## Changes In The Murobak Gas Processing Plant In The Years Of Independence

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**Abstract:** In the years of independence, significant changes and modernization works were carried out at the Mubarak Gas Processing Plant. The increase in the plant's production capacity, the introduction of new technological processes, and the implementation of investment projects ensured the effective use of existing resources. The Mubarak Gas Processing Plant not only provided competitive products for the domestic market but also exported its products to foreign markets. The expanded activities of the plant played an important role in providing employment for the local population and contributed to the production efficiency and economic development. This article analyzes the development dynamics of the plant and its promising projects based on mutual support and annual indicators.

**Keywords:** Years of Independence, Mubarak Gas Processing Plant, modernization, production capacity, export, technological innovations, economic development, investment projects, energy resources, environmental standards.

The Mubarak Gas Processing Plant is one of the key facilities in Uzbekistan's oil and gas industry. The plant is of strategic importance for the country's economy, playing a leading role in processing natural gas and preparing it for export. Its activities are aimed at meeting both domestic needs and delivering competitive products to international markets.

After Uzbekistan gained independence, the oil and gas industry entered a new phase of development. In this process, the Mubarak Gas Processing Plant was also reorganized based on technological modernization and modern requirements. This introduction discusses the plant's role in the years of independence, its development path, and its contribution to the country's economy.

The activities of the Mubarak Gas Processing Plant during the independence period, modernization projects, improvements in production processes, and measures for ensuring environmental safety are widely discussed. At the same time, the plant's role and significance in the development of Uzbekistan's gas industry are analyzed.

The Mubarak Gas Processing Plant underwent rapid transformation processes during the years of independence, which created the opportunity for highly efficient utilization of production capacities. Furthermore, modern equipment and advanced technologies with high efficiency were widely implemented in the production processes. As a result, during the independence period, the volume of natural gas reserves at the plant increased by 40%, and annual production indicators reached 28.5–29 billion cubic meters<sup>1</sup>.

In 1991, the Mubarak Gas Field Management was restructured by merging the "Kogonneftgaz" and "Kashkadaryaneftgaz" production managements. Also, that same year, the "Kashkadaryaneftegazpromstroy" trust was established in Kashkadarya region with the aim of coordinating construction works in the oil and gas industry. This trust was involved in well repairs, general construction works, and equipment installation. The trust included large organizations such as "KSEM," "KKMS," "KTSS," and "KNGSI," which provided integrated services to oil and gas industry enterprises in the region. These organizations made significant contributions to oil and gas production, processing, and infrastructure development. For example, the total revenue of the trust in 2008 exceeded 25 million soms<sup>2</sup>

In 1990-1991, equipment installation work was carried out at the "Zevarda" gas field, and the field was put into operation. In the first year of its activity, 2 billion cubic meters of gas were extracted, and by 1994, the

<sup>&</sup>lt;sup>1</sup> Эшкулов Ф. Залворли одамлар – муваффақият мезони // Ўзбекистон ёкилғи энергетикаси, 2011 йил 27 сентябрь.

<sup>&</sup>lt;sup>2</sup> Ўз МА, М-155-фонд, 1-рўйхат, 61-иш, 101-108-варақлар.

extraction capacity was increased to 8 billion cubic meters. In 1991, the Ok Nazar field was launched and put into operation under the Mubarakneftgaz Unitary Enterprise system. In the following years, a number of new fields, such as Arniyoz-Kirquloch, Hujamubarak, Yangi Pomuk, Chynagar, Mezon, Yangi Qoratipa, Yumai, Khonobod, Ilim, Chulquvar, Ilonli, and Mirmiron, were brought into operation, significantly increasing production volume. The activity of these fields became strategically important, not only for the region but also as a key component in the country's energy sector <sup>3</sup>

In 1992, the commissioning of a new gas field resulted in an increase in gas extraction capacity by 2 billion cubic meters. Additionally, by December 1992, the annual capacity of the Mubarak Gas Processing Plant was raised to 25 billion cubic meters. To further improve the gas processing efficiency, the number of blocks at the plant was increased to 18. In 1993, the plant's gas condensate production reached 120,000 tons, and by 1994, this figure increased to 444,900 tons. This significantly enhanced the plant's production efficiency and made a substantial contribution to strengthening the economic potential of the country <sup>4</sup>

The Kökdumalok oil and gas condensate field is one of the largest fields in the Mubarakneftgaz unitar enterprise system and holds a significant position in Uzbekistan's oil and gas industry. In 1994, an oil preparation facility was commissioned, followed by a gas preparation facility in 1995. Additionally, in 1997, a compressor station was built based on modern equipment from the Dresser-Rand company (USA). The construction of the Kökdumalok compressor station had strategic importance in the development of Uzbekistan's oil and gas sector and marked one of the initial steps in attracting foreign investments into the country. The project's implementation also involved collaboration with Kellogg (USA) and Nisho Iwai (Japan), reflecting the development of global cooperation ties. At the Kökdumalok field, hundreds of wells produced an average of over 180 million cubic meters of gas and oil per day. In just the first five months of 1997, a workforce of 3,600 people produced 15 billion 876 million cubic meters of gas, 1 million 670 thousand cubic meters of oil, 791 tons of condensate, and 11 thousand 530 tons of liquefied gas. These figures further confirm the field's high production potential and its economic significance<sup>5</sup>.

