AMERICAN JOURNAL OF SOCIAL AND HUMANITARIAN RESEARCH

ISSN: 2690-9626
Vol. 3, No. 9, 2022

# Organization of Oil and Gas Processing Enterprises

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**ABSTRACT:** In the years of independence, transition to a market economy in the republic and in the process of fundamental economic reforms, stable supply of industrial enterprises with fuel resources and products of the oil and gas industry was defined as one of the important directions of state policy. The oil and gas processing industry has a special place in this process. Bringing the quality of manufactured products to the level of world standards, using modern technologies in production, and deepening the technological processes of oil and gas processing were considered the priority areas of the industry.

**KEYWORDS:** Independence, Fergana oil refineries, Karovulbazar, Uzbekneftegaz National Corporation.

After the independence of Uzbekistan, as in all spheres of economic life, fundamental changes and renewals began to be implemented in the oil and gas processing industry. This has become important in increasing production possibilities and variety of products in the industry. During the period under study, oil refining was carried out in two large enterprises of the country - Fergana (together with the Altiariq department) and Bukhara (Karovulbazar) oil refineries.

From the first years of independence, the government of Uzbekistan focused on improving the operations of the country's largest oil refining enterprises and providing them with new technologies.

First of all, in 1991-1993, the government developed a program for the development of new types of oil products. Thanks to the effective implementation of this program, a new device for the production of motor oil for cars was launched in a short period of time. Also, in order to coordinate and effectively organize the process of oil processing, these enterprises were initially transferred to the state production association "Uzneftnikaitishlash", and then to the control of the joint-stock company "Uzneftmahsulot"[1]. The Altiariq plant was transformed into a department of the Fergana oil refinery.

Reconstruction of Fergana and Altiariq oil refineries as a result of development of the Mingbuloq field in Namangan region was determined on the basis of the decision of the Cabinet of Ministers of the Republic of Uzbekistan on August 3, 1993. In 1995, the successful completion of the first strategic task of the oil and gas industry, i.e., the task of achieving full oil independence by increasing the production of oil, gas and gas condensate, created the need for consistent work in the processing of oil raw materials. For example, since 1995, in connection with the transition to full processing of local hydrocarbon raw materials[2], the reconstruction of technological facilities and the establishment of the production of oil products based on the requirements of the world standard became an urgent issue. The decision of the Cabinet of Ministers of the Republic of Uzbekistan on the reconstruction of the Fergana oil refinery was of great importance in order to solve this need [3].

On the basis of this decision, the reconstruction of the Fergana oil refinery in 1997-1999, including the construction of diesel fuel hydrotreatment and amino purification and sulfur removal devices, as well as the



ISSN 2690-9626 (online), Published by "Global Research Network LLC"
under Volume: 3 Issue: 9 in Sep-2022 https://grnjournals.us/index.php/AJSHR

modernization of the existing devices, was determined. Also, taking into account the costs of providing financial support to Uzbekneftegaz National Corporation in cooperation with the Japanese company Mitsui regarding the basic and detailed design, equipment and materials supply, construction, pre-commissioning work, technical supervision of start-up and adjustment work. 9895 mln. Japanese yen and 75.89 million. It was decided to conclude a contract with the condition of ready-to-use delivery for an amount not exceeding US dollars [4].

The project implemented in cooperation with the companies "Mitsui" and "Toyo Engineering" received 20.7 mln. of Uzbekistan, 90 mln. from the European Bank for Reconstruction and Development. provided a loan in the amount of US dollars. "Uzneftkaitailash" state production association was appointed as the main contractor of the important project.

It should be noted that, based on the decision, the financing of this project was carried out through loans provided by the Export-Import Bank of Japan and the European Bank for Reconstruction and Development, as well as a loan provided by the Republic of Uzbekistan to the national corporation "Uzbekneftgaz". During the implementation of the project, the company "Mitsui" and its foreign partners were exempted from all taxes and duties, including the import and export of the equipment involved in the construction related to the implementation of the contract.

