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SURVEY OF SOVIET HEAVY INDUSTRY (19)

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SURVEY OF SOVIET HEAVY INDUSTRY (19)

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.

TABLE OF CONTENTS

LOADING AND HOISTING MECHANISMS

New Cranes

The Chelyabinskiy Sovnarkhoz has been shipped a 20-ton travelling crane from Irkutsk. Supreme Economic Council Deputy Chairman Dmitriyev arranged to send Chelyabinsk 10-ton cranes, one each from the Sverdlovskiy and Khabarovskiy Economic Rayons and from the Moscow Oblast. The Uzlovskiy Plant is producing two 15-ton travelling cranes for them. In addition, the Chelyabinskiy Sovnarkhoz received 225 crane motors together with electrical equipment. Similar sets of electrical equipment have been shipped to Kuybyshev. One 10-ton crane for Kuybyshev has been allotted by the Tul'skiy Sovnarkhoz.

Great difficulties are being felt in Kuybyshev due to the lack of boilers for the compressor unit. As Lisin reported, these difficulties are the fault of the Kuybyshevskiy Sovnarkhoz. Three boilers, including two DKVRs which are necessary for the pressure pipe plant, 6.5x13, were allotted to Kuybyshev last year. But the Sovnarkhoz did not allot boilers for the enterprises and concluded no contract

New Cranes (cont'd)

with the producer plant. (Stroitel'naya Gazeta, 24 March 1961. Partial translation)

Universal Crane

The Leningrad Hoist and Transport Equipment Plant imeni Kirov has designed a universal crane for hoisting loads of up to 40 tons. It is equipped with a hook and automatic and magnetic grasping devices. The crane will be used in a rolling shop. (Leningradskaya Pravda, 23 March 1961)

Self-propelled Crane

The Machinery Plant No 3 of the Stroymekhanizatsiya Trust of the Leningradskiy Sovnarkhoz has made an experimental model of the PKB-5 wheeled self-propelled crane with a 5-ton hoisting capacity. Loads can be hoisted to a height of 22 m at a maximum boom length of 12.5 m, and to a height of 29.5 m at a boom length of 5.2 m. The crane with ballast weighs 32 tons. (Stroitel'stvo i Arkhitektura Leningrada, October 1960, page 36)

Electric Cranes

The Mogilev Hoist and Transport Equipment Plant has organized the series production of 5-ton overhead electric travelling cranes for work in chemical plants which are subject to fire hazard. The plant has also started designing a new huge crane for chemical plants. Its height of hoisting will be 28 m. (Sovetskaya Belorussiya, 4 March 1961)

MACHINE TOOLS

Uralmash Expansion

The Sverdlovsk Uralmash Plant has put into operation three more bays of the new excavator shop and is currently installing therein powerful grinding and boring machines and vertical boring mills. The steel foundry is being expanded 90 meters in length and will be equipped with more than 20 constant-flow lines. In the near future, new bays of the press and forging shop and of the trimming shop will be completed.

Six bays of the huge 13-bay welding shop will start operations soon. The most modern methods of electric welding will be used in this shop. The plant is also constructing a large laboratory building and an experimental shop. After the reconstruction is completed, the Uralmash Plant will almost double its production. (Sovetskaya Rossiya, 22 March 1961)

Cam Press

The Izhevsk Machinery Plant received a 25-ton capacity mechanical cam press from the Leninacan Press and Forging Equipment Plant. However this press has a number of manufacturing defects and therefore cannot be used. (Ekonomicheskaya Gazeta, 31 March 1961)

Gas-cutter

A new gas-cutter called the Odessa has been produced by the Odessa Gas-welding Machinery Plant. Equipped with a photoelectronic copying mechanism, it reads plans independently and simultaneously cuts parts from sheet steel with six gas-flame cutters. The machine can cut parts of various configurations from sheets with a thickness of ½ cm to 30 cm. The machine is operated by one person. (Ekonomicheskaya Gazeta, 3 November 1960. Partial translation)

New Press

Recently Soviet specialists built a unique crank press, model K-383, 2500-ton capacity. This unique unit is designed for press-working large parts of sheet steel. It is distinguished from its predecessors chiefly by its size. It is sufficient to say that the machine's drive mechanism is mounted at a height of seven m. It is not the size but electric welding which has brought world fame to the press. It contains not one rivet. All of its basic components, the table frame, cross-arm, slide-block and uprights -- are welded. The total weight of the welded structures is 350 tons, and separate parts weigh 110-120 tons. We had never before welded such large and heavy parts. In order to produce the components of the tremendous machine, 50, 80, 100 and even 160-mm rolled sheet metal was used. The most effective welding method for this metal was the electroslag method. For the first time the plant used special three-electrode A372 and the magnetic propelled A-501 units.

