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USSR MATERIALS AND MATERIALS PROCESSING EQUIPMENT

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I. CHEMICAL INDUSTRY

Plant Construction and Operation Bottlenecks

Kursk Lavsan Plant

DESIGN ERRORS FRUSTRATE PLANT BUILDERS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 15 Apr 60

The first USSR lavsan plant is being built in Kursk. It is planned to put the plant into operation in three stages. The first stage, which will produce staple fiber, is scheduled to begin production in the second quarter of 1960. The second stage, producing silk and cord yarn, is to begin production in the first quarter of 1961. The third stage will become operational in 1962. Output of anid, a miracle fiber with characteristics similar to those of lavsan, will also begin in 1962.

An experimental production facility will create technological processes for the new enterprise. The best ways of operating equipment will be selected in its shops, and workers will be trained there.

But there is now a good deal of anxiety about this "plant in miniature"; the schedule for putting it into operation is not being maintained. Some blame the builders; the builders blame the planning organizations, which are the State Institute for the Planning of Synthetic Fiber Industry Enterprises (Giproiv) and the State Planning Institute for the Construction Industry (Promstroyproyekt). The truth is that builders and designers must share the blame.

For example, Giproiv incorrectly positioned some machines and equipment in its design of the staple finishing shop. Since this became apparent only after the machines and equipment had been installed, they had to be demounted and then remounted on new foundations. This took about 2 weeks. A month was consumed in correcting another Giproiv mistake: in its original design, the institute confused the locations of the first and second transformer substations.

The carelessness of the designers at times approaches the ridiculous. In the design of the spinning shop, the ceiling should have been so arranged as to permit electrical installation work, but Promstroyproyekt's working plans omitted this altogether. Installation of production machinery is being completed in this shop, but so far the institute has not made a decision on what is to be done about the ceiling arrangement. In its design of the staple shop, Giproiv failed to provide for such a "trifling detail" as a cable conduit. As a result, the equipment is cut off from its electric power supply.

According to Rusov, a mechanic of the experimental production facility, the principal deficiency in the work of Promstroyproyekt and Giproiv is that they often do not correlate the equipment installation factor with the building construction factor in the technical documents which they prepare and that they grossly violate GOSTs. Very often, standard sizes are given loosely in the plans, and sometimes unstandardized sizes are shown as fixed sizes.

Frequently, a building is erected without the builders' knowing what kind of equipment is to be installed in it. The air conditioning room is an example. When the time came to install a tank in this room, it was necessary to take down a completed wall to get the tank in. And it has often been necessary to take down partitions and then put them up again.

The designers surprise the builders also in connection with the main production buildings of the plant. In December 1959, Promstroyproyekt sent working plans for the ventilation systems in the main production buildings; 2 months later, the institute sent new plans. In its design for the first stage of the plant, Giproiv for some reason failed to provide for a compressed air installation; consequently, the placing of orders for compressors was delayed. Giproiv "forgot" that the plant required an installation to prepare and process silica sand; but the spinning shops in both the experimental facility and the main production buildings would be unable to function without it.

Moscow, Izvestiya, 27 May 60

Final preparations are now being made at the Iavsan plant being built in Kursk to put into operation the experimental production facility as well as the main production building.

Daugavpils Synthetic Fiber Plant

MATERIAL SHORTAGES, DESIGN PROBLEMS PLAGUE BUILDING PROJECT -- Riga, Sovetskaya Latviya, 29 Apr 60

Good progress is being made on the construction of the Daugavpils Synthetic Fiber Plant. Over 350,000 cu m of earth has been moved on the 34-hectare site where the enterprise is being erected. The foundations for six buildings have been laid. The roof is being placed on the fire station. The administration building and dining hall walls are being completed. Installation of communications conduits and water lines has begun.

As usual, there are delays in the supply of building materials. A shortage of precast reinforced concrete and fittings has stopped work on the materials supply building and the chemical building. There is a lack of commercial concrete.

Many changes in the design documents are also delaying the work. Recently, the designers ordered by telephone that work cease while changes were made in the arrangement of conduits on the plant site.

The water problem has not yet been solved; water is still being hauled from the city on trucks. Wells have been drilled to the designed depth, but no water has been found there. It is apparent that also in this instance the designers must recheck their calculations.

This is a Komsomol project; a komsomol staff has been created with a chief at its head. But he is stationed in the construction trust office, not at the construction site, and communicates with the builders mainly by telephone. It appears that the Komsomol staff should be located at the site.

Lisichansk Chemical Combine

EQUIPMENT LACK THREATENS CAPROLACTAM SHOP OPERATIONS -- Kiev, Pravda Ukrainy, 29 Mar 60

The group of caprolactam shops under construction at the Lisichansk Chemical Combine is scheduled to go into operation in the fourth quarter of 1960. General construction work on most of the shops is approaching completion; however, much of the technological equipment has not yet arrived. As in 1959, some suppliers are pleading for more time to make deliveries.

The enterprises contributing to a difficult situation at the construction site include the Slavyansk Coke-Chemical Equipment Plant, the Fastov Krasnyy Oktyabr' Plant, the Korosten Chemical Machinery Plant, the Sumy Machine Building Plant imeni Frunze, and the Nikolayev Road Machinery Plant. In 1959, these plants failed to deliver much badly needed equipment.

Unfortunately, there does not appear to be any change in attitude toward the filling of orders for equipment. For example, the Dnepropetrovsk Metallurgical Equipment Plant has not yet agreed to produce 15 units of equipment, including eight rectification columns, even though construction of the building in which they will be erected must be halted until they are acquired. A representative of the Dnepropetrovsk plant visiting the combine has declared that his plant has no intention of making the columns. The Korosten Chemical Machinery Plant and other plants take a similar attitude.

CPYRGHT

The staff of the especially important Komsomol construction project at the Lisichansk Chemical Combine directs this inquiry to Gosplan Ukrainian SSR: Why may the directors of these plants delay the acceptance of orders and why do they fail to keep the staff informed on delivery of ordered equipment?

Dneprodzerzhinsk Nitrogen Fertilizer Plant

PLANT AWAITS EQUIPMENT IN VAIN -- Kiev, Pravda Ukrainy, 12 May 60

The Dneprodzerzhinsk Nitrogen Fertilizer Plant is scheduled to increase its production capacity considerably in the Seven-Year Plan period. However, the expansion work is lagging, and this time, it is not the builders who are at fault but the suppliers of equipment.

CPYRGHT

The Kiev Bol'shevik Plant was scheduled to supply contact process equipment in the first quarter of 1959. In May 1959, the Bol'shevik plant requested that the fertilizer plant accept the equipment without filters. So as not to delay the installation schedule still more, the fertilizer plant accepted the equipment with the condition that filters be supplied by July 1959. Months passed. Letters of inquiry were not answered. In February 1960, the fertilizer plant appealed to the Kievskiy Sovnarkhoz and the Kievskaya Oblast Party Committee to put pressure on the Bol'shevik plant for the filters. However, the fertilizer plant has not yet received the filters.

Kuybyshev Synthetic Rubber Plant

MINISTRY ADMITS EQUIPMENT SUPPLY IRREGULARITIES -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 15 May 60

On 2 March 1960, this newspaper published an article citing several reasons which might delay getting the Kuybyshev Synthetic Rubber Plant into operation on schedule /see USSR Materials and Materials Processing Equipment, No 22/.

CPYRGHT

P. Neporozhskiy, Deputy Minister of Construction of Electric Power Stations USSR, has acknowledged that the complaint regarding heat and power supply is justified. He assured this newspaper that the ministry had taken measures to ensure the operation of two boilers before the end of 1960, and also that the synthetic rubber plant would be supplied with needed technological equipment and materials.

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Chirchik Electrochemical Combine

CONSTRUCTION AND SUPPLY LAG BEHIND SCHEDULE -- Tashkent, Pravda Vostoka, 12 May 60

The Chirchik Electrochemical Combine is an especially important Komsomol project. However, the busy construction activity of one day is often followed by inactivity on the next, and sometimes the work shutdown continues for a long time.

The Chirchikkhimstroy /Chirchik Chemical Enterprise Construction/ Administration failed to fulfill its 1959 plan. The record was somewhat better in the first quarter of 1960, for the construction and installation plan was fulfilled. But many important structures are not being completed on schedule. For instance, building No 93 should have been finished in 1959 but is not in operation even now. The completion dates for the gas and mazut storage tanks and other installations passed long ago.

