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JPRS: 4635

22 May 1961

SURVEY OF SOVIET HEAVY INDUSTRY (16)

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SURVEY OF SOVIET HEAVY INDUSTRY (16)

This is a series report, published approximately biweekly, which contains items of interest on Soviet heavy industry as reflected in articles, short news items, announcements, etc., appearing in various USSR and other publications. The items contained in this report fall under the broad categories listed below in the table of contents.

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Metallurgy and Mining

Drawing Mill

A Perovo plant near Moscow will produce an experimental "5/750" drawing mill for the production of wire with high-tensile strength. The mill has been designed by the All-Union Scientific Research Institute of Heavy Machine Construction. (Moscow, Stroitel'naya Gazeta, 12 March 1961)

Pipe Mill

The Elektrostal' Heavy Machinery Plant is currently assembling a KhPT-250 heavy-duty mill for cold-rolling of pipes. (Ekonomicheskaya Gazeta, 4 January 1961)

Conveyer Bridge

The Dnepropetrovsk Metallurgical Equipment Plant is making a dump-forming conveyer bridge for open-pit mining of manganese ore. It will be over 250 meters long and will have a productivity of 3,750 cu m of ore per hour. (Pravda Ukrainy, 18 January 1961)

PIPE MILL

At the Electrosteel Heavy Machinery Plant tests have been completed on a unique mill for cold-rolling pipes of diameters of up to 250 mm. This complex unit is the country's first. The new mill is designed for rolling cylindrical seamless pipes of carbon and alloy steel. It is distinguished from similar units of domestic and foreign make by the high degree of mechanization and automation of production processes. The equipment for the 250 mill is being shipped to the customer in parts, and its assembly will soon begin. Putting the new unit into operation will save the state large amounts of money. (Leninskoye Znamya, 31 January 1961. Partial translation)

Wire-drawing Mills

The Alma-Ata Heavy Machinery Plant is the country's leading enterprise in the production of drawing mills for copper, steel and aluminum wire and small-diameter pipes. The total volume of production for all types of mechanisms is to increase by four times according to the Seven Year Plan. The plant must assimilate and begin production of completely new types of drawing mills for tungsten and molybdenum wire and variable section pipes. At present the enterprise is being rebuilt and expanded. This work should be completed in 1963. Unfortunately, the enterprise will certainly not meet the deadline. This is only because the Kazakh SSR State Planning Commission and the Alma-Altinskiy Sovnarkhoz have provided little funds. Last year a little more than one million rubles was earmarked and expended. About the same amount is earmarked for 1961. If this continues the enterprise will be reconstructed by the end of 1965 and not by the end of 1963. The boiler room, the charge bay of the casting shop and two shop block bays should have been put into operation as early as 1959. But 1960 has come to an end, and these have not yet been completed. (Ekonomicheskaya Gazeta, 5 January 1961. Partial translation)

ELECTRICAL POWER EQUIPMENT

New Gas Turbine

The technical design for the world's largest dual-shaft gas turbine unit has been developed by the designers of the Khar'kov Turbine Plant imeni Kirov. The unique unit has a capacity of 100,000 kw -- almost four times greater than foreign equipment of the same type. Natural gas burned in special chambers will serve as fuel for the unit. It heats to the necessary temperature air which has been supercharged by compressors. A stream of gas-air mixture passes through the turbine blades and activates them. There is no more need for expensive steam boilers and condensors. In comparison with two 50,000-kw gas turbine units, the 100,000 kw capacity unit will cost 35% less, and production space occupied by it in the machine section of the electric power plant will be decreased by 40%. Little operating personnel will be required. (Pravda Ukrainy, 7 January 1961. Partial translation)