Our plant is one of the first in the Oblast to use welding on a large scale. In 1955 one fifth of all presses were welded, and at present approximately 94% of machinery

New Press (cont'd)

is produced with the use of welding. In a short period the collective designed and built more than 20 types of unique machinery with this method, such as a group of forging presses with capacities of from 630 to 2500 tons. In addition, doubleaction presses were produced with complex welded crossarm components. Replacement of cast and riveted bedplates by welded ones saved about three million rubles in the past year alone. At one time electroslag welding did not produce positive results in the production of bed-plates for K-654, K-475A presses and others. The weight of smelted metal on the bed-plate of the K-886 press decreased by more than 600 kg and on the K-274-A -- 500. Lowering metal not only lowers the process cost, but improves design, since welding tensions are decreased.

Our experience shows that besides the electroslag, it is possible to make broad use of the arc-welding method for cast iron without heating the object being welded, using TsCh-4 electrodes. With these electrodes we weld small defects in iron castings, produce welded-cast structures of gray and high-density pig iron, as well as from cast iron

New Press (cont'd)

and steel with non-thick welded metal. The basic technological process in welding bed-plates is semiautomatic welding, with which more than 60% of structures are produced. This is quite efficient. The plant has successfully introduced semiautomatic welding under a layer of flux with deep fusion. For welding sheets thicker than 100 mm in one pass, the electroslag method is used. Last year welding in a medium of carbonic acid gas was introduced. Broad application of automatic and semiautomatic welding has introduced new technological processes, in particular, fire-correcting of thick sheets up to 160 mm, mechanized face-cutting by guide-blocks on semiautomatic machines and others.

The further development of welded production at our plant is being held up due to the lack of necessary space. In 1960 construction of a welded structures shop was to begin, which would have a productivity of several thousand tons per year. This shop will have a closed cycle of press bed-plate production and other components of rolled metal, as well as combined structures of rolled metal and steel castings. (Ekonomicheskaya Gazeta, 26 March 1961. Partial translation)

REFRIGERATION EQUIPMENT

Production Growth

What is holding up the growth of production of small refrigeration units? First of all, it is the great expenditure of copper and brass which are used in the main component of refrigeration units, the refrigeration batteries (evaporators). Now we have all-aluminum evaporators. Consequently the requirements for copper and brass have decreased considerably. Now it is a matter of building shops for producing evaporators for refrigeration machinery of aluminum tubing. We have had a shortage of small-diameter steel tubing, but this problem has already achieved technical solution. Right now, instead of this tubing, aluminum tubing is used with rolled ribbing. The remaining materials and instruments used for the production of refrigeration machinery are not in short supply and, with a proper review of industrial plans, can be produced in sufficient quantities. But perhaps one of the basic factors slowing down the production of refrigeration equipment is the lack

Production Growth (cont'd)

of a specialization in enterprizes producing small equipment. For example, we shall mention three basic plants -- the Khar'kov, Yaroslavl' and Riga plants.

The Khar'kov Plant is a leader in commercial machinery construction. Here there is an experimental-design bureau for designing refrigeration equipment and machinery for public dining enterprises. As early as 1959 specialization for this plant was determined -- small refrigeration units. Nevertheless the plant becomes each year a type of department store. Besides five types of refrigeration units and 25 types of evaporators, the plant also produces more than 15 types of machinery and mechanisms for public dining enterprises. Here we have potato peelers, machinery for washing potatoes, and gas ranges, electric fry pans, coffee grinders, vacuum cleaners, as well as conveyor lines for processing potatoes...

The plant is used at only 60% of its total for direct designation production, but this is not the only thing. The tremendous variety of items produced prevents the plant from introducing broad mechanization and automation of production processes, the attention of designers and tech-

Production Growth (cont'd)

nologists is being scattered, and material-technical supply is too complicated. The Yaroslavl' Refrigeration Machinery Plant is in about the same state. Besides 15-20,000 compressors, similar to those produced by the Khar'kov Plant, the Yaroslavl' produces multi-purpose machinery for bakeries, electric food cookers of four models, gas and electric autoclaves, dough-kneading machinery, etc.

At the Riga Kompressor Plant machinery is produced which is similar in productivity to the Khar'kov Plant, but of an entirely different design. Quality is not very high. At many technical conferences it was recognized as inefficient to produce the Riga model compressor, but planning organs "take pity" on the plant and allow it to continue producing its old items. The Yaroslavl' Plant should be freed from all other cactivities except the production of one or two new model hermetic machines, in order that it not duplicate the production of the Khar'kov Plant. The Khar'kov Plant could produce, for example, air-cooled machinery and the Yaroslavl' Plant -- water-cooled or vice versa. In view

Proddction Growth (cont'd)

of the fact that several small hermetic freon machines have been approved for production, the Riga plant could specialize on several models of this type. (Ekonomicheskaya Gazeta, 23 March 1961. Partial translation)

CHEMICAL INDUSTRY

New Branch Institute

The All-union Scientific Research and Design Institute of Chemical Machine Building has opened a branch institute in the City of Severodonetsk, Bol'shaya Novodmitrovskaya Ul., No 14. (Vechernyaya Moskva, 2 September 1960)