Radzinskiy, the combine's deputy director for capital construction, provided the following information regarding the situation prevailing at the construction site.

An over-all Seven-Year allotment of funds has been made for construction of the combine. Gosplan Uzbek SSR distributes these funds on an annual basis. But sometimes structures are designated for construction before design documents for them have been prepared. Equipment cannot be ordered until these documents have become available. This occurred in 1959, and that was why several million rubles remained unspent. A similar situation is now being created, although strong protests are being directed to the design organizations, particularly to the Chirchik branch of the State Institute of Nitrogen Industry.

About ten organizations are involved in procuring electrical equipment for the Chirchik Electrochemical Combine. Among these are the Administration of Heavy Industry, Tashkentskiy Sovnarkhoz; the Procurement Division, Tashkentskiy Sovnarkhoz; the Procurement Division, Gosplan Uzbek SSR; and the Procurement Division, Gosplan USSR. All of these require statements and forms, but practical assistance received from them is negligible. Often it is necessary for representatives of the combine's Capital Construction Division to visit Glavkhimkomplekt /Main Administration of Equipment Procurement for the Chemical Industry?/ in Moscow in the role of "pushers" and expedite an order for equipment.

In 1959, the Tambov Chemical Machine Building Plant failed to deliver reduction equipment on time. The plant in Sumy delayed delivery of centrifuges and absorption columns for the nitric acid shop beyond the agreed date. The Penza plant did not deliver tanks which it was to supply. Yet none of the equipment procurement organizations was seriously disturbed by these delivery schedule disruptions.

It was planned to use precast reinforced concrete on a wide scale in remodeling the combine. Suppliers are the Tashkent Plant No 2, the Yumalakskiy Reinforced Concrete Products Combine, and Chirchikkhimstroy's concrete plant. All are putting out low-quality products. Recently, it was decided to remove and replace several substandard reinforced concrete columns in the building which houses the metallic sodium shop. Reinforced concrete beams installed in Building No 93 were subsequently also found to lack the required sturdiness, but a controversy has been raging the past 5 months on whether or not to replace them. In the meantime, work on this building remains at a standstill. Work on the methane conversion shop, which will process Bukhara gas, has ceased because of a concrete shortage. The construction project's concrete requirements are not over 100 cu m daily; its concrete plant has two mixers capable of putting out 240 cu m per day, but they are often inoperative because there is no sand or gravel.

There is a lack of cooperation between the construction administration and the supervisors of the shops where remodeling is being carried out. As a result, when a machine is delivered, many construction deficiencies come to light which must be adjusted before the machine can be put into operation. For instance, the combine's machinery and repair shop spent 6 months making necessary adjustments for the installation of a gas compressor in the ammonia shop.

The unsatisfactory situation prevailing at the construction site must end. The project must be rescued from its laggard role and must assume leading status.

Petrochemicals

NEW EQUIPMENT INSTALLED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 24 Apr 60

Another large installation for initial processing of petroleum, an atmosphere-vacuum pipe still, has gone into operation at the Salavat Petrochemical Combine in the last few days.

Rubber

KHRUSHCHEV FAVORS SUMGAIT PROCESS FOR OTHER PLANTS -- Alma-Ata, Kazakhstanskaya Pravda, 29 Apr 60

N. S. Khrushchev went from Baku to visit the Sumgait Synthetic Rubber Plant, the largest chemical industry enterprise in the Azerbaydzhan SSR. F. Mustafin, director of the Sumgait Synthetic Rubber Plant, and other officials escorted the chairman of the Council of Ministers USSR on a tour of the plant.

Khrushchev was greatly interested in the economic feasibility of having existing synthetic rubber plants adopt the Sumgait plant's new technological process of converting butane gas into divinyl, which is then polymerized into synthetic rubber, as compared with the usual method of producing synthetic rubber from ethyl alcohol. Yu. Shmuk, chief design engineer of the Sumgait plant and deputy chief engineer of Giprokauchuk /State Institute for the Planning of Rubber Industry Plants/, spoke favorably on this possibility.

In response to Khrushchev's interest in the further development of Sumgait as a chemical center of the USSR, he was informed that prospects for such development were favorable because of the availability of natural gas and the by-products of Baku oil refineries. He was told that construction of a great petrochemical combine has begun in Sumgait and that its products will include synthetic fibers, including lavsan.

Synthetic Fibers

SECOND PRODUCTION LINE SOON TO GO INTO OPERATION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 24 Apr 60

The Engel's Artificial and Synthetic Fiber Combine, Saratovskaya Oblast, has put the first industrial technological capron production line into operation. A second technological capron production line is to go into operation in May 1960, or a month earlier than originally scheduled.

DEVELOPMENT OF NEW FIBER DESCRIBED -- Leningradskaya Pravda, 29 Apr 60

Vinol is a synthetic fiber with a promising future. The name was suggested by Sergey Nikolayevich Ushakov, Corresponding Member of the Academy of Sciences USSR, the scientist who supervised its development. The fiber was created in a laboratory of the Institute of High Molecular Compounds, Academy of Sciences USSR.

Research for this fiber was occasioned by the fact that existing synthetic fibers had one very serious defect; they did not absorb water well. There was need for a polymer "hydrophilic" in nature and cheap to produce.

The Japanese had such fibers. The Americans undertook to produce their own, but then preferred to purchase a license from the Japanese.

A laboratory group consisting of Yelena Mikhaylovna Lavrent'yeva, K. S. Podgorskaya, and N. M. Glinkina began independent research for a new synthetic material under the supervision of S. N. Ushakov.

An initial difficulty was the unavailability in the USSR of a certain type of polyvinyl alcohol. After about a year, a small quantity of polyvinyl alcohol of the required degree of polymerization and chemical composition was produced in the laboratory.

This alcohol was sufficient for only a few experiments. Then the Scientific Research Institute of Polymerized Plastics, which has its own experimental plant, undertook to develop the technology for producing polyvinyl alcohol. The efforts of laboratory chief I. M. Fingauz, shop chief A. A. Pavlov, and Engr A. N. Sverdlova were successful; polyvinyl alcohol of the exact type needed became available in quantity and it was possible to produce the first vinol.

Fabric made of this fiber resembles wool gabardine in appearance. Resistant to the action of many alkalis and acids, the fiber will be useful in the manufacture of filters and linings required by the chemical and mining industries.

The raw material source of this miracle fiber is acetylene. The gas is first converted into a liquid, vinyl acetate, then into a solid, polyvinyl alcohol in powder form, which in turn becomes the spinning solution. On reaching the spinning machine, the solution is forced under compressed air pressure through spinnerets. These spinnerets are only 2.5 cm in diameter but have 2,400 tiny holes. From every spinneret, there issue 2,400 filaments. At the end of the production process, a finished vinol fiber is obtained.

Seven tenths cubic meter of acetylene will yield one kilogram of vinol.

Plastics

TEXTOLITE, OTHER PRODUCTS MADE IN ARMENIA -- Yerevan, Kommunist, 29 Apr 60

The immediate future of the Echmiadzin Plastics Plant in the Armenian SSR is closely associated with glass textolite. The main component of a plastic, which determines its qualities and type, is one of a variety of artificial resins produced from petroleum, coal, or natural gas. Many plastics require a filler which may be sawdust, wood chips, fiber glass, cotton fabrics, paper, asbestos, or one of many mineral compounds. A plasticizer added to a plastic imparts flexibility and permits it to be shaped into a variety of forms. Plasticizers compose up to 40 percent of some plastic products.

Textolite is a new laminated material consisting of fabric impregnated with a synthetic resin to which heat and pressure are applied. Machine parts are made of textolite. So-called glass textolite is obtained if glass fabric rather than ordinary fabric is impregnated with resin. Glass textolite is stronger than all other laminated plastics. All kinds of boats, motor vehicle bodies, furniture, and houses are now being made of laminated plastics.

The Echmiadzin Plastics Plant will become a producer of glass textolite after it is remodeled, which will be before the end of the Seven-Year Plan. The design work for the first stage of renovation has already been completed.

The remodeled plant will process three times as much raw material as the present plant, while gross output will be almost five times as great. The present main building, where plastics are now made, will become a shop for the production of glass textolite. Plastics output will be transferred to a new larger building, which has been designed to house considerably more presses than the present building.

