automation of optical microscopes (LM) with respect to service, reception and processing of information
- Improvement in the use of contrast procedures for measurement techniques using LM in biomedicine and engineering
- Combination of laser-grid microscopy with time-resolved and other detection methods (ultrashort-time technique)

7. Cooperation with enterprises and institutes in the old laender: ZT Biomed Bad Oeynhausen/North Rhine

Westphalia MfP company, Bad Oeynhausen Max-Planck Institute for Biophysical Chemistry, Goettingen

8. International cooperation: none.

(137) CENTRAL R&D DIVISION OF JENOPTIK CARL ZEISS JENA GMBH

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 8 30

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1991

3. Managing director: Dr. Wolfgang Nordwig

4. Total employees, of whom R&D personnel (persons): 171, 171

5. 1991 R&D budget (thousand DM): 4,049

6. Field of work (research and activity profile):

- Research work on application of integrated optics
- Process development for fiber-chip-coupling
- Development and manufacture of hybrid integrated circuits and optohybrids (thick and thin-film technology, laser compensation, dye bonds), as well as special and fiber assemblies, preferably for optical sensors and special optoelectronic components. In order to assure the quality of this, an efficient optical measurement technique—in the range of 200 through 1100 nm—is available for component studies (such as spectral sensitivity as well as radiation determination in the near and distant field)
- Innovation and transfer of systems and automation solutions in information science with the most extensive systems integration with silicon (operating systems, microcomputer technology, eulometered electronics design, ASICs, test procedures)
- Research work for the use of modern physical measurement techniques and measurement strategies in optical precision instruments—primarily the use of microoptical and micromechanical components—under the conditions of structural technological change including the use of new materials

7. Cooperation with enterprises and institutes in the old laender: IOT Wagahaeusel Fraunhofer Institutes leading electronics companies (such as Siemens, LSI-Logie).

8. International cooperation: Fujitsu/Japan.

(138) ZEISS JENA PRECISION CONSTRUCTION GMBH

Hans-Beimler-Str. 25, 0-6905 Jena, Tel.: not known

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1991

3. Managing director: Dr. Hans Joachim Schaefer

4. Total employees, of whom R&D personnel (persons): 350, 17

5. 1991 R&D budget (thousand DM): 840
6. Field of work (research and activity profile):
- R&D in the field of precision drives and guides for positioning devices, table systems as well as spindle drives for special machinery
 - Laboratory work and test projects by experienced professionals with corresponding precision processing machines in the specific field
 - Experiment and test evaluations
7. Cooperation with enterprises and institutes in the old laender: none.
8. International cooperation: none.

(139) JENOPTIK CARL ZEISS JENA GMBH, PHOTOGRAMMETRY DIVISION

Tatzendpromenade 1 a, 0-6900 Jena, Tel.: 83 54 82

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990 (1901)
3. Managing director: Dr. Mark
4. Total employees, of whom R&D personnel (persons): 165, 41
5. 1991 R&D budget (thousand DM): 3,500

6. Field of work (research and activity profile):
- Equipment development; aerial survey cameras (LMK 2000), terrestrial recording cameras (UMK 1000), analytic stereo evaluation equipment (Dicomat), image interpretation equipment (Photopret, Visopret, Visoflex, Kartoflex modular system)
 - Integration of modern microelectronics (8- and 16-bit microprocessors as well as microcontrollers) in precision optical and mechanical components; firmware development for intelligent equipment controls and drive systems with demanding parameters; development of user software for image evaluation processes, mapping functions and database system connections
7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Participation in the various working groups of the ISPRS (International Society for Photogrammetry and Remote Sensing).