Chemical Machinery

A few days ago the editorial staff received a letter from the deputy chief of the Machine Construction Division of the Tambovskiy Sovnarkhoz, Katayev. This is what he wrote: "More than a month has passed since the publication of the article 'Light and Shadow'. But nothing earth-shaking has taken place at chemical machinery plants. The Boiler-mechanical Plant still does not have a complete plan for chemical machinery production for 1961. This is making it extremely difficult to prepare for production and makes it impossible to create a stockpile, breaking down the rhythmic operations of the production line. The Khimmash Plant has orders for reduction gears only for 2/3 of the nomenclature plan for 1961. Things are the same at Tambov's oldest enterprise, Komsomolets. They are short-ordered for copper equipment by more than one million rubles (new prices). Specialization is also having its troubles. The RSFSR Gosplan is continuing to order production to plants of other economic rayons, in the Komsomolets specialization. For example, "tube in tube" heat exchangers have been assigned for this year to the Svesskiy Pump Plant of Sumskaya Oblast. They have never produced

Chemical Machinery (cont'd)

these, and now they are asking the Tambov plant to send them the necessary plans. As for the Khimmash Plant in Morshansk, the sovnarkhoz has taken all possible measures for all chemical apparatus to go into production this year. However, for this purpose, besides everything else, two turning-and-boring lathes, an oxygen unit, an air compressor and sheet-bending rolls are absolutely essential. Funds for this equipment have not been allocated to the Tambovskiy Sovnarkhoz. This threatens to cut off production from an important installation." (Ekonomicheskaya Gazeta, 11 March 1961. Partial translation)

Equipment Deliveries

For 33 very important chemical installations of the RSFSR, the plan for equipment delivery last year was fulfilled by only 82 ½ %. Some machinery plants did not carry out their obligations and some, such as, for example, Penzkhimmash, did not even include in their plans orders for equipment which was necessary to install at the new plants. Correctly considering the machine builders to be in their debt, the construction men do not have the right not to note that they themselves are debtors. Several construction organizations did not carry out their plans for the beginning of operations in chemical machine construction. Last year more than 1/3 for the country as a whole and almost ½ for the RSFSR of new planned production capacity was not realized. The volume of investments, rate of capital operations and tasks for bringing new potential into production at chemical installations are growing and will continue to grow from year to year. This year it is necessary to bring chemical enterprises into production, the cost of which is equal to 90% of annual capital investments in this branch. A tremendous quantity of chemical equipment is required. Under these conditions even a small

Equipment Deliveries (cont'd)

delay in production has serious consequences. First of all construction must stop this delay.

59 very important machinery plant projects have been stressed this year by the Party and government. Many of the enterprises are to produce various equipment among other branches and heavy chemicals. But among these 59 there are five installations of national importance, which are being built to produce equipment only for the chemical industry. These key projects are the following: the Orel Equipment Plant for the artificial fiber industry, the Kurganskiy and Penza Chemical Machinery Plants and the Uralkhimmash Plant, famous throughout the country. This enterprise is one of the country's largest suppliers of chemical equipment. Muchhas been done by its collective for the development of this branch of industry, but recently the plant has more and more often not been able to handle its orders: there is a lack of production space and production capacity.

At the Lisichanskiy Chemical Combine, the Nevinnomysskiy Nitrogen Fertilizer Plant and several other enterprises,

Equipment Deliveries (cont'd)

shops have been planned for the production of mineral fertilizer. The supplier of the basic equipment, air separation blocks, is the Balashikhinskiy "40 let Oktyabrya" Plant of the Moscow Sovnarkhoz. But this enterprise is also failing to cope with orders, because it does not have sufficient production capacity. Unfortunately, there are other important installations which not only are not fulfilling their plans but are operating worse than last year. On chemical machinery shop construction in Kurgan and Penza, in January the work rate was even lower than the same month last year. Things are little better now. (Stroitel'naya Gazeta, 29 March 1961. Partial translation)

MISCELLANEOUS

Stellite Rods

The Penza Fittings Plant No 2 is advertizing for sale the following products: stellite rods VZK (3,770 kg) and LK-4 (204 kg), both 5 mm in diameter. Address: Penza, P.O. 20. (Ekonomicheskaya Gazeta, 24 March 1961)

Production Changes

The Moscow Machinery Plant imeni Kalinin has been ordered to produce the TTK-1 reduction gear, previously produced by the Moscow Borets Plant, and fittings and non-standard equipment previously manufactured at the Moscow Kompressor Plant. (Ekonomicheskaya Gazeta, 31 March 1961)

New Armenian Plant

A new plant is under construction in Lusavan. It will produce chemical equipment, transporters, conveyers, and other equipment for the Armenian Sovnarkhoz enterprises. The plant will be put into operation in 1962. (Yerevan, Kommunist, 17 March 1961)