Boiler Defects

We should relate in detail the case of the boiler which was delivered by the Taganrog "Krasnyy Kotel'shchik" Plant to the Pridneprovskaya State Regional Electric Power Plant. Naturally there had been complaints here previously. But in this case it was not a matter merely of paper. Two defective superheating chambers were returned to the plant, each of them 14 meters in length. The power engineers, after the first test run on the powerful boiler, discovered cracks in the welding seams of the secondary superheating chamber fittings. It was impossible to rectify these defects on the spot. Therefore, two chambers were dismounted and returned to Taganrog. What else is there to say? We can only say that the shutdown of such a powerful boiler, even for 24 hours, means a great loss to electrical power engineering. Not much time has passed and once again we have an "extraordinary" event. This time it happened to an even more powerful boiler set up at the Zmiyevskaya Power Plant. Through the fault of the boiler-mechanical assembly shop types of steel were for the production of fittings and bases. Now seven chambers have already been returned to the plant for repair of defects. Other facts

could be brought out. A boiler at Heat and Power Plant No 12, "Mosenergo", operated for only two weeks. Cracks appeared in the welded connections. It is reported from "Lenenergo" that in one of the boilers about 5000 defects appeared in and around pipe bends. There is a particularly large percentage of defective production in the casting shop. Losses from this defective production amount to hundreds of thousands of rubles. The cast parts often reveal cracks, blisters and dross. We should say that the "Krasnyy Kotel'shchik" is not always the only guilty party in the production of poor quality goods. Many complaints have been lodged by the boilermakers against the poor quality pipes produced by the Nikopol' Plant as well as by the Dnepropetrovsk Plant imeni V. I. Lenin. (Trud, 6 October 1960. Partial translation)

Turbine Test Stand

The Kaunas Pyargale Plant is installing a special stand for testing AR-0.75-11 turbines. (Sovetskaya Litva, 4 January 1961)

PRESS EQUIPMENT

Hydraulic Press

The basic parts of the 30,000-ton hydraulic press produced by the Novo-Kramatorsk Machinery Plant are made with the application of electroslag welding method. This method was utilized by the plant in the production of a 70,000-ton capacity press, which saved about 400 million rubles of capital expenditures. (Kommunist, December 1960, page 39)

New Double-action Press

Among the new powerful units incorporated and produced lately by the Kolomna Machine Tool constructors, the P-238 heavy press, double-action and with hydraulic cushion, is outstanding. The weight of the press is about 2000 tons. The remarkable unit has no equal. The press is completely automatic and is operated from one panel. All auxiliary operations have been mechanized. Use of the new presses will sharply increase labor productivity. (Leninskoye Znamya, 31 January 1961. Full translation)

Press Castings

The planned cost of a ton of cast-iron at the Voronezh Heavy Mechanical Press Plant is considerably higher than at other enterprises with the same types of castings. In 1960 the average planned cost of a ton of cast-iron at the Voronezh plant imeni Kalinin was 1,265 rubles, while at the Heavy Mechanical Press Plant it was 1,950 rubles. In July the cost of a ton of cast-iron at the Plant imeni Kalinin was 1,250 rubles, while at the Heavy Mechanical Press Plant -- 2,380 rubles. The plant expenditures in 1959 increased in comparison with 1958 by 300,000 rubles, and for nine months of the past year non-production expenditures and all types of overexpenditures comprised about three million rubles. (Ekonomicheskaya Gazeta, 28 January 1961. Partial translation)

EARTH MOVING AND CONSTRUCTION

Excavators

More than twelve years have passed since the time that the Uralmash Plant produced a powerful self-propelled excavator with a 10 cubic meter scoop capacity and a 75-meter boom length. For the first time powerful hydraulic drive was used for the basis of the propulsion mechanism. The workers of the Uralmash Plant, the Gidroprivod Plant and the designers of the Special Design Bureau in Khar'kov worked together to build a self-propelled drag-line. Under a crash program they designed, produced and tested hydraulic pumps and complex equipment. It is true that the weaknesses of this branch of technology appeared at that time. The fact was that the NPR-200 pump produced by Gidroprivod has a capacity of only 85 kw, and 500 kw were necessary for the machine. Instead of one it was necessary to mount six pumps. In past years Soviet technology has made great advances. The collective of the Uralmash Plant has begun to produce improved excavators with scoop capacities of from 14 to 25 cubic meters and boom lengths from 75 to 100 meters. For the first time in history the super-

Excavators (cont'd)

powerful ESh-25/100 dragline was produced here. But in order to produce such machinery it is necessary to have regulating pumps of 250-kw capacity as well as suitable hydraulic engines. And where can these be found if the most powerful pumps are still the NPR-200, just as twelve to 15 years ago. Much time has passed, yet we are still marking time!

