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SURVEY OF SOVIET HEAVY INDUSTRY (14)

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SURVEY OF SOVIET HEAVY INDUSTRY (14)

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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PUMPS AND COMPRESSORS

Kazan' Compressors

The Kazan' Compressor Plant is a large supplier of equipment for chemical enterprises which are being constructed in the Soviet Union. More than 30 designations of piston and turbine compressors were produced this year at the plant. Compressors with the brand of the Tatarskiy Sovnarkhoz are being shipped to Czechoslovakia, Poland, India, Viet Nam and other countries.

As a result of improving technological processes and organizing operations in a more efficient manner, compressor production was somewhat above the planned level for the year. A new design vertical piston compressor is being assembled on the test stand and is almost completed. It incorporates many technological innovations. It will be controlled automatically. (Ekonomicheskaya Gazeta, 24 December 1960. Partial translation)

Refrigerator Compressors

The Barnaul Meat Processing Combine has been informed by the Moscow Kompressor Plant that the latter, because of failure to fulfill its 1960 plan, is unable to deliver the four compressors promised for the combine's refrigerator plant construction site. However, the Kompressor plant failed to indicate when or whether these compressors would ever be delivered. (Ekonomicheskaya Gazeta, 13 December 1960)

Shchelkovo Pumps

The Shchelkovo Pump Plant ships its products to various countries of the world. (Leninskoye Znamya, 10 December 1960)

VP-20/8 Compressor

The Melitopol' Pump and Compressor Plant has developed the VP-20/8 compressor, which weighs almost 0.5 ton less and uses only 1/3 as much oil as its predecessor. (Ekonomicheskaya Gazeta, 10 December 1960)

Force Pumps

During the past five years, 20% of the Leningrad Nevskiy Machinery Plant's production has been designated for the metallurgical and chemical enterprises of China, Poland, Bulgaria, the Korean People's Democratic Republic, Albania, India, and Yugoslavia. At present it is assembling for China a 3500 force pump with a capacity of 3500 cubic meters of air per minute. (Moscow, Vneshnyaya Torgovlya, December 1960, page 21)

CONSTRUCTION AND EARTH MOVING

New Power Shovel

The world's largest stripping power shovel, the EVG-35/65, with a scoop capacity of 35 cubic meters and a boom length of 65 meters, has been produced by the Novo-Kramatorsk Machinery Plant of the Stalinskiy Sovnarkhoz. The machine's large linear parameters make it possible to carry out stripping operations with ore dumping directly in the work area without supplementary reexcavation. The greatest radius and height of excavation are 65 and 40 meters, the dumping radius -- 62 meters, and its height -- 45 meters. The weight of the machine is 2650 tons, and its average productivity is 1700 cubic meters per hour. Its pressure speed is regulated automatically, depending on the load exertion in digging, a fact which makes possible the maximum use of the capacity of the hoist engine as well as productivity increase and easing of the task of the operator. (Ekonomicheskaya Gazeta, 14 December 1960. Full translation)

Chimkent Excavators

The 100th excavator has left the plant. The annual plan has been fulfilled. By the end of December several more machines will be produced. This year the Kentau Machinery builders have introduced many improvements in the E-303 excavator produced by them. The boom has been strengthened, and the control panel is now mounted as a separate component. The machine now has upper revolving headlights for illuminating the area of operations. The appearance of the excavator has improved and its cost has decreased.

The young enterprises will specialize in producing excavators with a scoop of 0.25 to 0.4 cubic meter capacity. By 1965 this production will increase by almost 15 times. The Kentau plant will be one of the country's largest excavator suppliers. The new E-406 excavator, the production of which will begin with the new year, is a highly productive, multi-purpose piece of construction equipment with a powerful motor, with an improved main reduction gear and ball-bearing swivel plate. The E-406 is designed for the addition of various mechanisms. In particular, it can be used ass a reloading and assembly crane, grab, dragline, frozen soil loosener, loader of dry, loose materials, and

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Chimkent Excavators (cont'd)

a turn-scoop with reverse shovel for digging foundation excavations and filling in trenches. In the opinion of specialists, the maximum succession of component and part unification as well as that of almost all technological equipment will make it possible to start production without closing down the enterprise for retooling the production lines. (Ekonomicheskaya Gazeta, 21 December 1960. Full translation)

Snow Roads

There is more than one meter of snow under the wheel trains, but the multi-ton truck rolls along as if on an asphalt highway. The machine tore out of the woods and shot across the snowy steppe at top speed. Evidently, the reader would think, the truck has special high passability wheel trains. No, they are ordinary ones. But the road is something else again. It is made of snow, without the use of any other materials. In Arkhangel'sk an experimental model of a machine has been built for laying roads of snow "asphalt", which has shown excellent results during testing.