One shop in the new building will produce electrical fittings, such as switches, sockets, plugs, and fuses; 500 persons will be employed in this shop. A large new instrument shop will supply the enterprise with molds and other supplies necessary for the production of plastic products. Output of plastic consumer goods is to be 30 times as great as the present volume. The design for the first stage of remodeling includes provision for the construction of a workers settlement and for further expansion of the plant. A new, second stage could result in doubled output capacity.

Earth work is now under way in preparation for construction of the new main building, which will house the press shop; this shop will have a production area of approximately 10,000 sq m.

However, the young plant has been growing steadily quite apart from the remodeling plan. Two new shops, a processing shop where the rough plastic articles received from the press shop are finished and an assembly shop, were opened early in 1960. Formerly, these shops had been housed in the building with the presses. The additional space gained by the press shop permitted acquisition of additional equipment;: a 200-ton press, a 160-ton press, and a hydraulic high-pressure pump. An all-purpose milling machine was added to the instrument shop. The new equipment will go into operation within the next few days.

Seventeen enterprises in the Armenian SSR are using products made by the Echmiadzin Plastics Plant. Among these are the Leninakan Micropower Electric Motor Plant, the Yerevan Electrical Instrument Plant, the Yerevan Timepiece Plant, which receives plastic alarm clock cases, and the Leninakan Instrument Making Plant. The Gori Micropower Electric Motor Plant, which is still under construction, and other plants also use products of the Echmiadzin Plastics Plant in the Armenian SSR.

CONTINUOUS PRODUCTION LINES BOOST PHENOL-FORMALDEHYDE PRODUCTS OUTPUT -- Moscow, Izvestiya, 17 Jun 60

The Nizhne-Tagil' Plastics Plant produces over 300 different technical and chemical products. Recently, engineers P. S. Ivanov and V. N. Demkin suggested an original installation of equipment which would enable the plant to produce new types of resins. According to this scheme, all machines are assembled in one technological line. The Ivanov and Demkin installation was the first attempt made in the Soviet Union to organize continuous production of dry lacquer resins.

It has been resolved to assemble two more lines of this type, which will make possible a considerable increase in the plant's annual output of phenol-formaldehyde products.

ARTIFICIAL LEATHER PLANT IN OPERATION -- Moscow, Sovetskaya Rossiya, 30 Apr 60

A large artificial leather plant has gone into operation in Yoshkar-Ola, the capital of the Mariyskaya ASSR. The "textovinite" (tekstovinit) shop has put out its first products.

Fertilizers

PHOSPHATE SHOP IN OPERATION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 15 Apr 60

The first phosphate shop in the Ukraine has gone into operation at the Kiev Fertilizer Plant. The main production processes in the shop have been automated. The enterprise will now no longer need to import reagents and will be able to reduce the production cost of its basic product 40-50 percent.

LITHUANIAN SUPERPHOSPHATE PLANT PROGRESS -- Vil'nyus, Sovetskaya Litva, 7 May 60

Three kilometers from Kedaynyay, Lithuanian SSR, the Kedaynyay Superphosphate Plant is under construction. Already under roof are the buildings which will house the central laboratory, workers' dining hall, and plant administration. Also begun are the refrigeration installation, storehouses for materials and fuel, machine repair shop, building repair shop, and boilerhouse.

Construction of the combine is proceeding under rather difficult conditions; the area is swampy and overgrown with brush. The first step was the building of a road to the construction site.

Construction of the building for sulfuric acid production was begun recently. It is to be completed in time for the combine to begin producing by the end of 1961.

Sodium Sulfate

SULFATE COMBINE BEGINS NEW SEASON -- Ashkhabad, Turkmenskaya Iskra, 29 Apr 60

The first thousands of tons of sulfate produced by the Kara-Bogaz Sulfate Combine at the start of a new season have reached the port of Bekdash for shipment to USSR glass enterprises.

EXPANSION PLAN FOR SULFATE PRODUCER -- Moscow, Pravda, 13 June 60

Every year, 8-10 cu km of Caspian Sea water enters the Kara-Bogaz-Gol Gulf, carrying up to 100 million tons of salts, about half of which is mirabilite (sodium sulfate). Other salts in the water are magnesium sulfate, magnesium chloride, and bromine.

The Kara-Bogaz Sulfate Combine was organized to produce sodium sulfate in the First Five-Year Plan. The combine fulfilled its 1959 production plan and is successfully fulfilling the 1960 plan, an indication that fulfillment of the Seven-Year Plan for tripled sodium sulfate output is attainable. However, it will be necessary to reorganize the combine's production technology and to adopt industrial-type production methods.

Present sodium sulfate production technology is based on natural factors. The cold fall-winter period is used for precipitating mirabilite, and the warm spring-summer period, for dehydrating and drying it. This technology limits output increases, is entirely dependent on weather conditions, and is not adaptable to mechanization and automation. In the meantime, the national economy presents increasing requirements for sodium sulfate which is now widely used in the production of glass, paper, leather, and soap, and finds applications in metallurgy and other industries.

The Seven-Year Plan provides for construction of a sodium sulfate plant in Bekdash. This plant will represent technological progress, for it will precipitate and dry mirabilite artificially, eliminate much heavy

physical labor, and produce a better product. However, construction of the plant is proceeding very slowly. Computations indicate that production costs will remain high even with the new plant in operation. An electric power station must also be built and shipping costs will make the needed solid and liquid fuels expensive.

Production costs could be reduced if the bischofite, bromine, potassium, and other brine components which so far have been ignored were recovered by construction of facilities that would soon pay for themselves. If natural gas becomes available in Bekdash (its presence in western Turkmenistan and the Kara-Bogaz-Gol Gulf region is nolonger in doubt), the enterprise can be expanded to produce ammonia fertilizers, solvents, and initial materials for the production of plastics, synthetic rubber, etc.

Even though the Kara-Bogaz-Gol Gulf is now passing from the scientific research stage into a stage of economic usefulness, the State Committee for Chemistry of the Council of Ministers USSR and the Academy of Sciences USSR are slow in making decisions designed to speed development of this natural resource.

The Kara-Bogaz Sulfate Combine does not have its own design bureau and chemical laboratory. Technological problems are submitted to the All-Union Scientific Research Institute of Halurgy, while design work is handled by a branch of Gosgorkhimproyekt /State Institute for the Planning of Mining and Chemical Enterprises/. Both of these institutes are located in Leningrad and their decisions are often unrealistic.

For example, the design for the new plant calls for construction of a TETs (heat and electric power station) which is to supply steam for processing mirabilite. The combine's chief power engineer, O. D. Afanas'-yev, has proposed that a gas turbine installation be substituted for the TETs and that turbine gas be used to dry mirabilite. The engineer's suggestion has the advantages that such an installation could easily be automated and that 20 million rubles would be saved in construction costs. The State Committee for Chemistry of the Council of Ministers USSR should speedily consider the Afanas'yev proposal as a substitute for the original design. It is time to create a scientific and technical division at the combine, which would have a design bureau as one of its components.

Furfural

CONFERENCE DISCUSSES OUTPUT, COST, APPLICATIONS -- Moscow, Gidroliznaya i Lesokhimicheskaya Promyshlennost', No 2, 1960, p 30

An all-union conference on the production and applications of furfural was held in Riga in December 1959. The conference was organized by the State Scientific and Technical Committee of the Council of Ministers USSR, State Committee for Chemistry of the Council of Ministers USSR, and the State Scientific Council on the Use of Raw Materials Containing Pentosan. The more than 200 participants included representatives of enterprises, institutions, and departments interested in the production of furfural and its applications in the construction, chemical, petroleum, pharmaceutical, consumer goods, and other industries and in agriculture.

S. V. Chepigo, chairman of the Permanent Commission on Chemical Processing of Plant Materials by the Hydrolytic Method, GNTK /State Scientific and Technical Committee/ of the Council of Ministers USSR, spoke on the 1960-1965 plan for furfural production. D. M. Basin of Giprobum /State Institute for Planning in the Cellulose and Paper Industry/ addressed the conference on the technical and economic factors to be considered when locating furfural enterprises. In his speech, A. I. Kozlov of the NIIGS /Scientific Research Institute of the Hydrolysis and Sulfite Alcohol Industry/ declared that it will be possible to produce furfural at a cost of 1,500-2,500 rubles per ton in newly designed plants, as compared with about 3,000 rubles per ton in existing plants.