When the powerful ESh-25/100 excavator was being prepared for production, the special design bureau was instructed to design a 250-kw pump and the Khar'kov Gidroprivod Plant was to produce it. The enterprise was able to carry out this responsible task only with the aid of other plants. In order to test the pump for a short time and only at one-half capacity, the shop plants had to be shut down. And yet this plant is considered to be the greatest specialized enterprise in the country for production of hydraulic drive mechanisms! Not long ago the designers of Uralmash completed the technical plans for the ESh-50/125 giant excavator, which is far ahead of all models known today. But powerful 800-1000-kw pumps will be required for it. This type of pump is

Excavators (cont'd)

essential for boring vertical shafts. They will be able to be used for deep oil well drilling machinery, cold pipe-rolling mills and other modern equipment. Once more the question arises as to where these powerful pumps can be found? Specialists of scientific research institutes, although they have elaborated many hydraulic drive mechanisms and drawn up working blueprints, their achievements have not yet been embodied in metal. The Gosplan appointed the Berdyanskiy Mechanical Plant to produce the special equipment. It would seem that the years of work by the designers were over at last. Now it is a matter of the practical application of hydraulic drive mechanisms in the new machinery. However, the directors ofthe the Berdyanskiy Plant frustrated our hopes in stating that nobody said anything official to them about the plant specialization. We have no idea why this statement was made, but fact remains fact. The important resolution remained merely on paper. In the past two years the Berdyanskiy Plant has not produced one hydraulic equipment complex for industry, and the All-Union Scientific Research Institute for Metallurgical Machine

Excavators (cont'd)

Construction, engaged in the elaboration of pump design, produced at the Podol'sk Mechanical Plant only one pump model, and this was of low capacity. (Izvestiya, 29 January 1961. Partial translation)

Earth-milling Machine

The Bryansk Road Machinery Plant has made a new D-530 mounted earth-milling machine designed for the construction of highways. It is 25% more productive than previously made D-272 machines. (Moscow, Stroitel'naya Gazeta, 3 March 1961)

PUMPS AND COMPRESSORS

Main Pumps

The Sumy Pump Plant is currently stand-testing the first of the four main pumps which will be installed at the main crude-oil pumping station, the "Druzhba Narodov". (Izvestiya, 31 January 1961)

Compressors for Cuba

The Tashkent Transport Machinery Plant has received an order for 40 compressor stations for Cuba. (Tashkent, Pravda Vostoka, 12 January 1961)

PETROLEUM INDUSTRY

Turbodrills

The Kaluga Machinery Plant is producing hydraulic transmissions for turbodrills used in the petroleum industry in the USSR and other countries. (Ekonomicheskaya Gazeta, 25 January 1961)

HOIST AND TRANSPORT MECHANISMS

Tower Crane

The Rzhev Foundry and Machinery Plant has made an experimental model of the KB-16 tower crane, whereas an experimental model of the KB-60 tower crane is being produced by the Nikopol' Construction Machinery Plant, and an experimental model of the KB-100 crane is being made by the Khar'kov Construction Machinery Plant. It is also planned to organize the production of the experimental KB-4 and KB-25 cranes at the Rzhev Plant and of the KB-40 crane at the L'vov Mechanization and Automation Equipment Plant. The Moscow Severyanin Plant will produce KB-160 cranes and a Leningrad plant will make KB-250 cranes. (Moscow, Mekhanizatsiya Stroitel'stva, February 1961, page 5)

MISCELLANEOUS

Casting Drums

The Tbilisi Machinery Plant imeni Kalinin started the production of drums of a new design for cleaning castings. In 1961 the plant will produce 350 such drums, which will be fully mechanized and covered with sound insulating materials. (Vecherniy Tbilisi, 5 October 1960)

Universal Manipulator

The Chirchik Uzbekkhimmash Plant has designed and made the M-800 universal manipulator for welding parts either under flux or in a medium of carbon dioxide gas. (Ekonomicheskaya Gazeta, 18 January 1961)