As a result of the consistent implementation of this project, by the year 2000, a device for producing diesel fuel (GDS-hydrodesulfurization) meeting the requirements of the world standard was put into operation at the Fergana Oil Refinery [5]. The implementation of the project ensured deep and perfect processing of Uzbek oil, characterized by a high sulfur content. At the same time, the existing equipment and some of its parts were rebuilt and updated. A station that automatically and precisely pours oil products into railcar tanks has been put into operation. With the implementation of this project, since 2000, it has been possible to reduce oil extraction, that is, to increase the production of oil products while preserving its underground resources [6]. For example, gasoline extraction from raw materials increased by 5.4% compared to the previous period, and kerosene extraction by 14.3%.

As a result of the continuation of the reconstruction works of the plant, since June 2007 it was possible to obtain de-ethylated AI-95 gasoline, toluene fraction in the newly built GFU unit. Renewal of gasoline enrichment catalysts by the French company "Procataliz" was of great importance in launching the production of new types of products. In 2008, the production technology of 8 types of modern, universal and all-season motor oils under the name "Ferganol" was launched. Also, in 2008, with the commissioning of the gas fractionation device, an increase in product type and quality improvement was achieved. As a result of this process, the production of liquefied gas for cars and stable fractions of butane, propane and gasoline was launched. Launching of this device, along with strengthening the economic development of the enterprise, prevented harmful effects on the environment of thousands of tons of toxic gases being burned.

In the early days of independence, due to the increase of oil fields in the western regions of Uzbekistan, i.e., South-western Hisar and Bukhara-Khiva regions, and the development of the large Kokdumaloq oil field, bringing the oil refinery closer to the fields became an urgent issue. Based on this need, in May 1993, a group of members of the republican government and leading experts of the oil and gas industry selected a special place in Qarovulbazar district to establish a new enterprise, the Bukhara Oil Refinery, which serves to ensure oil independence. In the selection of this area, firstly, the proximity of the area to the sources of raw materials, secondly, the convenience of supplying the finished oil products necessary for the needs of Bukhara, Navoi, Samarkand, Khorezm, Kashkadarya, Surkhandarya regions and the Republic of Karakalpakstan, as well as saving a lot of money in this direction were assumed[7]. The analyzes conducted consistently by the relevant ministries and experts, which lasted almost three months, made it possible to draw final conclusions regarding the creation of the enterprise. On this basis, the adoption of the special


ISSN 2690-9626 (online), Published by "Global Research Network LLC"
under Volume: 3 Issue: 9 in Sep-2022 https://grnjournals.us/index.php/AJSHR

decision of the Cabinet of Ministers of the Republic of Uzbekistan on the construction of the Bukhara oil refinery on August 3, 1993 was of great importance. According to the plan developed on the basis of this decision, it was decided to put the project into operation in 45 months, to produce gasoline, jet kerosene, diesel, boiler fuel, and sulfur. A special group was established to study the activities of firms and companies specializing in the construction of the world's leading oil plants. For nearly two years, the group studied foreign companies that could build the Bukhara [8]. As a result of these works, the French company "Technip" was chosen, which incorporates the most modern techniques and technologies, scientific achievements for the establishment of the enterprise.

In April 1995, the decision of the Cabinet of Ministers of the Republic of Uzbekistan on the construction of Bukhara was adopted. In this decision, it was determined that the technological part of the factory to be built will be implemented by the "Teknip" company. A consortium was formed in cooperation with "Teknip" and Japanese companies "Marubeni" and "Jay-ji-si" for the implementation of the project. GAMA, one of the leading international contractors of Turkey, won the competition for the implementation of the project. Thus, the construction of the first phase of the plant was started in May 1995. 497 mln. necessary to start the first phase of the plant project. 40 percent of the amount in US dollars, i.e. 235 mln. The amount of US dollars was covered by the government of Uzbekistan, and 30% of the project cost was covered by the French "KOFAS", Japan and the US "Export-Import Bank". Also, on May 20, 1995, a 93-km gas condensate pipeline and a station for filling gas condensate into a wagon were put into operation. On the same day, gas condensate poured into 54 tank cars was sent to Fergana . Since that day, the purchase of crude oil imported from neighboring republics for the Fergana has been stopped, and the foundation of the independence of oil raw materials of Uzbekistan has been laid[9].