At present the Gor'kiy Polytechnical Institute, jointly with the Central Scientific Research Institute of Mechanization and Power Engineering for the Timber Industry and other institutes, is already designing a new, perfected industrial-type unit for laying snow roads. The machine which produces snow "asphalt" consists of several components. A unique paddle-cutter is located in the front. When the cutter begins to turn (Powered by the D-40 engine) the snow under it begins to powder. Directly behind the cutter is located a heating unit. The powdered snow, entering

the heating unit, is penetrated from two sides by powerful streams of hot gases. The fine particles of snow melt, thus forming the correct conditions for the "cementing" of the snow.

The final operation in laying the road is done by the following component, a vibro-packer. Vibrating, the massive metal plate rams the snow, and a solid snow surface is formed which supports pressure up to 30 kg per square cm. The thickness of the packed layer is as much as 60 cm in deep snow. Trucks with a load capacity of up to 40 tons can negotiate such snow "asphalt" freely. During one shift such a unit can lay a snow road of up to seven km in length and 240 cm between the wheels. The new method of laying winter roads will find particularly broad use in the northern and eastern areas of our country and mainly in the timber industry. Snow roads for transporting cut timber are being constructed now, but they are very expensive. Each kilometer costs up to 12-18000 rubles. The cost of laying a snow road by the new method will not be more than 2-3000

Snow Roads (cont'd)

rubles per kilometer. The new unit for laying snow "asphalt" consists basically of components which are series produced by industry. (Ekonomicheskaya Gazeta, 29 December 1960. Full translation)

New Motor Grader

The Chelyabinsk Road Machinery Plant imeni Kolyushchenko has completed the assembly of the first USSR-made 250-hp motor grader. It will be tested in the near future. (Komsomol'skaya Pravda, 2 December 1960)

Rock Excavator

The Zhdanov Heavy Machinery Plant has made the first EKP-4 rock excavator. (Ekonomicheskaya Gazeta, 16 December 1960.)

LOADING AND HOISTING MECHANISMS

Electric Travelling Cranes

Production has begun on four types of new electric travelling cranes at the Mogilevskiy Hoist-transport Equipment Plant. One of these is a fiveton crane designed for work in chemical shops. Its electric motors are protected by plastic and textolite casings, and all working parts are faced with organic glass. This completely eliminates the possibility of sparks and gas combustion. 20 units have already been produced. (Ekonomicheskaya Gazeta, 14 December 1960. Full translation)

Automatic Crane

This was a signal year for the Balashikhinskiy Automatic Crane Plant. The plant collective worked long hours on the new design supporting frame for the AK-5G automatic five-ton crane. The new model is almost 500 kg lighter in design and saved the plant 500 tons of rolled metal during the year. New test models of cranes with a load capacity of 7.5 tons were produced, on the same chassis as the AK-5G. A few days ago production testing was concluded on the new cranes, which were highly praised by the workers of the Plant imeni Likhachev. Today the collective of the Balashikhinskiy Automatic Crane Plant fulfilled its yearly program. (Vechernyaya Moskva, 17 December 1960. Full translation)

Giant Elevator

The machine builders of the Stalino Plant imeni 15-letiya Komsomola Ukrainy took another great step toward technological progress. They produced the country's most powerful multi-cable machine, the NK5 x 4, with a disk diameter of five meters. This giant elevator is designed for the Krivoy Rog Iron Ore Basin. Each of these machines is able to lift 25 tons up a shaft 1600 meters in depth. Calculations indicate that one NK5 x 4 machine will replace three existing bi-cylinder conical machines. This will effect a savings of about one and one half million rubles. (Izvestiya, 6 January 1961. Full translation)