Machinery Production

In 1961 the Ashkhabad Machinery Plant imeni 20-letiye Turkmenskoy SSR will organize the series production of mounted D-400-444 bulldozer * equipment, oil refinery pumps of various types, and dynamometers. (Turkmenskaya Iskra, 19 January 1961)

/Comment: the original text has a number of suspicious gaps between words such as the line containing only the two words "bulldozer equipment" and a large space between them, which could indicate the deletion of one or more words by a censor./

CHEMICAL INDUSTRY

Scrubbers

The Bryansk Phosphorite Plant is advertizing for sale two new "S-1.3" scrubbers made by the Novosibirsk Trud Plant. (Ekonomicheskaya Gazeta, 28 January 1961)

Chemical Equipment I

The collective of the Uralkhimmash Plant is constantly increasing production. In the past five years production of chemical equipment has doubled. It is representative that since the May Plenum of the CC of the Party (1958) the production of equipment and apparatus for chemical enterprises has increased more than one and one half times. In the two past years 38 new types of equipment have been incorporated in production. Naturally this does not mean that the collective of Uralkhimmash is going to be satisfied with what has already been achieved. Carefully analyzing their own reserves, the workers and engineers of the plant resolved to achieve the level of the production plan for the end of the Seven Year Plan, by 1963. In order to carry out our obligations we are using two methods -- we are undertaking new construction and improving existing production. An urgent task is a considerable improvement in planning. Often tasks for the production of new machinery and equipment arrive quite late at the plant, and the plans contain major defects. There is no clear-cut coordination in the delivery of parts and materials. It is a fact that

Chemical Equipment I (cont'd)

coordination between technical conditions for new materials and component parts as well as the delivery of these require many months. For example, the Leningrad branch of the Scientific Research Institute of Chemical Machinery Construction and the State Institute for Design and Planning in the Pulp and Paper Industry designed acid-resistant fittings and cooking boilers for the Krasnoyarsk Pulp and Paper Combine. But the Leningrad Plant imeni Lepse, which received the production order, declined to fill this order. It was necessary to organize the production of the acid-resistant fittings at our plant.

Or take the fact that the Uralkhimmash Plant was instructed to produce reactors for extracting caprolactam at the Lisichanskiy Chemical Combine. For many months the RSFSR Gosplan could not organize the delivery of forged reactor bodies. Only recently we were able to sign a contract with a new supplier for the production of these bodies. We do not always receive necessary materials in time. The Uralkhimmash Plant was to produce a bimetallic activator for the Vladimir Chemical Plant. A year went by and we did not receive the required metal. It is necessary to produce con-

Chemical Equipment I (cont'd)

tact equipment for the Stalinogorsk Chemical Combine. The planning organizations have taken a year and they still cannot decide who shall deliver the rust-resistant grill to us. Sometimes it is planned to use materials, the production of which has not yet begun. In the technical plans for autoclaves for the Karbolit Plant, "Giproplast" planned a cast frame of special steel, the production of which has not been undertaken yet by anyone. This led to a breakdown in equipment delivery. There are many similar examples. Institute workers should take this into consideration and not send abstract plans to machinery plants which cannot be implemented due to lack of material-technical supply. It is also necessary for the RSFSR Gosplan and the Higher Economic Council to pay more attention to the production of new materials as well as component parts.

An important reserve for increasing the production of chemical equipment at our plant is a purposeful use of its capacity. What is taking place at present? A considerable portion of our production is being sent to other enterprises in the form of cooperative delivery of castings, forgings,

Chemical Equipment I (cont'd)

sheet and volumetrical press-working, electrodes. We cooperatively produce reduction gears, shoring materials, tools, electrotechnical equipment, etc. There were many plans developed for the formation of strictly specialized enterprises, but they have not been realized. Our plant produces only about one third of total gross and commodity production for the chemical industry. The Groznyy Low-pressure Polyethylene Plant, the Voskresensk Chemical Combine and many other enterprises are awaiting urgent delivery of equipment from us. Instead of this, Uralkhimmash is producing commodities not in its line. An end should be put to this. Construction and reconstruction of the plant is progressing in an unsatisfactory manner. The Sverdlovsk Yuzhgorstroy Trust, which is handling this work, did not fulfill its task for our plant in 1959. It is significant that on the whole the trust successfully carried out its plan. This testifies once more to the insufficient attention devoted by construction men to putting the capacities of the chemical machinery industry into operation. (Ekonomicheskaya Gazeta, 29 January 1961. Partial translation)