Along with the establishment of the plant, the work of providing the enterprise with highly qualified personnel was carried out effectively. In particular, in July 1996, 147 technologists, mechanics, electricians and other specialists working at the enterprise were selected and trained at the Fergana Oil and Gas Technical College on the basis of a special program and tested their theoretical knowledge in practice at the Fergana.

In February 1997, the plant's main power supply station was put into operation, and the power supply was fully established. On August 18, 1997, the first line of the plant with a production capacity of 25,000 tons of gasoline per year, i.e., the first tests of the electric desalination device, was carried out. On August 22, at the international presentation ceremony of Bukhara, the plant was ceremonially launched with the participation of representatives of the government of the Republic of Uzbekistan and heads of foreign partner companies.

Block 5 of the first phase of the plant was put into operation in 1996, and the second phase of the enterprise was put into operation in 2006. In 1997-2002, in collaboration with leading experts, the main technological documents of the plant, the standards of manufactured technological equipment products were developed, technological processes and proposals for changing and improving technological equipment were studied in depth, proposals for improving the quality of manufactured products and new products were considered, their standardization and work on certification has been started. By 2002, the enterprise had the production capacity of 660,000 tons of gasoline, 1.3 million tons of diesel fuel and 300,000 tons of aviokerosene, meeting world requirements. Since 2003, the factory has started production of a new brand of unleaded AI-91 gasoline, and since September 2005, AI-80 gasoline. As a result of the consistent implementation of the decision of the President of the Republic of Uzbekistan "On improving the implementation of innovative projects and technologies in production" adopted in 2008, in 2009 the production of DJET A-1 brand fuel for gas turbine engines was launched at the plant. More than 300,000 euros were spent on the implementation of this project.

As of 2009, the plant produces diesel fuel and solvents, as well as sulfur, liquefied gas, propane, butane, technical oxygen, fuel oil with a number of brands of auto and aviation gasoline. 2.5 million per year in the



ISSN 2690-9626 (online), Published by "Global Research Network LLC"
under Volume: 3 Issue: 9 in Sep-2022 https://grnjournals.us/index.php/AJSHR

enterprise. tons of oil processing is possible, and currently 14 types of products are prepared based on the processing of crude oil. The enterprise produced 50% of gasoline, 35% of aviation fuel and 30% of diesel fuel in the republic. In addition to domestic needs, the products produced at the plant are exported to countries such as Russia, Afghanistan, and Tajikistan. The volume of oil products exported abroad until the first half of 2005 was 16 mln. tons.

The growth of the oil refining capacity in the republic, in turn, allowed the increase in the level of export of the products produced in the sector abroad. In particular, during 1995-2003, the export of oil products increased by 1.34 times, and in 2003, the export volume of products produced on the basis of oil processing was 38.9 million. amounted to US dollars[10].

In the development of the oil and gas industry, along with the oil refining network, the processing of gas raw materials is also important. Gas processing is a process that changes frequently. Because the change in the size and composition of deposits directly affects it.

In the development of the oil and gas industry, along with the oil refining network, the processing of gas raw materials is also important. Gas processing is a process that changes frequently. Because the change in the size and composition of deposits directly affects it. Natural gas extracted from mining reservoirs contains solid particles (sand, corrosion products), dark hydrocarbons (condensates), water vapor, sour carbon dioxide and inert gases. The presence of solid particles in the gas composition leads to rapid erosive erosion of the metal parts of the compressor interacting with the gas. In addition, solid particles contaminate and destroy fittings and measuring devices installed in pipelines, accumulate in certain sections of the pipeline, and reduce its cutting surface. This, in turn, reduces the gas permeability of the pipe.

In the republic, gas processing is carried out in three enterprises, that is, the Mubarak gas processing plant, the unitary subsidiary "Shortanneftgaz" and the "Shortangazkimyo" complex.