New Tower Crane

Production has begun on the MSK-5-20 tower crane. This question was already discussed by Communists in October and November. Two commissions from the Armenian Sovnarkhoz visited the plant. However the situation remains alarming. At the beginning of 1961 the plant was to begin series production on the crane. We visited almost all shops where parts for the new crane were being produced. But nobody here is sure that the task will be fulfilled in time. The reason for the lack of fulfillment, as the plant director, L. Oganov, secretary of the party organization, S. Mirzoyan, and many engineering-technical workers told us, is the late flow of supplies of necessary materials by the Main Administration of Material-technical Supply of the Sovnarkhoz, and also the fact that the plant management treated this problem with unconcern for an extended length of time. (Kommunist, 22 December 1960. Partial translation)

Equipment Delays

Every month the Leningrad Hoist and Transport Equipment Plant fails to deliver a number of needed machines to the Leningrad Admiralteyskiy Plant, Leningrad Port, and other USSR enterprises. This is attributed to the bureaucratism and red tape at the plant, and vigourous measures are needed to revamp the manufacturing processes, its organization and planning. (Leningradskaya Pravda, 3 December 1960)

MACHINE TOOLS

Cam Presses

The Dnepropetrovsk Press Plant and the Barnaul Machanical Press Plant both produce K-117 cam presses, but their units are not interchangeable. (Ekonomicheskaya Gazeta, 20 December 1960)

METALLURGY AND MINING

Automatic Blooming Mill

The Sverdlovsk Uralmash Plant has completed blueprints for the "1300" automatic blooming mill with annual productivity of 5.5-6 million tons, or almost twice that of the previously produced mills. (Pravda, 10 January 1961)

AGRICULTURAL EQUIPMENT

New Diesel

The Khar'kov Serp i Molot Plant has developed a unified 75-hp SMD-14 diesel for tractors and grain combines. (Izvestiya, 4 January 1961)

Combine Parts

The Kiev Krasnyy Ekskavator Plant will produce above-plan spare parts for the S-4M and SK-3 combines in 1961. (Sovetskiye Profsoyuzy, January 1961, page 8)

ELECTRICAL POWER EQUIPMENT

High-pressure Turbine

The Kaluga Turbine Plant has recently completed a VPT-12 high-pressure steam turbine. It has been designed for a steam pressure of 90 atmospheres at a temperature of 535 degrees C. (Sovetskaya Rossiya, 30 December 1960)

Atomic Turbine

The Khar'kov Turbine Plant has recently completed the first steam turbine for the Novo-Voronezhskaya Atomic Electric Power Station. The new 70000-kw 3000 rpm machine will work with saturated steam at a pressure of 29 atmospheres. It is equipped with automatic controls. (Pravda Ukrainy, 29 December 1960)

New Boiler

The Podol'sk Machinery Plant imeni Ordzhonikidze has completed blueprints for the PK-39 boiler with a productivity of 950 tons of steam per hour at a pressure of 255 atmospheres.

The plant has recently started preparations for completing a new direct-flow boiler with a productivity of 640 tons of steam per hour. It has been designed to work in a unit with a 200,000-kw turbine. The new boiler is equipped with automatic safety devices.

During the current Seven Year Plan, the plant will organize the series production of boilers with a productivity of 1,900-2,400 tons of steam per hour. (Ekonomicheskaya Gazeta, 2 December 1960)

New Steam Turbine

The Leningrad Metal Plant is currently testing a 3000-RPM 300,000-kw steam turbine. It has two high-pressure cylinders and it works with a steam pressure of 240 atmospheres at 580 degrees Centigrade. (Ekonomicheskaya Gazeta, 21 December 1960)

Steam Turbine

The Leningrad Metal Plant is testing the 300,000-kw steam turbine weighing 750 tons. 25% less metal per kw of output was consumed in its manufacture compared to its predecessors. The plant has recently tested its seventh 200,000-kw steam turbine. (Sovetskaya Rossiya, 21 December 1960)

Diesel Generators

The fame of the Bol'shetokmakskiy Plant imeni Kirov has long since spread beyond the boundaries of the Zaporozhskaya Oblast. The diesel generators which are produced by it are familiar not only to the workers of the country's agriculture, but the seamen of the Far East, the petroleum workers of the Caucasus, and the geologists of Kazakhstan. They have also won popularity in Bulgaria, India, the UAR and other countries. During the past month alone the plant shipped 50 diesel motors to the Cuban Republic. The collective is in the process of producing new brands of machinery, several of which are already in series production.

Recently they built the K-153 diesel, with 115 hp. With the same weight as the K-150 engine, it is almost twice as powerful and uses much less fuel. We should mention that this motor has gas turbine pressure feed. Recently the collective successfully defended an air-cooled engine in the sovnarkhoz.