(140) KRISTALLKOMPONENTEN GMBH

Carl-Zeiss-Str. 1, 0-6900 Jena 1, Tel.: 8 30

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1991
3. Managing director: Dr. Gunther Wehrhan
4. Total employees, of whom R&D personnel (persons): 45, 12

5. 1991 R&D budget (thousand DM): 1,460

6. Field of work (research and activity profile):

—Development, production and operation of high-quality optical crystalline media, quality-tested semi-finished products and complete crystal components for use in optics and laser technology. Development for the range of materials, which includes 18 crystal types, is concentrated on the following, among others:

- Calcium fluorite (CaF₂) for high-performance optics
- Lithium fluoride (LiF) for X-ray applications
- Yttrium aluminum garnet doped with neodymium (YAG, Nd) for solid-state lasers
- Optical quartz for various application areas in the optical industry

—Purchase of crystals and their further processing into quality-tested semi-finished products and components, which are not part of the production program of the company, and their resale in the original or processed form to customers, as well as preparation of expert opinions and tests of raw crystals, semi-finished products and components from the world market according to customer demand

7. Cooperation with enterprises and institutes in the old laender: none.
8. International cooperation: none.

(141) JENOPTIK CARL ZEISS JENA GMBH, PLANT FOR DEVELOPMENT OF SCIENTIFIC AND TECHNICAL EQUIPMENT

Goeschwitzer Str. 33, 0-6905 Jena-Goeschwitz, Tel.: 7 68 61 10

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Reinhold
4. Total employees, of whom R&D personnel (persons): 847, 330
5. 1991 R&D budget (thousand DM): 38,000

6. Field of work (research and activity profile):

—Space technology Complex realization of projects for manned and unmanned space flight

—Image processing Utilization of digital methods based on CCD arrays and optically parallel image processing

—Infrared technology Development and production of infrared elements, components and objects

—Laser technology Development and manufacture of gas and solid state lasers as well as laser applications

—Optical layers Preparation of optical layer elements

—Measuring, testing and adjustment tools

—Materials laboratory

7. Cooperation with enterprises and institutes in the old laender: Universities and companies in the industry.

8. International cooperation: Cooperation with institutes in the USSR and Eastern Europe.

(142) JENOPTIK CARL ZEISS GMBH

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 7 68 83 95

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Bienert

4. Total employees, of whom R&D personnel (persons): 320, 100

5. 1991 R&D budget (thousand DM): 7,000

6. Field of work (research and activity profile):

—Development of processes, equipment and accessories for:

- Molecular spectrometry
- Analytic photometry
- Atomic absorption spectrometry
- Emission spectrometry
- Refractometry
- for use in chemical and biochemical analysis of liquid and solid samples, in environmental analysis of soils, water and air, in clinical-chemical laboratory diagnostics, in analysis by industry as well as by agriculture and the food industry

—Development and adjustment of components and process components for optical-electronic analysis procedures and equipment such as monochromators with measurement and evaluation electronics, polychromators with line and surface detectors, etc.

—Software for PC use, such as physical-optical calculation methods, statistics, calibration, tests for the quality of the analysis

—Connection to laboratory information and management systems

—Hardware solutions for SM drive controls, processing of measured values and power supply for special sources

7. Cooperation with enterprises and institutes in the old laender: Westfalia Separator company, Oelde.

8. International cooperation: The Clandon company and Considine company/England.

(143) JENOPTIK CARL ZEISS JENA GMBH, DIVISION FOR INDUSTRIAL METROLOGY

Tatzendpromenade 1a, 0-6900 Jena, Tel.: 83 54 82

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Herrmann Dietrich

4. Total employees, of whom R&D personnel (persons): 40, 4

5. 1991 R&D budget (thousand DM): 2,700

6. Field of work (research and activity profile):

—Development of high-precision mechanical and optical measuring equipment for research, measuring laboratories and manufacturing in the fields of:

- Single dimension/length measurement
- Multiple dimension measurement (2/3 dimension measuring equipment)
- Image processing
- Angle measurement
- Surface and form measurement
- Incremental and absolute laser distance measurement
- Numerical measuring systems
- with the components: Mechanics development, laboratory tests, optics development, electronics and software development for controls, evaluation and networking
- as well as their application in CAD systems according to ISO 9000 through 9004

—Research projects for the field of ultraprecision metrology

7. Cooperation with enterprises and institutes in the old laender: MBB, Ottobrunn Mercedes Benz, Stuttgart EMS-Technik, Leer Hightec, St. Ingbert/Saarland.

