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SCIENTIFIC-TECHNICAL CONFERENCE ON LUBRICATING AND COOLING AGENTS FOR METAL CUTTING

- USSR -

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/Following is a translation of an article by V. D. Sil'vestrov in the Russian-language periodical Stanki i Instrument (Lathes and Instrument), Moscow, No. 5, May 1960, page 42./

A conference was called by the Scientific-Research Laboratory on Lathes and Cutting Tools (NILSI) of the Gor'ki Council of National Economy and affiliate of the State Politechnic Institute imeni Zhdanova, jointly with the mechanical metal processing section of the Scientific and Technical Department of the Gor'ki Oblast Administration of Machine Industry. Among participants at the conference were representatives of following plants: Gor'ki Automobile Factory, Moscow Compact Car Plant, Kharkov and Chelyabinsk Tractor Plants, Dzernhinskiy Mechanical Plant, and others; scientific research institutes: VNIIASH /Vsesoyuzniy Nauchno-Issledovatel'skiy Institut (Avtomobil'nyh Sharikov?) -- All-Union Scientific Research Institute of (Automobile Bearings?)/, VNII /Vsesoyuzniy Nauchno-Issledovatel'skiy Institute Instrumentov -- All-Union Scientific Research Institute of Instruments/, NIITAVTOPROM /Nauchno-Issledovatel'skiy Institut Inzhenernoy Tekhniki Avtopromyshlennosti -- Scientific Research Institute of Engineering Techniques in Automobile Industry/, NIITEKHMASH /Nauchno-Issledovatel'skiy Institut Inzhenernoy Tekhniki Tekhnicheskih Mashin -- Scientific Research Institute of Engineering Techniques in Technical Machinery/, TSNIITMASH /Central Scientific Institute of Technology and Machine Building/; Politechnic Institutes of Gruzinsk, Tomsk, and Novo-Cherkassk, aviation institutes of Kazan and Kuybyshev, Ivanovsk Textile Institute, and Leningrad Engineering and Economic Institute.

A proper designation and use of lubricating and cooling liquids in metal cutting may mean a better quality of tooling, more productivity, less tear and wear of cutting tools, and often on these may depend the entire success of the operation.

The conference came to a conclusion that more experimental and research work be carried out in developing new lubricating and cooling agents and improved techniques for their use.

The application of cooling by means of atomized liquids is still not widespread. The delegates were able to get acquainted, at the conference and the plants of Gor'ki city, with the successful use of lubricating and cooling agents in a form of fog in grinding, milling,

planing, buffing, and sharpening. This method, with the consumption of from 0.5 to 2 grams per hour and with 50 to 300 grams of emulsifying solution helps to lower the wear and tear of the cutting tool, increases the productivity and quality of operation, lowers the temperature in the cutting zone and prevents annealing, buckling, searing, and cracking, and makes cooling possible where it is not practival to sprinkle (on vertical radial boring, planing, and other similarly constructed lathes); it also yields a better visibility in the cutting zone. This method also shows good future possibilities for automatic lathes.

The conference adopted a detailed resolution on the direction of theoretical and scientific-research work in the field of development, choice, and use of lubricating and cooling liquids in metal cutting, on the coordination of this work, and also on organizational measures needed to speed-up exploration and introduction of lubricating and cooling agents in metal cutting, which would meet the requirements of modern technology.

It was found practical to assign the work of developing new lubricating and cooling agents to VNII NP /Vsesoyuznyy Nauchno-Issledovatel'skiy Instrumental'niy Institute, Nablyudatel'niy Punkt -- All-Union Scientific Research Instrument Institute, Observation Point/, and exploration of the uses and exploitation of the lubricating and cooling agents to NIISI of the Gor'ki Council of National Economy, and Gor'ki Automobile Factory.

The Institute of Physical Chemistry of the USSR Academy of Sciences must renew and continue research into physical and chemical phenomena occurring in the cutting zone.

The conference considers that the full solution of the problem can be achieved if a special scientific and research institute on technological lubricants and cooling agents is organized. The functions of this institute will also include problems connected with development of technological lubricants used in rolling or other treatment of metals under pressure.

The conference considers it necessary to ask the State Committee of the USSR Council of Ministers on Automation and Machine Building to recommend the following to lathe making plants:

1) to incorporate cooling of tools by atomized liquids in the construction of new-type lathes, and particularly of those which do not use the customary cooling;

2) to eliminate possibility of penetration of cooling liquids into oils used for lubricating the lathes, and to eliminate possibility of oils penetrating into cooling agents; and,

3) not to use nitro dyes in lathe paints, but to replace them with alkali-resistant paints.

The conference considers that it would be practical to organize a permanent commission on lubricating and cooling agents for metal cutting at the State Scientific and Technical Committee of the RSFSR.

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