In 1995, Boryon Roziyev, who worked as an operator for oil and gas extraction at the Mubarak gas field under the Mubarak Gas Fields Directorate, was awarded the title of "Hero of Uzbekistan" in accordance with the decree of the President of the Republic of Uzbekistan. B. Roziyev had been working at the enterprise since 1972 and was distinguished by his diligence and dedication to his work. He made significant contributions not only to the development of the Mubarak gas field but also to the exploration of other oil and gas fields such as Shurtapa, North Maymanak, and others. His heroic labor is recognized not only for his work in this field but also for his invaluable contribution to the development of the country's oil and gas industry<sup>6</sup>.

Since May 25, 2000, the Mubarak Gas Processing Plant has been a subsidiary unit under the structure of the "Uzgeoneftgaz" production joint-stock company. In that year, the volume of processed gas at the plant reached 27.324 million cubic meters, while sulfur production amounted to 217.5 thousand tons, stabilized condensate production reached 556 thousand tons, and liquefied gas production totaled 13.5 thousand tons. These figures clearly demonstrate the high production capacity of the plant and its strategic importance in the country's oil and gas industry. The plant's effective operations during this period contributed significantly to the growth of Uzbekistan's economic potential<sup>7</sup>.

On August 17, 2006, the Mubarakneftgaz Unitary Enterprise received a prestigious certificate related to the implementation and application of a quality management system that complies with the international ISO 9001:2000 standard. This certificate confirmed the alignment of the enterprise's quality system and production processes with international standards. Although the Mubarak Gas Processing Plant was designed to process 30 billion cubic meters of gas annually, from 2007, the plant also began producing technical sulfur, which was certified by the international quality management system. The enterprise has established the production of several product types, including stable gas condensate, liquefied hydrocarbon gases, and technical sulfur.

<sup>&</sup>lt;sup>3</sup> ҚВДА, 536-фонд, 1-руйхат, 41-иш, 32 – 33-варақлар.

<sup>&</sup>lt;sup>4</sup> ҚВДА, 536-фонд, 1-руйхат, 87-иш, 18 – 19-варақлар.

<sup>&</sup>lt;sup>5</sup> Кум бахранлари бағридаги — мўжиза // — Ўзбекистон ёкилғи енергетикаси , 2004 йил 28 март.

<sup>&</sup>lt;sup>6</sup> Рўзиев Бўрон. – Ўзбекистон миллий энциклопедияси. 7-жилд. – Т.: ЎзМЭ ДИН, 2004. – Б.402.

<sup>&</sup>lt;sup>7</sup> ҚВДА, 536-фонд, 1-руйхат, 87-иш, 18 – 19-варақлар.

These products are in demand not only domestically but also in foreign markets and were directed towards export. This strengthened the Mubarak Gas Processing Plant's position in international trade<sup>8</sup>.

In 2008, the Mubarakneftgaz Unitary Enterprise carried out welding and installation work on pipelines totaling 108 kilometers at the Kokdumalak, Umid, Southern Kemachi, Samontepa, and Pomuk gas fields. That same year, the enterprise extracted oil and gas products from 31 wells under its management. These installation works were mainly carried out by the Mubarakneftegazmontazh (MNGM) organization. In 2008, MNGM earned 63 million som from the installation and mounting of oil and gas pipelines, while in 2007, this figure was 61 million som. In the following years, with the increase in the number of oil and gas fields and the expansion of operations in the region, MNGM's revenue further increased. For instance, in 2009, the organization's revenue was around 69 million som, and in 2010, it reached approximately 70 million som. During these years, MNGM played an active role in the construction of large fields such as North Shurtan and South Kemachi, which helped further expand the enterprise's production capacity<sup>9</sup>.

