TECHNOLOGY OF EXTRACTION OF FLUID FROM OIL AND GAS.

Sh.A. Ismatov, assistant of the Department
"Oil and Gas works" of
Karshi State Technical University.
Karshi Uzbekistan.

Annotation

The rapid development of the oil and gas industry and the introduction of various techniques and technologies are increasing the demand for petroleum products. The article reviews the huge construction works carried out in the country on the production of oil-containing associated gases and rare products from natural gas and the prospects for the production of liquefied fuel.

Key words: *sustainable gasoline, liquefied, synthetic fuel, GTL technology, associated gases, fractionation of gas, condensation, and cracking of gas.*

ТЕХНОЛОГИЯ ПРОИЗВОДСТВА СЖИЖЕННОГО ТОПЛИВА ИЗ НЕФТЯНЫХ ГАЗОВ

Исматов Ш.А., ассистент кафедры
«Нефтегазовой дело»
Каршинский государственный технический университет

Аннотация

Стремительное развитие нефтегазовой промышленности и внедрение различных технологий и технологий повышают потребность в нефтепродуктах. В статье изучены данные о масштабных строительных работах, проводимых в республике по производству уникальных продуктов из попутных газов и природного газа, а также о перспективах получения сжиженного топлива.

Ключевые слова: *стабильный бензин, сжиженное, синтетическое топливо, технология GTL, попутные газы, фракционирование, конденсация, крекинг.*

Currently, the country is working on implementing new stages of development of the oil and gas industry, the application of advanced technologies based on deep processing of raw materials, their complex development, the development of alternative energy sources, localization of production and the development of export products based on the requirements of the world market. The main prospective direction is the possibility of launching torches using small-sized devices, utilizing satellite oil gases and directly obtaining gaseous methane fuel, stable gasoline and a liquid mixture of propane-butane fraction.

A number of scientific and practical developments have been carried out with the technology of liquefied natural gas production in the USA, Russia, Germany, China, including the Republic of Uzbekistan. Shu jumladan suyultirilgan tabiiy gazlarni olish texnologiyasi va qurilmalarini ishlash bo‘yicha bir qator

Gritsenko A.I., Zakirov S.N., Zemenkov Y.D, Markova L.M, Proxorov A.D, Dudin S.M., Lutoshkin G.S., Klimova G.N., Litvak V.V., Yavorskiy M.I., Kislenko N.N., Nenaxov V., Rachevskiy B.S., Ryabsev N.I., Stepanov O.A. va Chirikov K.Y. kabi olimlar shug‘ullanishgan.

In particular, a number of scientists such as Gritsenko A.I., Zakirov S.N., Zemenkov Y.D., Markova L.M., Prokhorov A.D., Dudin S.M., Lutoshkin G.S., Klimova G.N., Litvak V.V., Yavorskiy M.I., Kislenko N.N., Nenakhov V., Rachevskiy B.S., Ryabsev N.I., Stepanov O.A. and Chirikov K.Y. were engaged in the development of technology and equipment for the production of liquefied natural gases. The oil and gas industry in the Republic of Uzbekistan is a multi-sector industry, forming a vertical-integration system in its composition, controlling the network from the bottom of the well to the customer. Ensuring the stability of such a large-capacity system requires training and education of highly qualified specialists.

Producing synthetic liquid fuels from natural gas is very cost-effective, and it's cheaper to transport than natural gas: it costs 30% to 50% of the cost of the finished product to transport it. When the gas is directly converted to liquid components in the mine itself, the capital cost of processing it is dramatically reduced. With current technologies of natural gas processing, it is possible to obtain high-quality gasoline and diesel fuel through the methanol production step [1].

Commercial use of GTL-based fuels depends on two main factors: the price of the oil needed to build the refinery and the size of the investment. The first factor ?? price is formed on the world market, the second factor is the subject of the analysis of the investment for the construction of the GTL plant, the technical-economic calculations and the risk.

It should be noted that the market for the products of the GTL plant is not limited, the price of liquid fuel is constantly rising. There can be no competition or threat from the refining industry for the growth of the GTL project.

The production of high-quality mator fuel components in GTL plants poses the problem of refiners producing higher quality fuel. A GTL facility can be built on the territory of an oil refinery or near a plant that purifies the gas of each component, and the need for refining does not end. In this case, the synthetic liquid fuel can be transferred to the mobile technological installation of the NPP for reprocessing [2].

The condition of the Republic of Uzbekistan is the availability of efficient production of synthetic liquid fuels on the basis of utilization of large amounts of gases released into the atmosphere, and secondly, the maintenance of the purity of atmospheric air. Currently, the processing of low-pressure gas supplied to the torch is carried out on a large scale in the "Shortan oil and gas extraction department" and "Mubarak oil and gas extraction department".

In addition to absorbing liquefied gas from associated gas, it is also isolated on the basis of low-temperature technology. During the processing of associated gases at gas processing plants, methane, ethane and partially propane are obtained from dry gas and its composition, ethane-containing fractions and liquefied gases:

propane, butane, isobutane and autobenzene contain stable gas gasoline components [3].

Comparison of associated gas content in oil fields with natural gases from gas and gas condensate fields is given below (Table 1). It can be seen from the information that the content of associated gas in the section of fields is very different from each other and depends on the type of fields and production conditions, liquefied gases are obtained not only from associated gases, but also from gas condensate fields. When gases operate in gas condensate fields under high pressure (100-600 kgf/cm2), oil passes liquid to some components. When the pressure decreases by 40-80 kgf/cm2, condensate is released from it as a result of gas condensation. Condensate contains components of heavy hydrocarbons of gasoline and liquefied gases.