I. I. Porzhitskiy of the State Committee for Chemistry of the Council of Ministers USSR pointed out certain conditions under which 1965 furfural requirements might grow to twice the figure shown in the Seven-Year Plan. Since increased use of furfural in the plastics industry in place of phenol would permit a 45-50-percent rise in the output of resin for molding powders, it is planned to use furfural in 30 percent of the plastics enterprises in the Seven-Year Plan period; to carry out this plan, more than 7,000 tons of furfural will be needed in 1965. Up to 20,000 tons of furfural could be used in 1965 to produce furfuryl alcohol, which is widely used abroad to make nylon, rubber, and abrasives and also finds application in acid- and alkali-resistant cements. A 5,000-ton annual furfural requirement is foreseen by 1965 for the production of furfural acetone, useful in the production of building materials, and a 10,000-ton requirement for the production of maleic anhydride, used in the output of resins and varnishes. It is estimated that the petroleum industry will require over 11,000 tons of furfural by 1965 and that other needs will total more than 16,000 tons. To find wide application in industry, furfural must cost no more than 2,000-3,000 rubles per ton.

V. E. Leyrikh of the Scientific Research Institute of Trunk Pipelines spoke about laboratory and experimental work being done on applications of furfuryl alcohol in the petroleum industry, while A. A. Sapunov of the Scientific Research Institute of Underground Mine Construction discussed experiments on the production of building blocks containing furfural acetone for use in mine tunnels. The industrial-scale experiments with furfural acetone which are to be conducted in 1960 have as an objective the output of tens of thousands of tons of this product under conditions which will permit production at a cost of 2,500-4,000 rubles per ton. V. I. Itinskiy of the Scientific Research Institute of Plastics described a cement consisting of 10-12 percent furfural acetone, 3 percent benzenesulfonic acid, and 85-87 percent mineral filler.

The conference adopted a resolution on the production and applications of furfural and its derivatives. To satisfy the requirements of the various branches of the national economy, it was recommended that furfural output be developed to the following levels: 77,000 tons in 1965, 130,000 tons in 1970, and 195,000 tons in 1975. The resolution also took note that furfural production capacity is being increased very slowly and that the development of furfural production is retarded by the fact that hydrolysis plants are subordinated to various administrations in the sovnarkhozes.

SPEAKER EXPLORES OUTPUT EXPANSION POSSIBILITIES -- Moscow, Gidroliznaya i Lesokhimicheskaya Promyshlennost', No 2, 1960, p 25

(Paper read by S. V. Chepigo, chairman of the Permanent Commission on Chemical Processing of Plant Materials by the Hydrolytic Method, at the all-union conference on the production and applications of furfural held in Riga in December 1959.)

The Soviet Union is behind the US in furfural production although it has at its disposal unlimited resources of raw materials containing pentosan. The reasons for this have been high cost of production, a research lag in producing furfural derivatives and finding applications for them in the national economy, and a lag in providing facilities for furfural production. This paper will suggest that the Seven-Year Plan goal of producing in 1965 about 20 times as much furfural as in 1959 may be considerably exceeded.

The Seven-Year Plan provides for furfural production in specialized furfural hydrolysis plants, in furfural shops at three xylitol hydrolysis plants, and in four furfural installations at alcohol hydrolysis plants. Raw materials covered by the plan are sunflower seen hulls, corncobs, cottonseed hulls, deciduous tree wood, and on a limited scale, cotton stalks. The plan does not take into account such possibilities as furfural production in combination with wood pyrolysis at wood chemical plants, setting up small (500-1,500 ton) furfural shops at fats and oils plants and other food industry enterprises, or the utilization of extraction industry waste materials such as oak bark waste, anabasis [Kazakh plant used to produce a pesticide] residue, nightshade waste, poppy residue, etc.

Furfural production should be organized at wood chemical plants that process deciduous wood. Using a one-percent sulfuric acid solution, it will be possible to obtain furfural equal to 3.5-4 percent of the weight of the wood being processed. This process will yield 10,000-15,000 tons of furfural per year. The production cost will be 1,400-2,000 rubles per ton and capital investment required will be about 2,200 rubles per ton of furfural. Experimental production of furfural by this method should be organized in 1960 at the Syava Wood Chemical Combine; thereupon, furfural shops should be designed for other existing wood chemical plants as well as for some under construction.

There are in the Soviet Union a large number of food enterprises where 5,000-15,000 tons of plant residues (sunflower seed hulls, corncobs, etc.) accumulate each year. At such enterprises, furfural shops with an annual capacity of 1,000-1,500 tons should be constructed. Production cost of furfural at such shops will not exceed 1,200 rubles per ton according to data developed by Giprobum /State Institute for Planning in the Pulp and Paper Industry/ and according to data on the experience of small furfural plants in Italy. With minimum capital investment, this process will quickly add 15,000 tons per year to USSR furfural output. It is incumbent on Gosplan USSR and the sovnarkhozes to pay attention to the creation of such "small-scale" furfural production facilities as well as to the construction of large furfural hydrolysis plants.

The use of other raw materials containing pentosan, such as cotton stalks, alkaloid plant residues, essential-oil plant residues, and scutched hemp residues, as well as expanded use of oak bark waste, would permit quick creation or rapid expansion of furfural production at the existing hydrolysis plants indicated below.

1. Saratov Hydrolysis Plant: production of up to 3,000 tons per year on the basis of oak bark waste from the Vol'sk Tanning Extracts Plant and sunflower seed hulls from local oil mills. This output, together with the furfural output of the Shumerlya Hydrolysis Plant, would be prerequisite to the organization of nylon production at the Engel's Synthetic Fiber Plant.

2. Chimkent Hydrolysis Plant: production of up to 3,000-4,000 tons per year on the basis of anabasis, nightshade, and possibly also poppy residues.

3. Yangi-Yul' Hydrolysis Plant: production of up to 3,000 tons per year on the basis of scutched hemp residue and cotton stalks.

4. Kropotkin Hydrolysis Plant: production of up to 3,000 tons per year on the basis of sunflower seed hulls.

5. Andizhan Hydrolysis Plant: production of up to 5,000 tons per year on the basis of cotton stalks.

6. Fergana Hydrolysis Plant: production of up to 2,000 tons per year on the basis of cotton stalks.

Problems regarding procurement, storage, grinding, and transport of cotton stalks must be surveyed and quickly solved. This is important for ensuring a raw material supply for furfural production not only to the Andizhan, Fergana, and Yangi-Yul' hydrolysis plants, but also the Begovat Hydrolysis Plant in Uzbekistan, construction of which is to be finished in 1962.

The organization and expansion of furfural production at the existing southern hydrolysis plants will require less capital investment and can be carried out more quickly than construction of new enterprises of the same capacity. It is also noteworthy that these plants have hydrogen at their disposal and that any unused equipment in their xylitol shops can easily and quickly be converted to produce furfuryl alcohol, tetrahydrofuran, and other furfural derivatives.

All of these measures plus the capacity provided under the Seven-Year Plan will permit production of 70,000-80,000 tons of furfural in 1965, or double the planned amount. The new figure will cover top priority requirements which have developed in the national economy of the Soviet Union.

Ammonia

NEW FACILITY IN PRODUCTION -- Moscow, Izvestiya, 21 Jun 60

The largest ammonia production facility in the USSR has gone into operation at the Kemerovo Chemical Combine. Even in 1960, it will produce tens of thousands of tons of fertilizers. Besides fertilizers, the facility will produce caprolactam, urea, and many other organic products.

Cellulose

SIBERIAN COMBINE BEGINS PRODUCTION -- Yerevan, Kommunist, 30 Apr 60

The Krasnoyarsk Cellulose-Paper Combine has put out its first products. This giant Siberian wood-chemical enterprise is characterized by a high degree of mechanization and automation. Equipment is now being installed in the paper mill, which will produce viscose cellulose, newsprint, other papers, and cardboard.

NEW PLANT STARTED -- Moscow, Izvestiya, 22 Jun 60

CPYRGHT

Construction of a large cellulose plant has begun on the shore of Lake Baykal. Annually, it will process over 700,000 cu m of wood and produce 100,000 tons of sulfate cellulose. The plant will also produce other products.