Chemical Equipment II

For a person coming to the Chemical Machinery Plant for the first time, there is something in the Tambov Komsomolets assembly shop which probably will seem strange, not fitting within the framework of the usual picture of modern production. Everywhere there are piles of assembled units, pipes, covers, strips of metal. The brigades wander from spot to spot. Today they assemble one unit and tomorrow another at the other end of the bay. This is explained quite simply -- an extremely individual type of production! What else can one expect from a plant where an order for three or four machines of identical design is called a series? At first glance such reasoning seems consistant. But A. A. Smitskoy, director of the Komsomolets, has another opinion. "No, no!" he retorts energetically. "Things can be organized differently in the chemical machinery industry. This is testified to by our Tambov experience... There are four specialized chemical machinery plants in the Tambovskiy Sovnarkhoz, and when you acquaint yourself with their operations, you will see what a tremendous leap forward this extremely complicated branch of machinery construction has made since

Chemical Equipment II (cont'd)

the May Plenum of the CC of the Party (1958)." One can begin by mentioning that the production of chemical equipment has almost doubled during this time in Tambov. And this increase has been achieved completely with what can be called inner reserves. Dozens of devices and units have been constructed at the plants, which allow the mechanization of many tiring operations of equipment mounting. These are the first indications of the basic technological renovation of the enterprises. Here is an example. The designers of the Komsomolets built a unique machine tool for coiling the tubes of a heat exchanger. This tiresome work was formerly done within a period of three to four months by four fitters. Now two workers can handle it in two weeks. Two to three years ago noone took the proposal seriously to organize the individual production of a production line at the plant. Such a person would simply be laughed at. Now that enthusiasts from the Tambov Boiler-mechanical Plant have boldly smashed the obsolete system of brigade fitting, they are being assailed on all sides for information, and this is no coincidence. The production line allows the productinn of two to three times as much machinery on the same production

Chemical Equipment II (cont'd)

space and with the same basic capacities. The line method of assembly has won general approval, but it has been incorporated at only one of the four enterprises. Last year the Tambov Machinery builders promised to produce several thousand rubles worth of equipment above plan, but they did not keep their word. In addition, several important orders for heavy chemical equipment were not filled.

The Komsomolets, in spite of its youthful name, is the oldest chemical machinery plant in Tambov. They say that a certain coppersmith, a genius in inventing clever devices, founded it during the First World War. Copper is still the favorite material. It is no surprise that it was decided to specialize the plant in the production of copper heat exchangers at the recent All-Union Technical Conference. What is amazing is the fact that the USSR Gosplan held the conference and soon went contrary to its resolutions. Four months had not gone by before the orders for copper equipment were rescinded and orders for steel equipment were sent instead. "We naturally cannot form an opinion on the causes," Smitskoy said, shrugging his shoulders. "I know only that

Chemical Equipment II (cont'd)

about this time orders for such equipment came to two other enterprises where they specialized in steel and aluminum equipment, as well as to other plants. I know because all of these other enterprises appealed to us to aid them and send them plans."

In the meantime this juggling of orders caused much harm to the Komsomolets collective, both material and morale-wise. The fact is that last year they were all set to start a production line for the fitting of coiled copper heat exchangers. They built the equipment themselves, elaborated the technology and solved all the problems. They were pleased, and yet it turned out that this was all in vain. The equipment was sold in order to keep it from rusting, and in this manner a portion of the expenditures was made up. But the sorrow remained. The production line at the boiler-mechanical plant is also threatened, where single-type tube-casing heat exchangers are fitted. Very few have been ordered for this year -- about one half the capacity of the production line. On the other hand the Komsomolets and the Morshanskiy Khimmash Plant have received such orders. But an order for the production of rectification columns was given to the

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Chemical Equipment II (cont'd)

Boiler-mechanical Plant, although they do not have the necessary conditions for the fitting of such tremendous equipment. The Komsomolets is in a better position to produce these. The extremely large product nomenclature also hinders the organization of line production at the plants. The shelves in the plant tool sheds are groaning under the weight of the equipment -- each apparatus is of original construction an requires new production technology. And yet it is our Soviet experience which has shown that the nomenclature of chemical equipment can be decreased sharply without any harm being done, and single-type standardized groups can be used. Such parts standards have already been elaborated for steel and tube-casing heat exchangers for general purposes, for welded capacities and columns. And yet each plant is engaging in the separate design of copper equipment, as well as equipment of non-metallic materials with protective coverings.