8. International cooperation: FIAN, Moscow (Physical Institute of the Academy of Sciences of the USSR).

(144) JENOPTIK CARL ZEISS JENA GMBH, DIVISION FOR ASTRONOMY EQUIPMENT, PRODUCT DEVELOPMENT

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 8 30

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990 (1897)

3. Managing director: Mr. Klaus Meinig

4. Total employees, of whom R&D personnel (persons): 150, 48

5. 1991 R&D budget (thousand DM): 2,600

6. Field of work (research and activity profile):

- Product manufacture: Astronomical projection equipment for hemispheric projections (planetariums); amateur telescopes with between 63 and 180 mm aperture, intermediate-size telescopes between 300 and 2000 mm aperture

- Design of complex mechanical, optical and electronic systems for precision engineering, with active and passive optical systems, mountings and guides with high precision, drives, illuminators, bearings, etc.
- Development of drive and brightness controls for various needs, from simple PC controls to complex modular multiprocessor systems
- Production of software solutions for equipment controls with problem-adapted 8- to 32-bit processors with special interfaces, for single user or realtime-multitasking operating systems

7. Cooperation with enterprises and institutes in the old laender: Messerschmidt/Boelkow/Blohm-Kommunikationssysteme, Munich Krupp Industrietechnik, Duisburg-Rheinhausen Siemens AG, West Berlin 4H-Hubel, Blieskastel Institute of Astronomy of Bochum University Stuttgart Planetarium.

8. International cooperation: IAU [International Astronomical Union], IPS [International Planetarium Society], IPDC [International Planetarium Directors' Conference] Vilati, Budapest/Hungary.

(145) DIVISION FOR SEMICONDUCTOR PRODUCTION EQUIPMENT OF JENOPTIK CARL ZEISS JENA GMBH

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 8 30

1. Industry: Electrical, Precision Engineering and Optics
2. Legal form, year founded: GmbH, 1990 (1970)
3. Managing director: Mr. Reimer
4. Total employees, of whom R&D personnel (persons): 600, 250
5. 1991 R&D budget (thousand DM): 30,000
6. Field of work (research and activity profile):

- R&D services for optical and electron beam lithographic facilities with the highest structural resolution and productivity
- Development of high-power optical and electron-optical systems, precision mechanics, object handling, laser measuring technology, vacuum technology, electronic control and software, data processing, measurement technology, facility testing and application for high-resolution resistance illumination

7. Cooperation with enterprises and institutes in the old laender: IMT/Berlin, IMS/Stuttgart, Siemens/Munich.

8. International cooperation: EC institutions.

(146) JENOPTIK CARL ZEISS JENA GMBH, RESEARCH CENTER FOR OPTICAL MEDICAL TECHNOLOGY

Carl-Zeiss-Str. 1, 0-6900 Jena, Tel.: 8 30

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Fritsch

4. Total employees, of whom R&D personnel (persons): 50, 50

5. 1991 R&D budget (thousand DM): 5,000

6. Field of work (research and activity profile):

—Product development of equipment for the medical system principally based on optical principles, for direct examination and treatment of patients, particularly:

- Surgical and examination microscopes
- Ophthalmological diagnosis and therapy instruments
- Instruments for eyeglass and contact lens determination
- X-ray display cameras

7. Cooperation with enterprises and institutes in the old laender: Fraunhofer Society St. Ingbert.

8. International cooperation: Akturoentgen Aktubinsk/USSR.

(147) DESIGN UND CONSTRUCTION GMBH

Cuno-Hofmeister-Str. 29, PSF 136, 0-6400 Sonneberg

1. Industry: Iron, Sheetmetal and Metal Goods, Musical Instruments, Sports Equipment, Toys and Jewelry
2. Legal form, year founded: GmbH, 1990
3. Managing director: Dipl. Engr. Peter Hoehn
4. Total employees, of whom R&D personnel (persons): 5, 4
5. 1991 R&D budget (thousand DM): 250
6. Field of work (research and activity profile):

- Product development for toys
- Design, building as well as model and pattern construction
- Development, design, building and model and pattern construction for advertising media for municipal sectors
- Graphic design

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: none.

(148) TEXTIL-SERVICE GMBH I.A.