Chemical Equipment

Compressors and Pumps

NEW TURBOCOMPRESSOR FOR CHEMICAL INDUSTRY -- Moscow, Mashinostroitel', May 60, p 36

CPYRGHT

The Sverdlovsk Uralkhimmash Plant has produced a new turbocompressor for the chemical industry. Its heat-removal capacity is 8 million kilocalories per hour, the equivalent of 3,000 ZIL refrigerators. The new machine is ten times as powerful and lighter than a piston compressor.

COMPRESSOR PRODUCTION IN LITHUANIAN SSR -- Vil'nyus, Sovetskaya Litva, 16 Apr 60

CPYRGHT

During the first quarter of 1960, the Lithuanian SSR industry has produced 3,800 mobile compressors, or 96 percent of the number envisaged by the plan. This figure can be expressed as 123 percent of the compressor output figure for the first quarter of 1959.

PUMP PRODUCTION IN ARMENIAN SSR -- Yerevan, Kommunist, 27 Apr 60

CPYRGHT

During the first quarter of 1960, the Armenian SSR produced 11,071 centrifugal and blade-type pumps, or 19 percent more than in the same period of 1959.

Gas Equipment

NEW GAZOAPPARAT PLANT -- Moscow, Sovetskaya Rossiya, 16 Apr 60

CPYRGHT

Several new plants, including the "Gazoapparat" Plant [in Ordzhonikidze?], have been put into operation in the Severo-Ossetinskaya ASSR during the past few years.

GAS-MAINS INSTALLATION MACHINERY -- Moscow, Stroitel'stvo Truboprovodov, May 60, p 29

At the Moscow Exhibition of the Achievements of the National Economy of the USSR, the following machines are being shown: the TS-1B scraper-type trench filling machine, the 1M-5 machine for tar-coating pipes, the 1ML-7 machine for winding insulation material on pipes, and the UGT-8 machine for cold-bending of gas pipes.

II. PETROLEUM AND GAS INDUSTRIES

Production

OIL, GAS OUTPUT IN FIRST QUARTER 1960 -- Leningrad, Leningradskaya Pravda, 16 Apr 60

The Soviet Union extracted 34.5 million tons of crude oil and 11.9 billion cu m of gas in the first quarter of 1960, according to the Central Statistical Administration of the Council of Ministers USSR.

Oil production went up 16 percent and gas output was 30 percent higher than in the same period of 1959.

Moscow, Sovetskaya Rossiya, 19 Apr 60

According to the Central Statistical Administration of the Council of Ministers RSFSR, 27.6 million tons of oil and 6.4 billion cu m of gas were produced in the RSFSR in the first quarter of 1960. This was 18 percent more oil and 36 percent more gas than was produced in the same period of 1959.

TURKMEN SSR EXPECTS TO REACH 1965 PETROLEUM PRODUCTION GOAL IN 1963 -- Ashkhabad, Turkmenskaya, Iskra, 14 May 60

According to M. Mravyan, chief of the Turkmenneft' Petroleum Association, the Turkmen petroleum industry expects to reach in 1963 the petroleum output projected for 1965 by the Seven-Year Plan. Since 1 January 1960, daily production has increased by 765 tons. In 1959, the industry produced nearly 77,000 tons more petroleum than had been planned for the year. In the first quarter of 1960, some 25,230 tons of petroleum has been produced and 5,914 meters of hole has been drilled in excess of the plan.

A new oil field with larger geological reserves than any previous discovery has been found in the republic in 1960. The new discovery, named the Leninskiy Oil Field, lies west of the huge Kotur-Tepe Oil Field, the commercial development of which began in 1959, the same year the Kamyshldzha and Okarem oil fields, both high-yield deposits, were found in the southern part of the Caspian Sea region.

The 1960 schedule calls for the fracturing of 100 oil wells. The 80 wells which were fractured in 1959 yielded 10,043 tons more crude oil. It has been estimated that pressuring has resulted in the recovery of about 3 million tons of crude oil at Karadag since the injection of water and gas began there in 1954.

Remote control equipment has been installed at Oil Field No 1 of the Kumdagneft' Oil Field Administration. Automation and dispatching services are to be introduced into deep pumping operations at all the oil fields at Kumdag and Cheleken.

The mechanization of underground repair jobs and capital repair jobs requiring considerable labor is being given special attention. The 28 underground repair crews have pipe coupling and uncoupling mechanisms, and round trip time in underground repair operations has declined 15-20 percent. Capital repair crews are also to be provided such mechanisms in 1960.

The present dehydrating method employed at the oil fields and requiring the use of expensive "dark contact" [principally sulfonic acids] is to be replaced by one which will use electric dehydrating units that are scheduled for construction by 1962.

The 1960 schedule also calls for introducing electrodrilling. Eventually, this type of drilling is to be increased on a broad scale in Turkmenistan.

Along with these favorable developments, there is a very important factor on the negative side. The lack of pipelines and of enterprises in which casing head gas may be used is resulting in the loss of tens of million of rubles' worth of this gas annually through flares at the fields.

Oil Field Operations

NEW OIL FIELD ESTABLISHED IN TURKMENISTAN -- Ashkhabad, Turkmenskaya Iskra, 14 May 60

A new oil field was established about 2 months ago at the former Dagadzhikskiy sector of the Chelekenneft' Oil Field Administration. The new field has become Oil Field No 2 of this field administration.

Efforts are being made to increase production from the low-yield flowing wells by the installation of new deep well pumps, but their installation is being delayed by the acute shortage of equipment. Moreover, the field has no repair shop of its own and any repairs that must be made require travel to the village of Azizbekovo, several kilometers away.

FIFTH HORIZON FOUND AT OFFSHORE OIL FIELD -- Yerevan, Kommunist, 5 May 60

Baku, 3 May -- A new oil horizon has been found at a prospecting well drilled to a depth of 3,500 meters at Offshore Oil Field No 12 of the Ordzhonikidzeneft' Oil Field Administration. The well is flowing a high-grade oil. This is the fifth oil horizon being developed under the Caspian Sea Bed in the Peschanyy Island area, offshore from Baku.

Fifteen crews are drilling deep and superdeep wells at this site to search for oil and gas. Daily oil production at this field has increased 10 percent since the beginning of the year.

7,000-METER OIL WELL SUNK IN AZERBAYDZHAN -- Ashkhabad, Turkmenskaya Iskra, 15 Apr 60

A 7,000-meter oil well is being sunk at the southern tip of the Apsheron Peninsula of Azerbaydzhan. Two wells have recently been completed in the republic to depths of 4,835 meters and 4,855 meters.

In 1959, some 17.1 million tons of crude oil and 4.8 billion cu m of gas came from Azerbaydzhan.

NEW STEEL ISLET BEING BUILT TO DRILL OFFSHORE OIL WELLS IN CASPIAN SEA -- Baku, Bakinskiy Rabochiy, 16 Mar 60

A steel islet, to be used as a foundation from which to drill offshore oil wells in the Caspian Sea, is being built 33 km from the Apsheron Peninsula. The islet is being built in a section where the water is 32 meters deep. The first prospecting well to be drilled from the foundation has been projected to a depth of 4,500 m.

LAG IN EXPLORATION AFFECTING GROWTH OF OIL PRODUCTION IN KIRGIZIA -- Frunze, Sovetskaya Kirgiziya, 11 May 60

The Seven-Year Plan calls for a threefold increase in oil production in Kirgizia. The 1959 production goal was fulfilled only 85 percent, however, and production in the first quarter of 1960 was below that of the corresponding quarter of 1959. Production has declined because of inattention to the expansion of the oil industry by the republic's organizations.

The exploration of new sites is so far behind that the lag is retarding the industry's expansion. The Administration of Geology and Conservation of Natural Resources of the Council of Ministers Kirgiz SSR and the Kirgizneft' Oil Field Administration are both responsible for exploratory operations in the republic. Geophysical exploration is

the function of geologists, whereas the actual exploratory drilling is performed by oil workers. The two administrations have failed to coordinate their activities and have been blaming each other for the poor operations in the oil industry.

Golubin, chief of the geology administration, has blamed the geologists of the oil field administration for the lag in exploration activity. He has complained that the Kirgizneft' Oil Field Administration not only lacks plans for the exploration of new sites and for the completion of exploration of existing deposits but also that most of the field administration's plans for geological exploration in 1959 were unsatisfactorily formulated and failed to meet present demands.