Gasholders

The Dnepropetrovsk Plant imeni Babushkin has organized a special section for the production of gasholders of uniform capacity. The operations at this section are 80% mechanized. (Stroitel'naya Gazeta, 24 March 1961)

Oil Filters

The Domodedovo Machinery Plant is advertizing in this newspaper that it produces Kd-1006A, Kd-2006A, and Kd-4006A self-cleaning oil filters from materials supplied by the consumers. (Ekonomicheskaya Gazeta, 31 March 1961)

Ukrainian Cooperation

The Mechanical Plant in Berdyansk is producing powerful pumps for thermal electric power stations. For their production it has received alloy forgings from the Novo-Kramatorsk Machinery Plant imeni Stalin. But suddenly a directive arrived from the republic Gosplan: the forging production is to be transfered to the Dnepropetrovsk Metallurgical Equipment Plant.

According to the plan of the heavy machinery division of the Ukrainian SSR Gosplan, the Dnepropetrovskiy Sovnarkhoz was to organize at the Nikopol' Road Machinery Plant the production of 450 tower cranes and 60 dry materials unloaders. In order to carry out this program the specialization and cooperation division of the Gosplan assigned sufficient steel castings.-- 1300 tons. This was in July of last year. But in December the program of crane production and unloader production was reviewed. The factory plan included a supplementary 40 cranes and 10 unloaders. The plant agreed to the increased program, assuming that casting deliveries would correspondingly increase. But this was not the case. When the machine builders appealed to the Gosplan, the specialization and cooper-

Ukrainian Cooperation (cont'd)

ation division gave them a "business-like" bit of advice: "Look for 250 tons of castings locally..." In the meantime, the additional machinery which is to be produced by the plant has already been "spoken for". The consumers are waiting for it and they are in a hurry.

Take the following example. Last year the diesel plant imini Kirov in the city of Bol'shoy Tokmak was assigned additional production of diesels, freeing the Melitopol' Motor Plant from producing them. The new program was rather difficult for the diesel builders to carry out, but the plant collective was not afraid of difficulties and mobilized reserves for the energetic fulfillment of this task. However, without considering the production capacity of the enterprise the Gosplan decided to "load it up" with orders for gear regulators for the Dagestanskiy Sovnarkhoz, spark plugs for the Saratov Diesel Plant, components and parts for the Troitskiy Diesel, etc. After this "loading up", the program for producing diesels was broken.

Decision has long been awaited for the question of press-working products for the Zaporozh'ye Machinery Plant.

Ukrainian Cooperation (cont'd)

As early as September of last year the USSR Gosplan indicated the obvious stupidity of furnishing the plant with press-work parts from the enterprises of the Chelyabinskiy and Moscow Sovnarkhozes. Can this not be done closer, without being transported from a great distance? A special resolution by the Ukrainian SSR Gosplan proposed the local organization of press-worked parts production.

The Orekhovskiy Ressora Plant receives hydraulic cylinders for scrapers from Khar'kov, although the workers of the enterprise are convinced that they could produce their own cylinders. This is especially important because the present supplier -- the Khar'kov Road Machinery Plant -- is overloaded and regularly fails to fulfill the plan for cooperative deliveries. It is also ridiculous to transport from Izhevsk and Gor'kiy press-worked spare parts to Dnepropetrovsk for motor vehicles. Production could easily be organized in Dnepropetrovsk -- for this merely a 1200-ton horizontal-forging machine would be required. (Ekonomicheskaya Gazeta, 17 March 1961. Partial translation)

CONSTRUCTION, EARTH-MOVING AND ROAD MACHINERY

New Excavator

The first ESh-25/100 walking excavator has been put into operation at the Bogdanovsk Open Pit Mine in the Nikopol'-Marganets Basin. It is expected to excavate 7 million tons of earth per year. (Pravda Ukrainy, 23 March 1961)

Excavator Parts

In spite of the fact that the Mogilev Strommashina Plant has had commercial dealings with the Kiev Krasnyy Ekskavator Plant for the past 7 years, the latter refuses to supply 36 types of parts to the Mogilev Plant. It claims that all series of these parts are either too large or too small. (Ekonomicheskaya Gazeta, 7 March 1961)

"Tiny" Excavators

The Leningrad Excavator Plant has made its first group of series-produced "tiny" excavators with a bucket capacity of 0.15 cu m. The "Pamyat' Il'icha" kolkhoz has received 80 of these excavators. (Leningradskaya Pravda, 17 January 1961)

Scraper Defects

The machine builders of the Bryanskiy Sovnarkhoz produce D-213A scrapers with serious defects in their design. (Pravda, 23 March 1961)

Snow-clearing Machine

The Rybinsk Road Machinery Plant is developing a snow-clearing machine which will throw 3000 tons of snow per hour to a distance of 50 m from the highway.