As is known from the refining process, when oil rises up pipelines, part of the associated gas remains in it in a liquid state. The amount of dissolved gas and its composition depend on the operating mode, pressure and temperature of the balance.

Gases contained in the oil are returned to the oil field units for stabilization, and the remaining fractions of methane and butane are additionally obtained. More than half of liquefied petroleum gas is produced during processing at refineries. The refinery gas content for each process has the following classification (Table 1).

Table 1

The average content of associated gases in several oil fields is comparable to the data of gas and gas condensate fields.

number	Location of fields	Depth of occurrence	Component depth								Amount of condensate in	Relative density
			CH_4	C_2H_6	C_3H_8	C_4H_{10}	C_5+ from Top	CO_2	H_2+ unique gases	H_2		
I. Gas condensate fields												
1.	O‘rtabuloq	2185	88,0	1,4	0,37	0,15	0,21	4,7	0,1	4,9	11,6	
2	Zevarda	2610	90	4,5						0,09	78,8	
5	Gazli	97,2	0,32	0,9	0,47	0,13	2,3279	-	-	-	-	
II. Oil and Gas Fields												
6	Janubiy Kemachi	2600	81,5	10,31	3,26	0,73	16	3,25	0,56	0,04	43	
7	Umid	2600	90,87	3,62	0,85	0,32	0,52	3,2	0,55	0,07	56	
III. Oil fields												
8	Shimoliy O‘rtabuloq	4300	88,0	3,910,	0,91	0,6	2,327	3,38	0,7	0,04	78	-

10	Ko‘kdum aloq	2950	78,31	5,0	1,97	0,73	9,48	3,7	0,37	0,08	600	
11	Kruk	2160	84,58	5,96	1.18	0,24	0,396	2.48	0,17	0,13	73	

The thermal cracking process produces a large amount of oliphens. The catalytic process produces a large amount of isobutanes and the pyrolysis process produces a large amount of ethylene and hydrogen. Gas, propane-propylene, butane-butylene fractions are classified as components of the gas extracted from the oil in the plants.

Therefore, the composition of the liquefied petroleum gas depends on the method of production. The accompanying gases are boundary hydrocarbons (propane-butane) when processed in gas processing plants, and in the latter case have a small amount of boundary hydrocarbons (propane-butane). In oil refineries, the concentration of propylene and butylene in the liquefied petroleum gas is dramatically increased.

Installation for the production of propane and higher hydrocarbons:

A scheme for using the Joule-Thomson effect to obtain liquefied petroleum gases is given below. To prevent the formation of hydrates in the gas stream, 80% methanol is injected into the gas stream prior to cooling. After the gas passes through the inlet separator, the recuperative heat exchanger enters T1 and is cooled by the reverse flow of the gas [5]. In this process, the gas is pressurized and cooled to the required pressure to be delivered to the consumers, and then it enters a three-dose C1 separator to separate the liquid that falls into it. The gas accumulates in the boiler after the coolant is fed to the recuperative heat exchanger.

table 2

Description of the satellite oil and gas of the North Ortabuloq field.

№	Name and mass fraction of components, %	Value
1	Hydrogen sulfide	3,89
2	Carbon dioxide ($H_2S + CO_2$)	3,16
3	Nitrogen (N_2)	1,03
4	Methane (CH_4)	51,59
5	Ethane (C_2H_6)	14,78
6	Propane (C_3H_8)	16,40
7	Isobutane (iC_4H_{10})	1,94
8	Normal butane (nC_4H_{10})	4,93
9	Isopentane (iC_5H_{12})	1,09
10	Normal pentane (nC_5H_{12})	1,19
11	Gas density (in relation to air)	0,997

The condensed fraction leaves the main fractional column to the highest boiling point and depends on the boiling point: light primary distillate (-100°C), primary heavy distillate (50-200°C), aviation and domestic kerosene (150-360°C) containing railway and middle distillates of marine diesel fuel (at intermediate temperature), gas oil (175-360° C) Some of them are incoming products and increase LPG emissions [6].

This is due to the economic crisis in the world, a reduction in oil production in the Middle East, its high price, economic depression and a decrease in oil demand. At the same time, the demand for transport fuel increased: motor gasoline, aviation kerosene and diesel fuel. Due to the increased demand for "light oil," the question is now raised about reducing the production of light fractions by increasing the production of distillers and increasing the production of synthetic liquid fuel instead of fuel. To achieve this, additional light cracking stages have been added to the refinery process chain. In this case, the "heavy" fuel leaving the main fraction separation unit is heated to a 450°C.gacha pressure of about 9800 kPa of oil, distillates are pumped into the residual oil, that is, a light cracking resin fraction is obtained. The light cracking process is another type of thermal cracking. It enhances the yield of olefinic series of hydrocarbons with a high cracking content. Based on the point of liquefied gas generation, it increases the emission of low-boiling gases (propane and butane) during light cracking, is a low-saturated product, contains a large amount of propylene and butylene.

In accordance with the adoption of one or two purification conversions as the main cracking of most oil refineries. The technological scheme of the plant determines the yield of liquefied petroleum gas in a wide range Catalytic reforming is the simplest conversion process, and it ensures the release of liquefied petroleum gas. The main goal here is to get the aromatic hydrocarbons C6/C7 or the intermediates or the gasoline mixture. The product of this process is the crude oil obtained by fractional discharge column or a special primary. The main process of conversion of hydrocarbons of paraffin and petroleum rows is the instantaneous dehydrogenation and ring formation of aromatic hydrocarbons in the presence of distillate. These gases, along with other lighter gases, are released during the recovery phase of rapid low-pressure evaporation and enter the reactors as a distillate, filled with a platinum catalyst.

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