Here is another new product. This is an automatic diesel generator. It is designed for radio relay communications lines, and can also be used in rural areas. Thanks

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Diesel Generators (cont'd)

to the use of such equipment in the national economy, each year 20,000 rubles will be saved by each unit. (Ekonomicheskaya Gazeta, 9 December 1960. Partial translation)

500,000-kw Turbine

Following the tradition which has been built up around the unique 500,000-kw K-500-240 turbine, one can say that is will produce more electric energy than eight Volkhov power stations. In the coming 15 to 20 years the power engineers have the task of completely electrifying the country and increasing the capacity of electric power stations by almost 10 times. The rapid implementation of this plan requires the creation of high-capacity units. Right now the plant shops are completing the assembly and preparation for testing of the first model of a 300,000-kw turbine. The 500,000 is the second in this series of super-powerful machines.

The new turbine has been designed to incorporate all the most recent achievements of science and technology by the Central Experimental-design Bureau for Steam and Gas Turbines of the Leningrad Metal Plant. It has been designed for a high use coefficient. In size and weight the K-500-240 will differ little from the 300,000. The length of the vanes and the design of the flow sector for these turbines are almost the same. At the same time the capacity of the

500,000-kw Turbine (cont'd)

500,000 turbine is more than one and one half times as great.

This has been achieved thanks to the fact that the design of the admission components has been reworked. A supplementary steam exhaust is introduced and pressure in the condensor has been increased somewhat. The problem of the turbine's admission was one of the most complex and difficult ones to solve.

A no less important advantage of the new turbine lies in the fact that the expenditure of metal per kw of capacity has decreased sharply. Savings will amount to approximately 30%, or 600 g of metal per kw. In an electric power station with eight turbines this savings will amount to 2400 tons, that is, enough metal to produce three 500,000-kw turbines.

The new turbine unit will be run by a distance control panel. Numerous instruments designed for controlling the operations and the boiler will be placed in one block. It is important to note that both the 300,000 and the 500,000 turbines, as well as two other units designed by the design bureau with capacities of 800,000 and one million kw, are machines with identical steam parameters and a high degree

500,000-kw Turbine (cont'd)

of parts standardization. This will make it possible to shift practically from single unit production to large-scale series production of all the common components and parts for these powerful turbines, to decrease sharply the labor required for producing the machinery as well as to increase the sum total of the capacity of the machinery produced by the plant. Right now in the Central Experimental-design Bureau of the plant, the technical plan for the 500,000 turbine is being completed. It will be defended in a very short while. (Leningradskaya Pravda, 27 December 1960. Partial translation)

Khar'kov 300,000-kw Turbine

For the 40th anniversary of the GOELRO plan the machine builders of the Khar'kov Turbine Plant imeni Kirov, simultaneously with the Leningrad Metal Plant, have created a giant turbine with a 300,000-kw capacity. But this is not the limit. The designers are already intending to design an 800,000 and a million kw capacity turbine.

"We are particularly happy," said Chief Designer and corresponding member of the Ukrainian SSR Academy of Sciences Leonid Aleksandrovich Shubenko-Shubin, "that we are greeting the 40th anniversary of the day the Eighth All-Russian Congress of Soviets ratified the historical GOELRO plan with worthy achievements: the assembly of the K-300-240 steam turbine, produced a year ahead of schedule, and a unique machine for the Voronezh Atomic Electric Power Station. In addition we are working on the world's largest gas turbine unit." "Just what is the new turbine like?" "This is a single-shaft unit with three300,000-kw capacity at 300 rpm, of a condensor type, with hypercritical steam parameters: pressure before the turbine has 240 atmospheres and the temperature is 580 degrees Centigrade. It differs advantageously from the large steam units produced in our

Khar'kov 300,000-kw Turbine (cont'd)

country primarily in the fact of economy. The yearly savings in fuel for one K-300-240 turbine alone will be about 17 million rubles in comparison to 100,000-kw units."

In spite of the tremendous capacity and high initial steam parameters, the giant turbine is very compact. Its length is 21.4 meters, that is, only one and one half times as long as the VKT-100. Consequently a structure which now houses three 100,000-kw turbines can house two 300,000-kw turbines. The new turbine is no longer than the Leningrad SVK-150 and PVK-200, and its weight is comparatively small. This is why the installation of the new turbines will greatly decrease the high cost of constructing thermoelectric power stations.