The plant is also developing the D-549 "tandem-type" heavy roller with a hydrostatic drive and simplified transmission system. (Ekonomicheskaya Gazeta, 31 March 1961)

Excavators

Enterprises producing large single-bucket excavators for earth and rock work, besides the production of many types of machinery, this year will begin to plan and produce several new models. In particular, the Novo-Kramatorsk Plant imeni Stalin is organizing the production of ESh-5/45 ESh-10/60 self-propelled excavators with bucket capacity of 5 and 10 cu m respectively and boom lengths of 45 and 60 m. Their productivity, in comparison with the famous ESh-4/40M, ESh-6/60 and ESh-8/60 excavators from the same plant, will increase 1½ to two times, while the total weight of the machines will remain unchanged. The Ural'skiy Heavy Machinery Plant imeni Ordzhonikidze will produce a second test model of the EKG-5 quarry excavator of the "straight shovel" type with a 5 cu m capacity bucket. Its productivity will be 25-30% higher than excavators of the same EKG-4 class, and its weight will be decreased approximately 20 tons.

In addition, Uralmashzavod will continue the production of ESh-15/90 self-propelled excavators, will complete tests on the ESh-25/100 excavator and the design of the powerful ESh-50/125 giant excavator. According to its op-

Excavators (cont'd)

erating parameters (scoop capacities are 15, 25 and 50 cu m respectively) and technical-economic indices, these machines will have no equal anywhere in the world. The Zhdanov Heavy Machinery Plant is planning to produce a 5-6 cu m bucket capacity excavator. The machine will be equipped with replaceable operating equipment: a drag line and an 80-ton capacity construction crane. Thanks to the replaceable equipment the field of use of these excavators will be increased considerably. In addition, they will be produced both with electric and diesel motors. This is particularly important for hydrotechnical construction in remote areas where, during the initial period of earth moving, there will sometimes be no electricity. The Izhora Plant imeni Zhdanov will continue producing the EKG-8 excavator with an 8 cu m bucket capacity, the largest in the quarry machinery class. At the same time the plant will conduct work in modernizing this excavator in order to decrease its weight by 25-30 tons and to increase the bucket capacity to 10 cu m. In designing and producing new excavator models, plastics, low-alloy steels and light alloys are being used broadly. (Ekonomicheskaya Gazeta, 25 March 1961. Full translation)

Concrete Roller

Highway and railroad builders will soon receive a new and unusual piece of equipment -- the DSK-1 reinforced concrete tractor-sectioned pneumatic roller. It was created by the designers of the Rostov Road Technology Repair Plant in cooperation with the collective of the Glavstroymekhanizatsii planning-design bureau of the Ministry of Transport Construction. The originators of the plan made bold use of reinforced concrete. Insignificant volumetrical weight is combined with great hardness and firmness. The use of reinforced concrete made it possible to create a multi-purpose road roller with pneumatic coverings with a considerable decrease in metal use. The roller possesses removable reinforced concrete blocks, a fact which allows it to be used as a light, medium and heavy roller. The design has one more interesting feature: any of the six rollers can be replaced on the job without any hoist mechanisms. A turning chain mechanism head makes it possible to turn the roller around on a narrow section of road. Tests on the new road machinery showed its advantages over former models. Production will cost much less. This year 280 of these rollers are to be produced. (Ekonomicheskaya Gazeta, 25 March 1961. Full translation)

Construction Costs

The cost of basic construction, according to reevaluation figures of 1 January 1960, comprised 5,440,000,000 new rubles. If we consider that in 1959 the volume of construction work in the USSR comprised about 17 billion rubles, it is possible to say that there are 3.12 rubles of completed work for each basic fund ruble in construction. For sovnarkhoz construction organization this index was 2.42 rubles. In various sovnarkhozes the average indices differ extremely both from the average USSR index as a whole as well as among the various sovnarkhozes. Of 37 of the largest sovnarkhozes taken at random, in two of them the annual volume of construction work per ruble of basic funds was lower than the average index for the country's sovnarkhozes; in 8 it wavers between 51 and 70% of this index; in 5 others -- from 71 to 90; in three -- 101 to 110; in 9 -- from 111 to 140; in four -- 141 to 160; in four others -- from 161 to 170, and, finally, in two -- higher than 200%.

Such great differences are naturally caused by various reasons in each case. For each ruble of basic funds the builders of the Gor'kovskiy Sovnarkhoz produce four rubles

Construction Costs (cont'd)

per year approximately, the Bashkirskiy -- 1.24, the Khabarovskiy -- more than 4. On the basis of these indices it is still impossible to determine which sovnarkhoz makes best use of the basic funds. However, there is ground ... for comparison and analysis. It is necessary to ascertain (and use of basic fund use indices forces us to do this) to what degree these variations can be explained by objective conditions, for in many cases a high figure means simply insufficiently intelligent use of the productive capacities of construction organizations. It is suffieient to say that in the country as an average construction machinery is in operation only 20-27% of calendar and 50-56% of work time. Can we be satisfied with this? In the Moldavian SSR ... the average machinery operation use in 1955-58 was the following: excavators -- 5, bulldozers -- 4.3, tower cranes -- 5.9 hours. The calendar time use coefficient for construction machinery in the Irkutskiy Sovnarkhoz barely reached 22-28% in 1959. An analysis of these data shows that in several sovnarkhozes surplus capacity can be found. The construction administration of the Saratovskiy Sovnarkhoz in 1959 possessed 55 surplus machines costing almost 187,000