Mubarak gas processing plant has a special place in the oil and gas industry of the republic. The construction of the enterprise was approved by the decision of the former Union government No. 370 of May 23, 1968, and December 31, 1971 is the date of operation of the enterprise. Since January 1972, by order of the former Union Ministry of Gas Industry, the Mubarak gas-sulfur plant has been called the Mubarak gas processing plant. By 1973, workshop No. 3 - a workshop for extracting sulfur from the gas composition - was launched at the enterprise. 5 billion per year of the enterprise. The 1st plant with the capacity to process m3 of natural gas was built and put into operation in 1971-1973, the 2nd plant with the same raw material processing capacity in 1978-1980, the 3rd plant in 1980-1981, and the 4th plant in 1983-1986. Thus, by 1991, the plant's gas processing capacity was 24 bln. delivered to m3.

The first years of independence marked a turning point in the operation of the Mubarak gas processing plant. Taking into account that ensuring the stable operation of the plant is of great importance for the country to recover its economy and achieve fuel independence, two billion a year each. m3, a total of 6.25 billion. The 5th turn, consisting of blocks 13, 14, 15, with a gas processing capacity of m3, has been put into operation. Construction of Block 14, which began in the second half of 1992, was launched in December 1993. The 13th block was put into operation on October 23, 1994, and the last 15th block at the end of December 1996. At the same time, the 4th turn of the sulfur production unit with an annual production capacity of 183 thousand tons was put into operation at the enterprise. It contains 745.2 thousand tons of gas condensate per year, a gas desulfurizer with a capacity of 17.2 thousand tons of liquefied gas. In addition to two units of six sulfur generators equipped with equipment and facilities, a device for obtaining liquefied gas and one-way gas condensate stabilization was also put into operation. It should be noted that the devices and equipment installed in these blocks were brought from foreign countries, such as Russia, Germany, Finland, which are leaders in the field of gas processing.



ISSN 2690-9626 (online), Published by "Global Research Network LLC"
under Volume: 3 Issue: 9 in Sep-2022 https://grnjournals.us/index.php/AJSHR

In 2007-2008, outdated devices were renewed in the 16th, 17th, 18th blocks of the enterprise. The equipment and facilities installed in this unit were considered unique among the CIS countries in terms of the level of gas purification and the volume of processing.

In the early stages of its activity, the company produced two types of products - sulfur and purified gas. Today, it produces processed natural gas, solid and liquid sulfur, stabilized gas condensate, liquefied gas (propane and butane fraction). 5 bln. If m3 of natural gas is processed, by 2006, this indicator will be about 29 billion. reached m3. In 2010, the company made 27-28 billion per year. m3 of gas was processed and 250-300 thousand tons of sulfur and more than 500 thousand tons of gas condensate were obtained.

As mentioned above, the gas extracted from the Shu'rtan gas field is characterized by its low sulfur content and the presence of valuable fuels such as light hydrocarbons - ethane, propane, butane. These valuable components are raw materials for polymer materials - polyethylene, polyvinyl chloride and other products. The introduction of single polyethylene production is of great importance in the development of agriculture, mining industry, automobile and aircraft industry. This increased the possibility of producing new types of products by processing raw materials and supplying necessary products for other sectors of the national economy. Until 1998, polyethylene and plastic materials were brought to Uzbekistan from abroad, mainly from Russia, for a large amount of money. In order to solve this problem, as well as to strengthen the country's economy through the development of the oil and gas industry, the establishment of a gas and chemical complex has become an important necessity. In the implementation of this project, first of all, a convenient area with the necessary infrastructure was selected - "Shortangaz" DIChB, Talimarjon GRES and Talimarjon Main Canal Facilities Center (150 ha). Companies such as "AB Lummus", "Novo Chemicals", "Shell", which have a great position and experience in the world, participated in the competition for the implementation of the gas-chemical complex project with their proposals and projects.

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ISSN 2690-9626 (online), Published by “Global Research Network LLC"
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ISSN 2690-9626 (online), Published by "Global Research Network LLC"
under Volume: 3 Issue: 9 in Sep-2022 https://grnjournals.us/index.php/AJSHR