It has been calculated that one and one half times as many K-300-240 turbines can be produced as, for example, VKT-100 under identical production shop capacities and with the same number of workers. This demonstrates the comparatively low labor expenditure necessary for producing turbines of this type. The controls and safety system have been made completely automatic in the giant turbine.

Khar'kov 300,000-kw Turbine (cont'd)

Eight institutes and laboratories of technical institutes participated in the scientific research work connected with designing the giant turbine. As a result of the joint efforts several unique design solutions were arrived at. For example, the governors are in concert with the stop valves. This made it possible to simplify the turbine to a considerable extent as well as its steam distribution and control, to decrease losses in steam pressure, and to decrease the weight of steam pipes by 15 tons. The high-pressure cylinder steam boxes have been produced as one unit with the inner boiler, which, thanks to the use of a new type of steel (P-1) has lightened the entire cylinder by eight to ten tons. With this design, the admission unit of the inner boiler heats up along its entire circumference under any conditions.

A new final stage vane has been designed. Thanks to it, three exhausts can be used instead of four in the low-pressure cylinder. This has made it possible to decrease the length of the turbine by 3.6 meters, and to decrease its weight by 108 tons. Water (condensed) is used in the control system for the first time instead of oil. Attention should

Khar'kov 300,000-kw Turbine (cont'd)

be drawn to the fact that many components and parts of the new turbine have been standardized with those used for the VKT-100 and the PVK-150. Thanks to this a considerable part of the equipment available at the plant was used for producing the K-300-240 turbine and will be used in the future. (Ekonomicheskaya Gazeta, 24 December 1960. Partial translation)

Gas Turbine Development

The plants of our economic rayon -- the Metal Plant, Nevskiy Machinery Plant imeni V. I. Lenin and Ekonomayzer Plant -- are designing and constructing gas turbines of various types and capacities for the needs of Soviet industry, transport and construction. One can say without exaggeration that the Leningrad plants producing gas turbines are determining to a great degree the technical-economic level of Soviet gas turbine construction.

This situation places great responsibility on the Leningrad power machinery constructors. In past years gas turbine units with capacities from 300 kw to 12,000 kw have been produeed by the collectives of our plants. This year the Metal, Nevskiy and Ekonomayzer Plants are to produce and test models of new gas turbines with capacities of 25,000 kw, 12,000 kw and 1500 kw. Right now the Metal Plant is working feverishly to produce the first GT-25-700 gas turbine, with a capacity of 25,000 kw, which is to be installed at the Kiev power station in 1961.

However, if we subject the work of the Leningrad gas turbine constructors to a critical observation for the past year, its results cannot be considered satisfactory.

Gas Turbine Development (cont'd)

First of all the growing cleavage between the production of machinery and the operational use is cause for alarm,. Today only a few units which have passed factory tests have been put into permanent operation. For example, the GT-700-4 gas turbine units of the Nevskiy Plant, which were produced in large numbers for main gas lines, are only now being put into operation, after the correction of serious defects. Low-capacity turbines produced by the Ekonomayzer Plant have not been delivered to the consumers and are at various stages of testing and assembly. The plant has a large plan for producing gas turbines in 1961, but is not armed with the experience of the operations of its own machines. The first gas turbine unit with a capacity of 12,000 kw, produced at the Metal Plant, ran about 7,000 hours, and not on natural gas as it was designed to do, but on liquid fuel. It is necessary to confess that we have little experience in actual machinery operation, and this is slowing down the further development of gas turbine construction. Naturally the question arises as to the reason for this. How can the slow rate of implementation of gas

Gas Turbine Development (cont'd)

turbines in the economy be explained? In our opinion one of the reasons for this is the fact that almost from the beginning our institutes and research organizations engaged in problems of gas turbine construction have had almost no scientific backlog of experience. The steam turbine plants which were given the orders for producing gas turbines have become unique experimental organizations. They are arriving at practical solutions to the numerous technical and theoretical problems by initiative and trial-and-error. The lack of experimental and test stands not only slows down the development of designs but has sometimes led to incorrect decisions. Unfortunately it is impossible to say that this situation has been fully corrected.