Construction Costs (cont'd)

rubles (new rubles): 16 excavators, 14 truck cranes and 25 bulldozers. Unfortunately there are many such examples. (Ekonomicheskaya Gazeta, 3 March 1961. Partial translation)

ELECTRICAL POWER EQUIPMENT

Gas Turbine

In 1961 the Leningrad Metal Plant will make the GTN-9 gas turbine installation and the master model of the R-50-130 steam turbine of 50,000-kw capacity, and will develop plans for a PVK-100-130 horizontal-type hydroturbine for the Cherepetskaya GES. (Leningradskaya Pravda, 22 January 1961)

Siberian Turbines

The Leningrad Metal Plant will make turbines for 12 Siberian thermal electric power stations. In 1961 the plant will produce five such turbines, the first of which has already been completed and will be installed at the Omsk Thermoelectric Central Station. (Ekonomicheskaya Gazeta, 23 March 1961)

Hydroturbine

The Leningrad Metal Plant has completed the master model of a hydroturbine for the Uch-Kurganskaya GES which is being currently constructed in Central Asia. (Ekonomicheskaya Gazeta, 2 March 1961)

Karpinsk Generators

The Karpinsk Electrical Machinery Plant (North Urals Region) has started the production of generators and SE-3 excavators. (Ekonomicheskaya Gazeta, 23 March 1961)

PUMPS AND COMPRESSORS

Acid-resistant Pumps

The Kataysk Pump Plant (Kurganskiy Sovnarkhoz) should have shipped 38 acid-resistant pumps to the Shebekino Fatty Acids and Fatty Alcohols Combine during the first quarter of 1961. However, the plant management stated that it would not be able to fulfill the order for these pumps until the last quarter of 1961. The Kurgankhimmash Plant also is delaying the delivery of four centrifugal separators. (Ekonomicheskaya Gazeta, 24 March 1961)

Light Compressors

The Yerevan Compressor Plant is currently producing VU-3/8V new compressor units which are 250 kg lighter in weight than their predecessors. (Yerevan, Kommunist, 21 September 1960)

Huge Compressor

In the near future the Krasnodar Compressor Plant will start the assembly of a huge compressor designed for a pressure of 1500 atmospheres. It will be capable of compressing 5000 cu m of ethylene gas per hour for the production of polyethylene. This compressor will be 17 times more productive than its predecessors. (Vecherniy Leningrad, 18 January 1961)

Pumps To Cuba

The Andizhan Strommashina Plant has recently shipped 80 diesel engines and several S-245 pumps to Cuba. At present the plant is producing diesels and pumps for Mongolia, Afghanistan, the UAR, Tunisia and other countries. (Ekonomicheskaya Gazeta, 2 March 1961)

Air Compressors

The Kazan' Compressor Plant has been unable to complete the assembly of 20 air compressors due to lack of high-pressure oil pumps. Until recently it was receiving M8x500 oil pumps from the Shchelkovo Pump Plant, but Gosplan RSFSR relieved the Shchelkovo Plant of production of these pumps, and as yet no plant has been ordered to produce them. (Ekonomicheskaya Gazeta, 2 March 1961)

Chlorine Compressor

The Kazan' Compressor Plant has successfully made and tested an automatic compressor which can compress 15 cu m of chlorine gas in one minute to a pressure of 12 atmospheres. In 1961 the plant will produce two large-capacity compressors for the chemical industry. (Vechernyaya Moskva, 8 March 1961)

Mobile Compressor

The Yerevan Compressor Plant has made the first model of a small PKUO-75/8 mobile water cooled compressor for agricultural areas. It will be series produced. (Yerevan, Kommunist, 5 March 1961)

Penza Compressor

The Penza Machine builders failed to deliver the ZG-83-10/320 compressor to the Gorlovka Nitrogen Fertilizer Plant. This machine was scheduled to be shipped during the second quarter of 1960, but it has not yet been received by the Gorlovka Plant. (Pravda Ukrainy, 16 March 1961)

UAR Compressors

The Penza Compressor Plant has completed two VG-100/8 compressors destined for the UAR. (Ekonomicheskaya Gazeta, 21 March 1961)

Plant Renamed

The Pavlodar Combine Plant has been renamed the Pavlodar Refrigeration and Compressor Equipment Plant. It will be the largest producer of compressor and refrigeration equipment in the USSR. However, reconstruction of the plant has not yet been completed. (Kazakhstanskaya Pravda, 15 September 1960)