To ensure the constant monitoring of the quality of products produced at the Mubarak Gas Processing Plant Unitary Subsidiary, the central laboratory staff conducted regular analyses. A significant focus was placed on equipping the laboratory with modern technologies to enhance quality control. Special attention was given to improving the working and living conditions of employees. In 2011, on the initiative of the central laboratory head, L. Rakhmonova, new modern equipment was purchased for the laboratory, including an electronic furnace manufactured in Germany. This equipment allowed for continuous monitoring of the quality of sulfur products. Experienced engineers, including Feruza Ummatova, Nodira Chorieva, and Zulaykho Mamadaminova, played a significant role in monitoring product quality. They made important contributions to conducting quality analyses and implementing new technologies in the laboratory<sup>10</sup>

In March 2012, Uzbekneftegaz JSC continued another significant project aimed at modernizing the gas processing plant—the construction of a Propane-Butane Mixture Plant (PBMP). According to the project, the PBMP was designed to process 12 billion cubic meters of natural gas annually, producing 258,000 tons of liquefied gas and 125,000 tons of gas condensate. More than 80% of the product was directed for export. The first phase of the construction was completed by the end of 2011. The financing sources for the project included a loan of \$85 million from the China Development Bank, \$55.4 million from the Uzbekistan Reconstruction and Development Fund, \$50 million in credits from Uzbek banks, and \$53.6 million from Uzbekneftegaz JSC's own funds. This project had a significant impact not only on the country's economy but also on the supply of new technologies to the energy sector <sup>11</sup>

In 2012, construction and installation works continued at the compressor station built at the South Ortabulok gas field, which is part of Muborakneftgaz Unitary Sub-branch. The compressor station was designed to ensure the extraction of residual gas with high sulfur content from the South Ortabulok field. The station was also built as part of the project to improve the South Ortabulok and Samantepa fields, as well as to construct the gas pipeline from the South Ortabulok to the Muborak Gas Processing Plant. The main task of the station was to increase the pressure of the wet raw gas, which has a high sulfur content, to the required level for transportation to the Muborak Gas Processing Plant, in conditions where the reservoir energy of the South Ortabulok field was decreasing. According to the Program for the Development of Priority Sectors of the Industry of the Republic of Uzbekistan (2011–2015) and the 2012 Investment Program, this project was valued at a total of \$310 million. It was aimed at an annual capacity of 2.7 billion cubic meters of past values at a total of south or soft condensate extraction, and the transportation of 5.5 billion cubic meters of gas <sup>12</sup>

The website of Muborakneftgaz UCH reported on another significant project carried out in the first nine months of 2012. This project was focused on the improvement of the South Kemachi field, involving large-scale construction and modernization works. Additionally, in May 2012, during the visit of the delegation

<sup>&</sup>lt;sup>8</sup> Темиров Б. — Муборакнефтгазнинг халкаро сертификати // Қашқадарё, 2006 йил 12 сентябрь.

<sup>&</sup>lt;sup>9</sup> Ўз МА, М-155-фонд, 1-рўйхат, 118-иш, 205-210-варақлар.

<sup>&</sup>lt;sup>10</sup> Акулов В. Богатый опыт, современные технические средства, высококвалифицированный персонал залог успеха // Узбекистон ёкилғи энергетикаси, 2011 йил 16 декабрь.

<sup>&</sup>lt;sup>11</sup> Мощность завода значительно увеличится // Ўзбекистон ёкилғи энергетикаси, 2012 йил 15 сентябрь.

<sup>&</sup>lt;sup>12</sup> 2011 – 2015 йилларда Ўзбекистон Республикаси саноатини ривожлантиришнинг устувор йўналишлари тўгрисидаги Дастур. – Т., 2011. – Б.43 – 44.

from the M.V. Frunze Scientific and Production Association in Sumy, Ukraine, to Uzbekistan, the issue of producing modern equipment for the fields under the control of Muborakneftgaz UCH was discussed. During the negotiations with Ukrainian partners, tasks related to the supply of high-tech equipment for the compressor station to be built at the South Kemachi field and other facilities of Muborakneftgaz UCH were discussed<sup>13</sup>.

In accordance with the 2012 Investment Program, a total of \$103.75 million was allocated for the implementation of this project from the credit of Uzbekneftegaz Joint Stock Company and the China Development Bank. This funding provided the necessary financial foundation for the completion of construction works at the propane-butane separation unit. Additionally, \$80 million from the own funds of Uzbekneftegaz Joint Stock Company was invested to complete these construction works<sup>14</sup>.

In 2012, another major and important investment project was implemented at the Mubarak Gas Processing Plant in collaboration with Idorama Group (Singapore) to build a gas-chemical complex with a production capacity of 500 thousand tons of polyethylene per year. A total of \$100 million was allocated for this project. In accordance with the 2012 Investment Program of our country, \$25 million from the own funds of Uzbekneftegaz Joint Stock Company and \$25 million from the Uzbekistan Reconstruction and Development Fund were allocated for the implementation of this project, which has a total cost of over \$2.5 billion. Additionally, by 2015, foreign direct investments directed to this project amounted to \$50 million. The plant also continued to implement its prospective plans<sup>15</sup>.