The plants producing turbines have always supplied themselves and feel no real practical aid from scientific research organizations. But it would be possible to demand a more substantial contribution to gas turbine development from the Leningrad Polytechnical Institute imeni M. I. Kalinin, the Central Boiler-turbine Institute imeni Polzunov and the Shipbuilding Institute. Another reason for the unsatisfactory situation in gas turbine construction is the

Gas Turbine Development (cont'd)

underestimation of specific features, technical and organizational difficulties connected with the production of gas turbines. The initial gains in gas turbine construction speaks of the necessity of comprehensive and complete testing of gas turbines on plant stands under conditions as close to those of operations as possible. The practice of delivering machinery by individual components and elements, even though tested ones, should be rejected as harmful. If a unit is not completed at the plant it becomes three times as expensive in assembly and operation. In view of this we should recall the GT-700-4 gas turbine units of the Nevskiy Plant imeni V. I. Lenin, which were produced at the plant and shipped to gas pumping stations without comprehensive testing and adjustments. The outcome is obvious; much time and money was necessary in order to eliminate defects in design.

It is cause for alarm that even now the plants do not have the necessary number of stands for testing combustion chambers, regenerators, compressors and other gas turbine elements. For example, a gas turbine with a 25,000

Gas Turbine Development (cont'd)

kw capacity is being tested at the Metal Plant according to its individual elements, but the entire machine will be "adjusted" at the power station. This practice cannot be approved. The weak development of research institutes on "gas turbine" subject matter acts to this day as a brake in the development and production of gas turbines. It is sufficient to note that such an important field of research as design stability, which determines the behaviour of various metals and designs under operation conditions at high temperatures and tensions, is still in its initial stages. The turbine constructors do not know, for example, how the various elements of the gas turbine flow sectors react under conditions of high temperatures maintained for long periods of time. These elements include the operating and directing vanes, diaphragms, discs, compensators and regenerators, pipes, and combustion chamber elements. One should note that the Central Boiler-turbine Institute imeni Polzunov and the laboratories of the Metal and Nevskiy Plants are marking time and are giving no practical advice at all.

Research in the field of combustion chambers is lagging far behind. In the institute imeni Polzunov work in

the methods and theory of designing combustion chambers has been conducted for many years, but results on the testing of operational designs does not confirm the results of the experimental models, and designers are working intuitively as before.

The critical comments in this article do not exhaust all the problems of gas turbine construction. But right now it is particularly important to be aware of the weak points in our work because in coming years gas turbine construction should develop rapidly. A large-scale program of growth and improvement in Soviet gas turbine construction has been outlined. The Ekonomayzer Plant alone in 1961 is to produce 2.5 times more low-capacity gas turbines (from 600 to 1,500 kw) than in 1960. At the same time the designers and research workers will be designing a 2500-kw gas turbine unit with a primary gas temperature of 1200 degrees. The Nevskiy Machinery Plant imeni V. I. Lenin is developing the plans for and producing a unique gas turbine with a capacity of 12,000 kw. In addition work will continue on perfecting GT-700-5 gas turbine superchargers for main gas lines.

Gas Turbine Development (cont'd)

Much work in reaearch and design will be done at the Metal Plant in designing the first 100,000-kw capacity gas turbine unit. This machine will be able to compete with steam turbines of the same capacity, according to its technical-economic indices. The first 9,000-kw capacity GTN-9-700 gas turbine supercharger will be produced at the same plant for main gas lines. One of the most important conditions for the successful fulfillment of the plan is the creation of a network of test stands and the development of experimental work on gas turbines. These operations must be carefully controlled and completed in time. It is very important that the activities of research institutes, having a bearing on gas turbine construction, should aid in the solution of problems faced by the plants. In view of this it would be expedient to form a committee in the technical-economic council of the sovnarkhoz, which would coordinate and direct the activities of plants and research organizations in the field of gas turbine construction. The committee should possess not only a consultative voice but directive powers and should be able to make decisions on prac-

Gas Turbine Development (cont'd)

tical problems, approve new designs for gas turbine units, technical conditions for the acceptance and testing of turbines as well as plans for research work.

The question should also be examined as to the creation of independent design bureaus for gas turbine construction at plants producing gas turbines, as well as the allocation to them of the necessary production base. The creation of independent bureaus would further more effective work by designers, increase their qualifications, as well as raise the level of responsibility for designs produced. (Leningradskaya Pravda, 16 December 1960, Partial translation)

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