Saakov, who became chief of the Kirgnizneft' Oil Field Administration at the end of 1958, also criticizes the geologists and complains that they fail to provide new structures for exploratory drilling.

However, despite the poor performance of the field administration geologists, the geological administration is supposed to provide the oil workers with new structures and is mainly at fault for the lag in exploration. The geological administration increased the number of its seismic crews to only two, instead of four, as it was supposed to have done in 1959. As a result, the preparation of new structures for drilling has been delayed considerably.

The quality of wildcat operations is now more important than the number of crews engaged in searching for oil. Under present methods, wildcat operations cannot provide the results which will place individual sites under deep exploration. The geologists carry on their operations blindly because of the failure to develop proper methods and technology.

The Kirgiz Sovnarkhoz supervises the Kirgizneft' Oil Field Administration only superficially and is much at fault for the disturbing situation in the oil industry. After Saakov became chief of the field administration, he virtually "cleaned out" the staff of the field administration's subsidiary enterprises. In 1959, some 73 percent of the field administration's workers and 21 percent of its technical and engineering personnel departed. The chief engineer and chief geologist of the field administration, as well as the chiefs of the field administration's divisions of production engineering, planning, and labor and wages, were replaced. This took place during a very critical period for the republic's oil industry. For an entire year, the field administration had no chief engineer and no chief of its production engineering division.

The heavy turnover in personnel could have been attributed either to unfamiliarity with one's personnel or to inability to work with these individuals. However, it appears that for several years there were incompetent people in the principal production sectors of the oil field administration.

The sovnarkhoz has failed to help the oil workers decide numerous technical matters. For example, there have been discussions for several years about introducing hydraulic fracturing into oil field operations. The oil workers are unable to decide this matter themselves, yet the sovnarkhoz fails to provide any assistance. The situation of the Kirgiz oil industry is serious.

Gas Prospecting

GEOLOGISTS FIND INDICATIONS OF GAS IN LATVIA -- Riga, Sovetskaya Latviya, 22 May 60

One of three geological crews searching for oil and gas in the western part of Latvia in the Baltic Sea region has found indications of gas in the Cambrian sediments near the village of Piltene, northwest of Kuldiga. This crew has already drilled 1,154 meters of hole.

A second crew, which is drilling in this general area of the Baltic Sea region in which the deep-lying Cambrian, Ordovician, and Silurian sediments are believed to contain oil and gas pools, has already drilled more than 700 meters of hole but has not yet penetrated through the Devonian rock. The third crew is drilling near Ezere, south of Saldus.

Pipelines

PIPELINE WILL DELIVER GAS FROM UKRAINE TO BALTIC REPUBLICS -- Riga, Sovetskaya Latviya, 16 Apr 60

The construction of the Dashava-Minsk gas line with a lateral to Vil'nyus and Riga is one of the largest pipeline projects of the Seven-Year Plan. Riga is scheduled to receive gas in 1962.

The main line will run from gas fields in the Dashava-Komarno area in the Ukraine and will bifurcate at Ivatsevichi [in Brestskaya Oblast of Belorussia], from where one branch will run to Minsk and the other branch to Vil'nyus and Riga.

As of 10 April 1960, some 420 km of pipe had already been laid from the line's starting point. Of this length, 100 km has already been tested and recently placed in service.

Refining

REFINERY TO BE BUILT IN PAVLODAR, KAZAKHSTAN -- Alma-Ata, Kazakhstanskaya Pravda, 24 Apr 60

Pavlodar -- The Seven-Year Plan calls for the construction of an oil refinery in Pavlodar. The refinery, which is scheduled to process crude oil from fields in the Tatarskaya ASSR, will obtain its feed stock through a 500-mm pipeline to be built from Omsk. Construction of the pipeline is scheduled to start in 1961 so that it may be completed before the refinery goes on stream.

III. COAL INDUSTRY

Mines

MINING FACILITIES AND CAPACITIES OF LUGANSKIY ECONOMIC REGION -- Sovershenstvovaniye Tekhniki i Tekhnologii Dobychi Uglya (Improvement of the Equipment and Technology of Coal Mining), book edited by A. S. Kuz'mich, Moscow, 1960, pp 13-14

The Luganskiy Economic Administrative Region contains 262 mines (technical units) united into 175 mines and mine administrations (administrative units) which make up the Luganskugol' and Donbassantratsit combines. The planned capacity of all the mines is 63,603,000 tons of coal per year.

The capacity of the mines differs widely, with an average of 240,000 tons per year or 770 tons per 24 hours. The average capacity of a mine built before 1941 is 1,140 tons per 24 hours, including 39 mines (40 percent of the entire number) with a daily capacity of 1,000 tons or more, and the rest (51 mines) with a daily capacity of less than 1,000 tons. Of the mines constructed in postwar years, 28 (about 19 percent) have a daily capacity of 1,000 tons or more, but the majority have less than 1,000.

This group of mines was considerably augmented in 1954-1957 by building 65 new mines with a 24-hour capacity of 420-560 tons. Mines constructed during this short period made it possible to increase the mine capactiy of the region by more than 10 million tons per year; as a result, the coal output has been increased in recent years.

Of the 24 small mines built in wartime, nine had an average daily output of more than 500 tons; the other 15, less than 500 tons.

Coking coal is extracted in 50 mines with a planned capacity of more than 11 million tons per year, including 15 mines with a capacity of 1,000 tons or more per day. The average capacity per mine is 760 tons per day.

Consequently three fourths of the total number, of operating mines of the region, or 195, have a capacity of less than 1,000 tons per 24 hours.

Planned capacity for yearly output has been achieved 93.5 percent for the entire group of mines; including prewar mines, 104 percent; and mines built after the war, 88 percent.

SEVEN-YEAR COAL-MINE CONSTRUCTION PLANS -- Moscow, Shakhtnoye Stroitel'stvo, No 4, Apr 60, p 1

The Seven-Year Plan provides for the construction and putting into operation of underground coal mines and open pits with a total capacity of 200-220 million tons of coal per year, and also for the renovation of a large number of mines. It is planned to spend 75-78 million rubles on this work, that is, 22-27 percent more than in the past 7 years.

By directives of the 21st Congress of the CPSU, the cost of construction is to be reduced not less than 6 percent, labor productivity is to be increased 60-65 percent, and heavy manual labor is to be eliminated.

The planned capacity of the new mines is to be increased as follows: for the Donbass -- up to 2,000-5,000 tons per 24 hours, as against 750-800 tons, the present average per operating mine; for the Kuzbass -- up to 4,000—10,000 tons per 24 hours, as against 2,300-2,500 tons; for the Karaganda basin -- up to 3,000-8,000 tons per 24 hours, as against 1,500-1,550 tons; and for the Pechora basin -- 3,000-8,000 tons per 24 hours, as against 1,400-1,500 tons.

NEW COAL MINE UNDER CONSTRUCTION IN KIRGIZ SSR -- Frunze, Sovetskaya Kirgiziya, 17 May 60

A new coal mine is being built in Kirgiz SSR, near Kok-Yangak. The construction of a 500-meter slope is being completed and a mine railroad is being laid.

NEW COKING COAL REGION FOR KARAGANDA PLANT -- Alma-Ata, Kazakhstanskaya Pravda, 17 May 60

Forty kilometers from Karaganda, the new Shakhanskiy coal region is being established. This will supply high-calorie coking coal for blast furnaces of the Karaganda Metallurgical Plant. The large Churubay-Nura Mine No 12 is to be put into operation in 1961.

Coal Preparation

USSR COAL-PREPARATION MILLS -- Obogashcheniye Ugley v Tyazhelykh Sredakh (Coal Cleaning in Heavy Media), book by M. V. Tsiperovich, Sverdlovsk, 1959, p 409 ff

There are 52 coal-preparation mills in the Donbass with a total productivity of 59,040,000 tons per year. Thirty-two of these mills, with a yearly productivity of 43,750,000 tons, are intended to prepare coal for coking. During the period from 1959-1965, the number of Donbass coal-preparation mills will rise sharply.

The Kuzbass has 28 coal preparation mills with a total productivity of 23,560,000 tons per year. Twenty-seven of these mills, with a yearly productivity of 20,960,000 tons, clean coal for coking; and one mill, with a yearly productivity of 2.6 million tons, cleans fuel coal. During the 1959-1965 period, 15 coal-preparation mills with a total yearly productivity of 34,820,000 tons will be built in the Kuzbass to prepare coal for coking.