Zeulenrodaer Str. 42, 0-6600 Greiz, Tel.: 7 30

1. Industry: Leather, Textile and Garment Industry
2. Legal form, year founded: GmbH i.A., 1990
3. Managing director: Engr. Dieter Obenauf

4. Total employees, of whom R&D personnel (persons):
49, 28

5. 1991 R&D budget (thousand DM): 1,000

6. Field of work (research and activity profile):

Research and scientific-technical service center for Karl-Marx-University in wool and silk processing in Thuringia and Saxony:

- Applied and technological research at the levels of thread formation, weave making and textile finishing, including testing and expert opinions
- Optimization of technical processes in wool processing, in waste water pollution from heavy metals in dye mills as well as new methods for antifelting of wool
- New technologies in thread formation, production of new types of sports textiles and for environmental protection
- Transfer of know-how and textile management

7. Cooperation with enterprises and institutes in the old laender: German Wool Research Institute of Aachen Technical University, German Textile Research Institute Nord-West, Krefeld Institute for Textile and Process Technology, Denkendorf Hansa-Textilchemie Oyten bei Bremen.

8. International cooperation: none

(149) INSTITUTE FOR CONSTRUCTION MATERIALS WEIMAR

Geschwister-Scholl-Str. 7a, 0-5300 Weimar, Tel.: 31 71

1. Industry: Construction Industry and Other

2. Legal form, year founded: Public Law Establishment, 1951

3. Managing director: Prof. Dr. Lucke

4. Total employees, of whom R&D personnel (persons):
125, 90

5. 1991 R&D budget (thousand DM): 6,600

6. Field of work (research and activity profile):

—Combination of application-oriented construction material research, materials testing and technical consulting in the fields of:

- Raw materials for construction
- Environmental protection and recycling of waste products
- Durability of construction materials and components
- Building diagnostics and repair
- Cement-bound fiber construction and work materials
- Corrosion protection of steel-reinforcements in foam mortar
- Structurally engineered heat protection

—Materials testing establishment with construction supervision as an independent testing station and accreditation as an outside monitor of wall and ceiling stone, B II concrete, ready-mix concrete, preassembled components/finished products, freshly manufactured and dry mortars, additives

—Operation of complex test chambers for temperature and humidity evaluation of components and building structures

—Advisory agency for asbestos materials with supraregional authority

—Information transfer agency for construction materials—ARCONIS—Thuringia, as well as input to the databases RSWB, MONUDOC and ICONDA

7. Cooperation with enterprises and institutes in the old laender: Research Association for Ready-Mix Concrete, regional association, Hoechst AG, Eternit AG, Gebr. Knauf Westdeutsche Gipswerke, Heidelberger Zement AG, Hebel Holding company, Fuerstenfeldbrueck, Haendle company, Muehlacker, Braas company, Schwenk company, Ulm, etc.

8. International cooperation: Central Building and Construction Material Institute Madrid (CEDEX).

(150) GEOTHERMIE NUEBRANDENBURG GMBH

Gerstenstr. 9, PSF 336, 0-2000 Neubrandenburg, Tel.: 53 41

1. Industry: Energy Industry and Water Supply

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dr. Engr. H. Schneider

4. Total employees, of whom R&D personnel (persons):
46, 20

5. 1991 R&D budget (thousand DM): 2,363

6. Field of work (research and activity profile):

- Planning and construction of facilities for geothermal heating
- Heat supply concepts making use of alternative or regenerative energy sources
- Geothermal resources and extended heat storage in aquifers

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Obiedinemi Nedra, Yaroslavl, USSR Moscow Energetics Institute, USSR.

(151) INFORMATIONSSYSTEM & DATA PROCESSING-CONSULTING GMBH ROSTOCK, INCORPORATED GMBH

Doberaner Str. 110-111, 0-2500 Rostock

1. Industry: Electrical, Precision Engineering and Optics

2. Legal form, year founded: GmbH, 1990
3. Managing director: Dr. Volker Koehler, Claus Lang
4. Total employees, of whom R&D personnel (persons): 195, 77
5. 1991 R&D budget (thousand DM): 818
6. Field of work (research and activity profile):

- Production of software products and development as well as introduction of program systems and projects within the process chain from technical preparation through to production
- Development and implementation of projects in information and communications technology
- Marketing in the field of information technology and office automation
- Business consulting
- Performance of computer services
- Organization and implementation of training services and presentations

7. Cooperation with enterprises and institutes in the old laender: Research Center of German Shipbuilding, regional association, Hamburg (FDS) Bremer Vulkan AG, Schiffbau- und Maschinenfabrik Bremen (BV) Berlin Technical University, Institute for Ships and Marine Technology (ISM) Bremer Institute for Operations and Applied Ergonomics of Bremen University (BIBA), Development Center for Marine and Industrial Technology GmbH (EMIT), Optical Systems Technology & Co KG (OPTIS).