"The elaboration of parts standards naturally takes time," they say at the plants. "But they should at least keep to the standards which have already been approved..." Last year a directive letter was issued on the procedure of

Chemical Equipment II (cont'd)

drawing manufacturing papers for chemical machinery, which strictly forbade plans to be accepted which deviated from approved parts standards. This document contained the signatures of highly authorized representatives of the USSR Gosplan, the Committee on Chemistry, the Committee on Automation in Machinery Construction, Soyuzglavmash, and yet machinery builders are receiving just such orders. What sort of a directive letter is that?

I. I. Dayan, director of the Boiler-mechanical Plant, is quite worried. A telegram was just laid on his desk: the Kazan' Chemical Plant had completely cancelled its order for heat exchangers. The picture of past years was repeated at all four Tambov plants. What is happening? According to all the objective laws of production the machine builders should order materials and component parts about six months before the production on any piece of equipment begins. This period of six months is necessary for the designers to develop working models, as well as for the technologists to prepare for production. This means that orders for equipment should come to the plant no later than July of the preceeding year. But they never arrive earlier than November.

Chemical Equipment II (cont'd)

As experience has shown, an order is not a firm guarantee that the plant will actually produce a given piece of equipment. For insurance, the directors of plants, not waiting for orders, order materials and component parts. They order large quantities and it later becomes clear that they did not order the right items. For example, several hundred motors are still at the Tambov Khimmash Plant from last year. "There is nothing to be surprised about," Plant Director A. A. Tsyutsyura frankly admits. "We made our orders blindly, for there were no production orders. If you do not order in time you will not get anything."

And how much scarce copper, stainless and high-alloy steel, and tubes are expended in vain due to this! It is possible to produce equipment from sheet steel 5-mm thick, and yet the order is for 10-mm. The designers get to work and "beef up" the design. It does not worry anyone that a good 100 kg of metal were expended in vain. This partially explains the scarcity of certain materials.

"We are fitting 17 pieces of machinery," A. Klimov, fitter brigadier from the Komsomolets tells us. "But only

Chemical Equipment II (cont'd)

six have been assembled. The rest are standing around unfinished. Some lack tubes, some -- sheet metal, some -- bases, some -- grills. There are plenty of these incomplete units at all four plants. In order for the unfinished units not to clutter up the shops, they are taken outside where they stand for months, carelessly covered by bits of canvas to shelter them from the whims of the unusually mild winter. And yet this is naturally included in the gross production. This is why the plan for gross production has been overfulfilled at all four enterprises, while that for nomenclature -- quite the contrary.

The Sovnarkhoz has the following to say about the Tambov Khimmash Plant: "This is our youngest plant with the greatest future." "And the least potential," wryly jests Tsyutsyura. "The fact is that this plant should be one of the country's basic suppliers of machinery for the rubber industry within a short time. Within five years -- 1961-1965 -- production should increase by seven times. But if growth continues to proceed at such a slow rate as last year," according to Tsyutsyura, "these five years will become ten." I saw that the scepticism of the director

had certain basis as soon as I entered the plant area. This is actually still a construction site, although now it has fallen silent. A tower crane looms over the unfinished structure as a symbol of the silence reigning here. The situation has been like this for a year and a half. At the same time, the mechanical sector as well as the assembly and electrowelding sectors, and even the warehouse -- almost all plant units -- have been joined into one shop. The construction men are pulling a fast one not only on the collective of this enterprise. At the Morshanskiy Khimmash Plant, the funds allocated last year for construction have been used only to a total of 20%. Facts are also known according to which the builders engaged in constructing installations of secondary importance are doing so on the direct orders of local organs. (Ekonomicheskaya Gazeta, 25 January 1961. Partial translation)

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