In 2014, at the Fifth Republic Fair of Innovative Ideas, Technologies, and Projects, an agreement was signed between Mubarakneftegaz JSC and the Academy of Sciences of the Republic of Uzbekistan to conduct experimental tests of floating pontoons to reduce the loss of light hydrocarbons from one of the oil fields. In October 2014, tests of floating pontoons were conducted at the condensate storage tanks of the Alan field, achieving positive results. It was found that during long-term (up to one month) storage, the efficiency of using floating plastic pontoons reached up to 5.0% of the volume of the filled product. It is worth noting that the use of this innovative technology not only prevents the evaporation of light hydrocarbons during storage but also reduces the risk of fire inside the container when storing flammable products <sup>16</sup>

On March 4, 2015, the Decree of the President of the Republic of Uzbekistan on measures to ensure the modernization, restructuring, and diversification of production for the period 2015-2019 became a logical continuation of the ongoing process of production renewal and the introduction of innovative technologies in our country. According to this Decree, 124 investment projects were planned for the modernization of production, technical, and technological renewal in the fields of geology, fuel-energy complex, chemistry, petrochemistry, and metallurgy. Additionally, 48 promising investment projects with the involvement of foreign investors were planned for implementation. Among these, the creation of a gas-chemical complex, the establishment of plastic product manufacturing, the purchase of high-tech equipment for geological exploration, and other projects were outlined for implementation at the Mubarak Gas Processing Plant unitary enterprise<sup>17</sup>

As part of the 2019 Investment Program, the construction of a new 4th unit for the propane-butane mixture production facility was completed at the Mubarak Gas Processing Plant LLC. Its annual production capacity amounts to 38,000 tons of liquefied gas. The total investment value of this project is estimated at 73 million USD, and during this period, 60.7 million USD has been allocated. Additionally, 66 new jobs will be created <sup>18</sup>

In accordance with the decree of the President of the Republic of Uzbekistan dated July 9, 2019, Mubarakneftgaz LLC was transformed into the Mubarak Oil and Gas Production Department under the structure of Uzbekneftegaz JSC. As a result of modernization works carried out in 2020, 26 new wells were drilled, 17 wells were repaired, and restoration works were carried out on 7 wells. Additionally, 11 technological facilities were improved and modernized, and technological processes were automated. This

<sup>&</sup>lt;sup>13</sup> Украинадан – Жанубий Кемачи конига // Ўзбекистон ёқилғи энергетикаси, 2012 йил 19 май

<sup>&</sup>lt;sup>14</sup> Темиров Б. Бир корхонада – учта йирик лойиха // Ўзбекистон ёкилғи энергетикаси, 2012 йил 16 февраль.

<sup>&</sup>lt;sup>15</sup> Муборак газни қайта ишлаш заводи жорий архиви маълумотлари.

<sup>&</sup>lt;sup>16</sup> Муборак газни қайта ишлаш заводи жорий архиви маълумотлари.

<sup>17</sup> Муборакда газ-кимё мажмуаси барпо этилади // Ўзбекистон ёкилғи энергетикаси, 2015 йил 3 апрел

<sup>&</sup>lt;sup>18</sup> Шухратов М. Марра юксак, лойихалар истикболли // Қашқадарё, 2019 йил 30 январь.

allowed the production of an additional 104 tons of oil, 1.6 billion cubic meters of gas, 12.8 thousand tons of condensate, and the supply of natural gas to over 2,000 households. Over the following years, a number of renewal and modernization works were carried out at the Mubarak Oil and Gas Production Department, increasing production capacities. Specifically, in 2021, it was planned to produce 16.8 billion cubic meters of natural gas, with actual production reaching 101.7% of the target. Gas condensate production amounted to 310.7 thousand tons, and oil production reached 109.0 thousand tons. To achieve these production targets, it was planned to put into operation 53 new wells, carry out thorough repairs and intensification works at 235 existing wells, and conduct construction and installation works at 17 technological facilities<sup>19</sup>.

In summary, during the years of independence, the Mubarak Gas Processing Plant has gone through distinctive stages of development. The modernization works and technological innovations implemented at the plant have increased production efficiency, enabling the export of competitive products not only to the domestic market but also to international markets. The plant's expanded operations have contributed to employment in the region, economic development, and the creation of new job opportunities. Through enhancing its production potential, the Mubarak Gas Processing Plant has become a significant energy and economic asset for our country. Its future development and new investment projects are expected to make a substantial contribution to the efficient use of the country's energy resources and the preservation of environmental sustainability.

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