8. International cooperation: none.

(152) INSTITUTE FOR POTATO RESEARCH

0-2551 Gross Luesewitz, Tel.: 50 (Sanitz)

1. Industry: Food and Semi-Luxury Consumables Industry
2. Legal form, year founded: Public Law Establishment, 1949
3. Managing director: Prof. Dr. Dieter Kleinhempel
4. Total employees, of whom R&D personnel (persons): 412, 353
5. 1991 R&D budget (thousand DM): 9,671
6. Field of work (research and activity profile):

- Cultivation research for medium-sized potato growing, preparation of evaluated diploid material, distribution of tetraploid culture materials with phytophthora and pallida resistance as well as with combined resistance and quality properties
- Maintenance of cultured potato and wild potato varieties, evaluation, catalogization and preparation upon request
- Nematode resistance testing, pathotype determination, population analyses

- Resistance research and determination of type susceptibilities with respect to viral and bacterial infections and mycoses
- Enzyme extraction, purification and enzymological studies of pectate lyases and cellulases, genetically supported cellulase extraction
- Determination of the physiological capability of potato genotypes, low-input behavior, root activity, photosynthetic activity, yield morphology
- Biochemical studies on shoot and tuber content materials, including electrophoretic genotype identification
- Development of production methods with suitability for stable and unstressed agricultural ecosystems

7. Cooperation with enterprises and institutes in the old laender: approx. 15 business enterprises and university establishments.

8. International cooperation: International Potato Center, Lima, Peru Executive board and sections of the European Association for Potato Research (EAPR), European Chips and Snacks Association (ECSA), Institute for Potato Farming Koronevo, Kraskovo, Moscow region Byelarusian Research Institute for Potatoes, Fruit and Vegetables, Minsk, Samokhvalovich-Minsk, and others.

(153) INSTITUTE FOR PLANT CULTIVATION

0-2601 Guelzow-Guestrow

1. Industry: Food and Semi-Luxury Consumables Industry
2. Legal form, year founded: Public Law Establishment, 1962
3. Managing director: Prof. Dr. Arno Winkel
4. Total employees, of whom R&D personnel (persons): 193, 130
5. 1991 R&D budget (thousand DM): 6,569
6. Field of work (research and activity profile):

—Grain cultivation research

- Physiological research and gene bank work
- Type and generic hybridization as well as research on genetic resistance
- Quality research

—Agrotechnical research and experimentation

7. Cooperation with enterprises and institutes in the old laender: Institute for Plant Farming and Plant Cultivation, Goettingen Institute for Plant Cultivation, Seed Research and Population Genetics of Hohenheim University, Institute for Applied Genetics of Berlin Free University Saatzzucht Dr. h.c. R, Carsten, and other university establishments.

8. International cooperation: Institute for Scientific and Industrial Research, Christchurch, New Zealand Agricultural Academy Wroclaw, Poland Agricultural Academy Szczecin, Poland Research Institute for Grain Cultivation, Szeged, Hungary.

(154) CIS GMBH, SOCIETY FOR COMPUTER INTEGRATION AND SOFTWARE DEVELOPMENT MBH

Rosa-Luxemburg-Str. 16-18. 0-2500 Rostock, Tel.: 38 56 28

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Wilfried Maaser, Dr. Ludwig Schrenk, Bernd Becker

4. Total employees, of whom R&D personnel (persons): 29, 15

5. 1991 R&D budget (thousand DM): 1,400

6. Field of work (research and activity profile):

- Analysis, development and production of construction-specific and construction-independent special and general CAD/CAM solutions for MS/DOS and UNIX systems based on in-house or outside software products in C, FORTRAN or other programming languages
- Operations analysis, generation of overall data processing concepts and solutions including network solutions
- Design of user-friendly operator surfaces and their implementation in data processing projects

7. Cooperation with enterprises and institutes in the old laender: Ingenieurbuero Krebs und Kiefer, Darmstadt ZGDV, Darmstadt Working Association ISYBAU of the building authorities BM Construction Branch Office, Berlin.