Vortex Pumps

The Bobruysk Machinery Plant imeni Stalin has developed vortex pumps for liquefied gases, which are extensively used at synthetic rubber plants and at chemical enterprises of the USSR, Rumania, Bulgaria, and other socialist countries. At present, the plant is developing new pumps with shaft seals and high-speed vortex pumps for liquified gases. (Sovetskaya Belorussiya, 31 March 1961)

METALLURGY AND MINING

Ore-grinding Mills

The Novo-Kramatorsk Machinery Plant has shipped more than 100 ore-grinding mills to Krivoy Rog ore-concentration combines. (Ekonomicheskaya Gazeta, 24 March 1961)

Welding Methods

A great future awaits the basically new method of welding refractory metals and their electronic beam fusion. This welding is done in vacuum chambers with the aid of a powerful electron gun. This method has already been tested and incorporated in industry. In the process of searching for the most effective use of electron beams the workers in our institute were successful in making use of one more important characteristic. Beams can also be used for fusing superhard metals, which with they acquire an uncharacteristic plasticity. Tungsten, for example, after electron beam fusion becomes so soft that it can be cut with a hacksaw.

The academician stressed that in the coming 20 years the production of welded structures in the country will increase by 500%. It is clear that production on such a scale cannot do without the science of automatics and cybernetics. Theoretical studies have already made it possible to begin creating programmed and cybernetic systems for regulating welding processes. For example, right now we are working on machinery designs and schemes which will be capable not only of maintaining previously fed welding pro-

Welding Methods (cont'd)

grams but will be capable of independent choice in choosing the most efficient method. At 13 machinery plants in Uzbekistan, semiautomatic welding in a medium of carbonic acid gas has been incorporated. In the electrotechnical industry cold pressure welding of non-ferrous metals has been introduced. In agricultural machinery production electrorivetwelding in a carbonic acid gas medium is being used. At the Uzbekkhimmash Plant in Chirchik, electroslag welding is done. The Uzbekistan Sovnarkhoz has formed a republic welding laboratory. The first steps toward the construction of welded cement kiln bodies have been taken at the Akhangoranskiy Plant.

Welding production is particularly poorly organized at the Tashkent Pod"yemnik Plant... Welding is not being mechanized at the Andizhanskiy Strommashina Plant. Equipment for mechanized welding is being partially held up at the Tashsel'mash, Excavator and other plants. The 30 units presently in operation for welding in a medium of carbonic acid gas do not satisfy the requirements even working around the clock. The republic must have an additional minimum of

Welding Methods (cont'd)

70 similar units, but only six have been allocated to us for this year. A specialized electrode shop organized at the Chirchiksel'mash Plant cannot fully satisfy the requirements of industry. Uzbekistan does not yet have an institute of higher education which can train welding engineers. The republics of Central Asia also do not have a scientific research center for developing progressive technology and means of mechanizing welding processes in industry and construction. (Pravda Vostoka, 18 March 1961. Partial translation)

Tube-rolling Mill

This will be a powerful mill of the latest design. For the first time in the world continuous rolling will take place of seamless tubing at a speed of 12 m/sec. In other words, in one year the mill will produce more than 42 km of tubing -- from Moscow to Podol'sk. This unit can produce a wide range of tubing -- with diameters from 30 to 102 mm, tubing which is essential in boiler-making, production of chemical equipment, many other branches of machine construction, construction, etc. Let us picture the tremendous continuous tube-rolling shop at the Pervoural'skiy Novotrubnyy Plant as being in operation. The blanks -- round 40-mm bars -- first go into the kiln where gas is burning. It quickly and evenly heats the steel to 1250°. Then the blanks are sent through a series of automatic mills. The first of them -- broaching -- transforms the heated bar into a sleeve. It is taken by a nine-stage mill which rolls the sleeves. Once again they are heated, this time electrically, and are welded into one tube thermally, and this tube runs with the speed of a passenger

Tube-rolling Mill (cont'd)

train through a 19-stage reduction mill or 11-stage calibrating mill.

The rolls of the reduction mill can turn at various speeds, and the final dimensions are given to the tubing by means of tension. Then a saw instantly cuts the tubing into sections of a specific length. All of this equipment is located in the hot section of the shop. Tens of thousands of square meters are occupied by the cold section of the shop, where six production lines are planned for tubing finishing. Through the entire journey of the seamless tubing in the shop it is not touched once by human hands. Here the ultimate in automation is designed. A computer-decision machine will be placed before the broaching mill -- it will determine flawlessly the optimum cut for each blank in order to avoid any discards. Tracing and control systems will regulate the mechanisms and the adjustment of the rolls. Television will aid the rolling mill operators in observing the rapid and continuous process -- there will be 12 TV cameras mounted on the 102 mill.