The Karaganda basin has six coal-preparation mills with a total productivity of 5,860,000 [sic] tons per year. Five of these mills with a yearly productivity of 4,050,000 tons, prepare coal for coking, and one mill, with yearly productivity of 1.8 million tons, prepares coal for fuel. During the 1959-1965 period, the construction of five coal-preparation mills is planned for the Karaganda basin. One of these, with a yearly productivity of 9.3 million tons, will be built at the Karaganda Metallurgical Plant to prepare coal for coking, and the other four, with a yearly productivity of 10.2 million tons, will prepare fuel coal.

Mining Equipment

NEW DEVICE FOR PROCESSING CUTTING BITS PRODUCED -- Kiev, Pravda Ukrainy, 15 May 60

The first automatic, rotary line in the USSR for the soldering and heat treatment of the cutting bits of coal combines and cutters was put into operation at the Krasnyy Luch Machine Building Plant in Luganskaya Oblast.

IV. FERROUS METALLURGY

Ore Mining

EXTRA DEEP MINE UNDER CONSTRUCTION IN URALS -- Moscow, Moskovskaya Pravda, 24 May 60

CPYRGHT

The construction of a mine with a planned yearly capacity of 2.5 million tons of ore has been started near the settlement of Rudnichnyy in the region of the Severo-Peschanskiy iron ore deposit, Sverdlovskaya Oblast. Ore will be mined here from a depth of more than 600 meters with the aid of powerful drilling installations, underground crushers, and excavators. This is the first time such a deep mine has been built in the Urals.

MINING POTENTIAL INCREASES AT KURSK MAGNETIC ANOMALY -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 May 60

CPYRGHT

Not long ago, it was estimated that the open-pit method of mining would produce not more than 20-21 million tons of rich iron ore per year in areas of the Kursk Magnetic Anomaly. At present, the potential in this direction has been considerably expanded. It is proposed to extract at least 30-32 million tons per year by the open-pit method in the Mikhaylovka, Staro-Oskol'skiy, and Novo-Oskol'skiy areas.

Moscow, Pravda, 20 Jun 60

CPYRGHT

The fourth Mikhaylovka mine complex has just been put into operation. This will be one of the largest in the unique iron ore basin of the Kursk Magnetic Anomaly, having a planned capacity of 4.5 million tons of rich iron ore per year to be mined by the open-pit method.

EXPLOITATIONS OF KERCH' ORE DEPOSITS -- Kiev, Pravda Ukrainy, 20 May 60

CPYRGHT

The Kamysh-Burunskiy deposit in the Kerch' area contains tremendous amounts of ore with an iron content of about 40 percent, approximating that of the Lorraine ore in France. At present, the easily concentrated, so-called brown ore is being predominantly worked. It is being utilized in metallurgical plants of the Donbass and the Central Region merely as an additive to Krivoy Rog ore since the technology of smelting the metal in Kerch' ore, which has a high content of phosphorus and arsenic compounds, has not been completely mastered.

The present extraction of Kerch' ore (3.9 million tons for 1959) is small in view of the large reserves, estimated at 2 billion tons. Further development of the iron industry of the Crimea depends first of all on the development and mastery of the technology of concentrating the "tobacco" variety of Kerch' ore. It is planned to build a large metallurgical combine on the basis of the deposit and to turn the city of Kerch' into a large ferrous metallurgical center.

Concentration

NEW OLENEGORSK CONCENTRATING MILL SECTION STARTS PRODUCTION -- Moscow, Sovetskaya Rossiya, 4 May 60

On 1 May 1960, 2 months ahead of schedule, workers of the Olenegorsk Mine Administration put the fourth section of its concentraing mill into operation. The first hundreds of tons of iron concentrate have already been processed by the new unit. The addition of the new section has increased the productive capacity of the Olenegorsk Mine Administration by 600,000 tons of iron concentrate per year. The Cherepovets Metallurgical Plant will receive more than 100,000 tons of concentrate above the plan during 1960.

Blast Furnaces

LARGEST SIBERIAN BLAST FURNACE BLOWN IN AT KUZNETSK COMBINE -- Moscow, Izvestiya, 26 May 60

On 25 May 1960, the largest blast furnace in Siberia was blown in at the Kuznetsk Metallurgical Combine. This blast furnace, as distinguished from those already in operation, has three more powerful blast heaters instead of the usual four. The gas pressure at the throat is twice as great as in older types. Other innovations have also been adopted. The operation of the new furnace will permit the Kuznetsk Metallurgical Combine to increase its output of pig iron 25 percent.

BLAST FURNACE CONSTRUCTION PLAN PROGRESSES AT KARAGANDA PLANT -- Alma-Ata, Kazakhstanskaya Pravda, 22 May 60

Builders and assembly workers of the Karaganda Metallurgical Plant are preparing to put into operation blast furnace No 1 imeni 40-letiye VLKSM. Work is progressing on the construction of blast furnace No 2.

Open-Hearth Furnaces

USSR TO INCREASE NUMBER OF LARGE OPEN-HEARTH FURNACES -- Razvitiye Konstruktsiy Martenovskikh Pechey (Development of Designs of Open-Hearth Furnaces), book by A. S. Lychagin, M. A. Chernenko, Moscow, 1960, p 5

In the near future the number of high capacity open-hearth furnaces in the USSR will grow considerably. The majority of open-hearth furnaces being remodeled will have a capacity of 500-600 tons.

Since an increase in the capacity of the furnaces is accompanied by a reduction in capital outlay for construction, a rise in labor productivity, and a reduction in the consumption of refractory materials and fuel per ton of steel, there is a resulting drop in the production cost of steel. Consequently, planning institutes are now at work on designs for furnaces with capacities of 800 and 900 tons. It is planned to pour the metal from the 800-ton furnaces into two ladles and that from the 900-ton furnaces into three.

SCIENTIFIC INSTITUTE DESIGNS NEW HIGHLY PRODUCTIVE OPEN-HEARTH FURNACE -- Moscow, Moskovskaya Pravda, 15 May 60

At the Khar'kov Giprostal' Scientific Research Institute, a plan has been worked out for a new type of open-hearth furnace which is to produce 3.9 million tons of steel per year. This is almost as much as was obtained in all the metallurgical plants of Russia in 1913.

Rolling Mills

NEW ROLLING MILL STARTS OPERATION AT ORSK-KHALILOVO COMBINE -- Ashkhabad, Turkmenskaya Iskra, 29 May 60

The builders of the Orsk-Khalilovo Metallurgical Combine have put into operation the largest 2800 rolling mill in Europe. This is the first unit of the 100 important All-Union Komsomol structures to be started.

A large number of complicated aggregates and mechanisms have been installed in the shop. All production processes are mechanized or automated.

CONSTRUCTION OF ZHDANOV ROLLING MILL SPEEDED UP -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 May 60

Work is being speeded up on the largest 1700 rolling mill in the USSR, at the Zhdanov Metallurgical Plant imeni Il'ich. Every 24 hours twice as much construction and assembly work is completed here as at the beginning of 1960.

MOST PRODUCTIVE COLD ROLLING MILL SHOP IN THE WORLD BEGINS OPERATION -- Paris, L'Humanite, 28 Jun 60, p 2

Moscow, 22 June (by telephone) -- The most productive cold rolling mill shop in the world has just been put into service near Lipetsk. The metallurgical plant where these rolling mills are operating [Novo-Lipetsk Metallurgical Combine] will soon become a combine comparable to the entire Magnitogorsk metallurgical complex. The combine is equipped with electric furnaces, installations for the continuous pouring of steel (one in operation and the other being completed) and one hot rolling mill. The cold rolling shop, which was built in 1 1/2 years by 5,000 workers, will produce tens of thousands of tons of steel plate each year. The two rolling mills which have been installed in the shop and which need to be tended by only a few technicians are a five-stand rolling mill and a reversing rolling mill.