8. International cooperation: none.

(155) SHIPBUILDING ENGINEERING CENTER GMBH

Carl-Hopp-Str. 19 a, 0-2510 Rostock, Tel.:

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH, 1990

3. Managing director: Dipl. Engr. Joachim Greven, Dipl. Engr. Dieter Schwinkendorf

4. Total employees, of whom R&D personnel (persons): 275, 173

5. 1991 R&D budget (thousand DM): 3,300

6. Field of work (research and activity profile):

Product and services for the shipbuilding industry:

—Development of sea-going and inland waterway vessels

—Scientific and technical services for development of automation technology, cargo handling and equipment:

- Development, planning, design of electrical drive navigation, switching devices and energy production facilities, model building, startup, testing, approval and service with special experience in electrical drive installations, winch controllers for fishing as well as control systems with special length measuring technique
- Positioning and monitoring systems based on memory-programmable controllers
- Application of industrial controllers for regulating auxiliary and refrigeration cycles

—Technology and management

—Services

7. Cooperation with enterprises and institutes in the old laender: none.

8. International cooperation: Krylov Institute, Leningrad CTO Gdansk.

(156) ROSTOCKER WIRTSCHAFTS- UND INGENIEURBUERO (RWI)

Lagerstr. 26, 0-2500 Rostock, Tel.: 2 08 21 70

1. Industry: Construction Industry and Other

2. Legal form, year founded: GmbH i.A., 1990

3. Managing director: Dr. Dirk Rarrasch

4. Total employees, of whom R&D personnel (persons): 39, 25

5. 1991 R&D budget (thousand DM): 2,200

6. Field of work (research and activity profile):

—Scientific-technical and financial services for:

- Complex space and traffic development
- Infrastructure design
- Innovative transportation technologies and logistics
- Computer-supported design and rationalization of processes
- Protection and cleanup in the environment
- Projects in traffic engineering

—Information processing, preparation and distribution

—Operation, consulting about preparation for implementation, servicing as well as training for users of electronic data processing, particularly recording and communications technology

7. Cooperation with enterprises and institutes in the old laender: SNV Study Association for Commuter Traffic mbH, Hamburg Institute for Maritime Transport and

Logistics, Bremen DYWIDAG—Dyckerhof & Wichmann AG, Hamburg subsidiary Deerberg Systems, Oldenburg Technology Transfer Center of Bremerhaven College Wilhelmshaven Harbor Industry Association.

8. International cooperation: Central Research Institute of the Naval Fleet of the USSR (ZNIIMF), Leningrad All-Union Institute for Naval Economy of the USSR (Soyuzmornii-projekt), Moscow Institute for Water Transportation (Wodentransport), Varna (Bulgaria) Planning Bureau for Hydraulic Engineering (projmors), Gdansk Instytut Morski, Gdansk.

(157) INSTITUTE FOR MARINE ENGINEERING AND ENVIRONMENTAL PROTECTION

Am Strom 109, 0-2530 Warnemuende, Tel.: 56-0

1. Industry: Construction Industry and Other
2. Legal form, year founded: GmbH, 1990
3. Managing director: Prof. Dr. Eckhardt, E. Zielke

4. Total employees, of whom R&D personnel (persons): 86, 67

5. 1991 R&D budget (thousand DM): 4,140

6. Field of work (research and activity profile):

- Planning for ships
- Design and construction of ships and other technical equipment and facilities
- Creation of CAD solutions for designing ships
- Analysis and ecological evaluation of test premises
- Complex measuring systems for monitoring the environment
- Measurement and assessment of environmental data
- Marine technology
- Underwater tools
- Logistics

7. Cooperation with enterprises and institutes in the old laender: Association for Promoting Marine Technology, Hamburg Research Center for German Shipbuilding, Hamburg.

8. International cooperation: none.