But perhaps the most interesting items will be the automatic control instruments. They will determine the type

Tube-rolling Mill (cont'd)

of steel, trace the dimensions of the tubing being rolled, ascertain external and internal defects, control the quality of finishing, sort the tubing, etc. If it were not for these instruments, it would be necessary to use up to 1000 persons for technical checking. Thus the 102 mill is characterized by three basic features: continuity of process, astounding automation and high productivity. The main designer is the Moscow Gipromez. But naturally it alone could not create this unique unit. Therefore, 38 organizations are participating in the design and planning of the shop. The basic producer of the mill is the Heavy Machinery Plant in the city of Elektrostal'. More than 200 enterprises join with it in filling the orders of the Pervoural'sk mill men. In the Sverdlovskiy Sovnarkhoz the significance of the 102 mill is defined as the following: "This front-rank installation is No 1 in the Urals." The determined deadline for putting the mill into operation is the third quarter of this year. At best six months remain. There is work stoppage at the construction site, and many plants are not fulfilling their orders. There is time and possibility

Tube-rolling Mill (cont'd)

to make up for what has been allowed to slip. This must be done by the joint efforts of the collectives of the supplier plants, planning and design organizations, and builders. The 102 mill must be put into operation by the deadline! (Ekonomicheskaya Gazeta, 29 March 1961. Full translation)

Metal Saving

Last year at the enterprises of the Tambovskiy Economic Rayon 949 tons of copper, 407 tons of lead, about 19 tons of nickel and more than 10 tons of molybdenum were saved. This was achieved thanks to the efforts of the plant collectives which are making broad use of cutting plans in preparing parts, mould-casting and pressure-casting, replacing bronze bushings with cast iron ones, etc. Much benefit has been received from the application of efficiency proposals. One proposal alone by a copper worker from the Komsomolets Plant, Teplyakov -- to change partition design for the foundation in the Sackheim column -- resulted in savings of about 1½ tons of copper. But the main source of the savings in non-ferrous metals is the use of two-layer metals with more plentiful components. The Tambovskiy Economic Rayon is a large chemical machinery center. The Komsomolets and Boiler-mechanical Plants alone expend much copper, brass, and stainless steel on the production of equipment. Last year the design was changed on several parts, material expenditure norms were reviewed and, as a result, 55 tons of copper, 18 tons of brass and 42 tons of stainless

Metal Saving (cont'd)

steel were saved. For the production of chemical equipment, bimetals are being used to a greater extent instead of homogenous stainless steel. Heat exchanger grills are now made not of copper or brass but of steel with a thin copper fused layer. However, this main reserve is still not being used to its capacity. What do tens of tons of bimetals used last year mean if the plants of the Tambovskiy Sovnarkhoz expend hundreds and thousands of tons of rolled copper, stainless steel, etc., every year. And yet much of this material could be replaced by bimetals without any decrease in quality. Much is hindering a broad use of bimetals, not only in chemical but in other branches of machine construction. Besides nickel, chrome, molybdenum and copper, an excellent material for protection against corrosive liquids, gases and vapors is titanium. Recently large titanium deposits have been discovered in our country. It is true that the extraction of metallic titanium is still expensive. But with an increase in the scale of mining and extraction the cost will doubtlessly decrease considerably. Titanium, if it is used as a protective layer, can replace stainless steel with 9% nickel content,

Metal Saving (cont'd)

8% chrome and 2-3% molybdenum. Unfortunately our metallurgical industry does not at all produce bimetals of carbon steel and titanium.

Great significance in chemical machine construction is possessed by heat-resistant glass-plastics and other plastics: polyethylene, polystyrol, ethrol on an acetylcellulose base, phaolite, vinyplast, rubber, perchlorvinyl lacquers. It is a shame that all these materials are used to an insufficient degree. We must confess with grief and vexation that there is unique competition between the men of the chemical industry and machinery builders in this oblast "for backwardness". This conclusion is obvious if one recalls certain facts. The first fact: in recent years, at international exhibits foreign firms (especially French) have been exhibiting chemical equipment of glass-plastics with particularly high operational parameters. However, when we appealed to the State Committee for Chemistry, they could not say anything positive on the production and use of heat-resistant glass-plastics for chemical machine construction. Fact No 2. In the Tambovskiy Economic Rayon

Metal Savings (cont'd)

as early as the middle of last year imported equipment arrived for the the production of polychlorvinyl and polyethylene tubing and products of ethrol. However, the RSFSR Gosplan, due to a lack of raw materials, is not even planning to produce anything of these materials this year. Fact No 3. Tubing from the Pervolural'skiy Starotrubnyy Plant with a protective layer of plastic has been seen by us so far only on the TV screen. And yet talk was going on about it as early as the July Plenum of the CC of the Party in 1960. Evidently the central planning organizations, scientific research institutes and sovnarkhozes (including our Tambovskiy -- we must confess) are solving this important problem extremely slowly, the problem of replacing shortage metals and the broader use of the country's raw materials. The USSR Gosplan, the State Scientific-technical Committee and branch committees should organize and lead the struggle for the application of more profitable types of raw materials and savings in non-ferrous metals. (Ekonomicheskaya Gazeta, 2024 March 1961. Partial translation)

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