CHEREPOVETS SHEET MILL CONDUCTS TEST RUN -- Moscow, Pravda, 24 Jun 60

On 22 June 1960 a hot test run of the 1700 sheet mill at the Cherepovets Metallurgical plant was conducted. The first slab was rolled on the six stands in front of the reeling section and the aggregates for transverse cutting. Sheet metal 1.8 mm thick and 1.5 meters wide was obtained. A cold test run of the complex engineering equipment will be made in subsequent units. The start of operations of the 1700 sheet mill is a big step in completing the construction of the sheet rolling shop which will be the largest not only in the USSR but also in Europe.

SECOND BLOOMING MILL UNDER CONSTRUCTION AT KUZNETSK COMBINE -- Riga, Sovetskaya Latviya, 12 May 60

Construction of a second blooming mill has been started at the Kuznetsk Metallurgical Combine. The new 1150 mill, being made by the Orsk Yuzhuralmash Plant and the Sverdlovsk Uralmash Plant will be completely automated. Television installations will be used to observe the technological process. Work of the operators will be greatly lightened, their functions being reduced to observation of the activity of the automatic devices which control the gigantic aggregate.

When this mill starts operating in 1961, the production of rolled stock at the enterprise will be increased 60 percent.

Iron and Steel Production

PRODUCTION COEFFICIENTS HIGH AT MAGNITOGORSK COMBINE -- Moscow, Sovetskaya Rossiya, 24 May 60

Workers at the Magnitogorsk Metallurgical Combine are now producing one ton of pig iron for every 0.608 cu m of the working volume of their blast furnaces and 9.22 tons of steel per square meter of hearth area of the open-hearth furnaces.

PRODUCTION OF CLAD STEEL -- Moscow, Pravda, 16 Jun 60

The Alchevskiy Metallurgical Plant imeni Voroshilov has started to put out a new product, a two-layer steel. Thin slabs of stainless steel are covered with a thick layer of ordinary carbon steel and the slabs are then sent to the rolling mill.

A bimetallic sheet is obtained which has all the properties of stainless steel and is only half as expensive. Such steel finds extensive use, particularly in the petroleum refining, chemical, and cellulose industries.

Coke

QUALITY OF COKE DETERIORATES IN SOVIET EAST -- Moscow, Koks i Khimiya, No 5, May 60, p 6

During recent years, the quality of coke at metallurgical enterprises of the Soviet East has deteriorated notably. Its mechanical toughness has decreased an average of 4-6 kg, based on the residue in a large [test] drum, and its ash content has increased 0.6-0.7 percent. Figures for individual enterprises are given in the following table:

Enterprise	Mechanical Toughness of Coke, Based on Residue in Large Drum (kg)		Ash Content of Coke (%)	
	1955	1959	1955	1959
Magnitogorsk Metallurgical Combine	322	322	11.5	11.8
Chelyabinsk Metallurgical Plant	321	315	10.8	11.7
Nizhniy Tagil Metallurgical Combine				
1st block of coking ovens	323	319	10.1	11.2
2d block of coking ovens	--	294	--	10.6
Orsk-Khalilovo Metallurgical Combine	305	308	12.4	12.5
Kuznetsk Metallurgical Combine	328	324	10.4	11.1
Kemerovo Coke-Chemical Plant	305	298	10.6	11.1

Metallurgical Equipment

FIRST USSR-MADE ROTATING FURNACE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 May 60

The Zhdanov Heavy Machine Building Plant has completed the first USSR-made rotating furnace for roasting lean iron ore. It has a productivity of 40 tons/hr.

METALLURGICAL CRANES -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 15 Apr 60

The Amurlitmash Plant has recently organized the production of overhead traveling cranes.

Moscow, Leninskoye Znamya, 13 Apr 60

The Domodedovo Machinery Plant is currently producing KD-20,000 air conditioners. The plant is also preparing for the production of SKK-IPR air conditioners to operate on AC in the cabs of metallurgical cranes. In 1960, air conditioners of this type will be produced with adapters for operation on DC.

NEW TUBE-DRAWING MILL -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 May 60

The Irkutsk Heavy Machine Building Plant has completed a new tube-drawing mill with a capacity of 75 tons. It is designed for the production of nonferrous tubes from 160 to 400 mm in diameter.

INSTITUTE ORGANIZED AT URAIMASH PLANT -- Moscow, Pravda, 24 May 60

For the first time in the USSR a new institute, the Scientific Research Design and Technological Institute for Heavy Machine Building (NIITYaZh MASh), has been organized at an enterprise, the Sverdlovsk Uralmash Plant. It is based on the plant's old and newly organized design divisions, central laboratory divisions, and branches of technological services.

The plant also has a division for mechanization and automation of manufacturing processes, and three technical commissions. In addition, communal design bureaus and bureaus of economic analysis are being developed extensively at the plant. Commissions for implementing the right of party organizations to check on plant administration have become the true guiding forces for technical progress at the plant.

V. NONFERROUS METALLURGY

Copper

RECENTLY EXPLORED REGION IN ALTAYSKIY KRAY PRODUCES COPPER ORE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 May 60

Copper ore is already being produced by the open-pit system in the Pokrovskiy region in Altayskiy Kray where exploration for copper ore was only recently completed. The ore is processed at the Irtysh Copper Smelting Plant without preliminary concentration.

Polymetallic ores have also been found near the Irtysh [Polymetals] Combine. Analysis has revealed that they have a high content of copper, lead, and zinc.

The Tishinskiy Deposit in Altayskiy Kray is especially valuable since one ton of ore from that deposit contains as much metal as 6 tons mined in other mines.

COPPER SMELTING PLANT INTRODUCES NEW MACHINE -- Alma-Ata, Kazakhstanskaya Pravda, 13 May 60

The Irtysh Copper Smelting Plant was the first plant in the Kazakh SSR to put into operation a high-capacity machine for casting blister copper.

KAZAKH COPPER PLANT USES OXYGEN-ENRICHED BLASTS -- Alma-Ata, Kazakhstanskaya Pravda, 28 May 60

Metallurgists of the Irtysh Copper Smelting Plant were the first in the nonferrous metallurgical industry of the Kazakh SSR to prove the high degree of efficiency obtained from the use of oxygen-enriched blasts in copper-smelting blast furnaces. The innovation increased furnace productivity 10 percent, although only one sixth as much coke was used.

The plant has completed the automation of the controlling and feeding of oxygen-enriched blasts into converters; and the pouring of copper into molds has been mechanized.

COPPER-CHEMICAL COMBINE ADDS PRODUCTION OF WIRE BARS -- Yerevan, Kommunist, 31 May 60

The Alaverdi Copper-Chemical Combine has begun the production of copper wire-bars with a high surface finish. As a result of the production of these new wire bars, plants producing copper cables will be able to manufacture products of a higher quality.

Aluminum

CONSTRUCTION OF UNIT FOR ALUMINA PRODUCTION UNDER WAY -- Moscow, Stroitel'naya Gazeta, 11 May 60

Builders of the Pavlodar Aluminum Plant have begun the construction of a complex of structures which will be devoted to the production of alumina. The unit will consist of 28 shops.

KAZAKH SSR TO EXPAND ALUMINA PRODUCTION -- Alma-Ata, Kazakhstanskaya Pravda, 11 May 60

New nonferrous metallurgical enterprises scheduled for completion during the Seven-Year Plan in the Kazakh SSR include the Pavlodar Aluminum and Alumina Plant, in which the processes involved in obtaining aluminum and alumina will be mechanized. The alumina shop of the plant will contain more than 20 buildings and structures.

The first section of the alumina plant is scheduled for operation in 1962, with alumina output planned for early 1963. The plant will be in full operation by the end of the Seven-Year Plan.

Cobalt

USSR PRODUCES COBALT IN NORTH SIBERIA -- Moscow, Pravda, 1 Jul 60

Cobalt has been discovered in the polar region of the USSR near Noril'sk where the Mining and Metallurgical Combine imeni A. P. Zavenyagin has erected the first semiautomatic installation in the world for the "extractive separation" of heavy metals.

The purity of the cobalt being produced by the combine has exceeded expectations.

Powder Metallurgy

PLANT PRODUCES ARTICLES FROM POWDERED WASTE METAL -- Moscow, Vechernyaya Moskva, 16 May 60

The plant for manufacturing locking devices of the Administration of the Metalworking Industry of the Moscow City Executive Committee is the first in the RSFSR to use metal waste products for powder from which to form finished products.

Metal powder is pressed in special molds which produce completed articles without additional processing. The plant is now producing 20 different articles made from metal powder.

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