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DISPOSAL OF FLARE ASSOCIATED GASES IN OIL AND GAS FIELDS

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Annotation
Expensive chemical raw materials, which make up the bulk of gas, are used as fuel for industrial needs and in heating systems.
Global warming, acid residues, climate change and the growing greenhouse effect are due to satellite oil gases.

Keywords: hydrocarbon gases, underground storage, atmosphere, chemical reagents, associated petroleum gas.

INTRODUCTION

A large resource of hydrocarbon gases is low-pressure and flare associated gases of oil and gas fields. The main part of the recovered associated gases consists of hydrocarbon gases, associated gases in oil and gases released during the separation process.
Large volumes of recoverable gases are not used expediently. Expensive chemical raw materials, which make up the bulk of gas, are used as fuel for industrial needs and in heating systems.
The economical use of satellite oil and gas remains one of the most problematic issues in world practice. More than 170 billion cubic meters of satellite oil and gas are burned in the atmosphere annually. This situation will inevitably cause great damage to the ecology and economy of mining countries.
Waste emissions into the atmosphere as a result of the combustion of flare gases endanger human health, the amount of harmful substances increases in large quantities, and the harmful metals contained in them cause all kinds of serious diseases.
Global warming, acid residues, climate change and the growing greenhouse effect are due to satellite oil gases.
Considering that Uzbekistan produces 60 billion cubic meters of gas per year, 58.4% of them are sent for domestic consumption, 6.5% - to underground storage facilities, 12.5% - to pumping productive formations (cycling process) and 22.5% - for export. If 3% of the total gas produced is flared into the atmosphere, this is a large number.
Considering that when 1000 m3 of associated petroleum gas is burned, 3 tons of carbon dioxide are released into the atmosphere, then when 1.5 billion m3 of gas is burned, 4.5 million tons of carbon dioxide are released into the atmosphere.
Of the 60 billion cubic meters of associated gases produced in Russia, 20 billion cubic meters are burned by flares, and the remaining 40 billion cubic meters are used for the needs of the company, 3 billion cubic meters - for electricity generation, processing and gas chemistry. A small amount of raw material is injected into the reservoir as a raw material.
The issue of utilization of associated petroleum gas is a serious problem for all oil companies. Currently, there are several ways to economically use associated petroleum gases.
Associated petroleum gas can be used as a fuel directly in gas piston generators or in gas turbine plants in blocks of gas preparation and separation devices, partially cleaned and dried. When using associated oil in gas generators or gas turbines, full capacity cannot be achieved, and the presence of heavy hydrocarbons and sulfur leads to rapid equipment breakdown.

On the basis of chemical technology, the fuel components are separated using chemical reagents. Considering the high cost of such chemical reagents and the fact that they are imported, the cost of their use in practice will increase.

Associated petroleum gases are passed through special blocks and the components that make up the fuel are separated. In this case, membrane technology and molecular sieve are used, but the sorbents quickly become saturated, and the films are filled, and they must be quickly replaced.

Low temperature separation technology based on propane cycle can be applied. When this technology is used in hot climates, productivity decreases and operating costs become more expensive.

Associated petroleum gases are transported to gas processing plants and processed. Expensive main pipes are expensive to lay, and the payback period is increased.

With the help of refrigerants, all the auxiliary gas components are separated into fuel components based on combustion.

The use of heavy petroleum fractions of hydrocarbons (C and higher) as fuel for gas generators creates certain problems and is a valuable raw material in the petrochemical industry.

The main solution to the problem is the separation of associated petroleum gases by a two-stage utilization: heavy hydrocarbons in the product and exhaust gases are burned in gas engines with a high methane content, or dry gas is fed into main gas pipelines.

Comprehensive measures will be taken to collect associated oil and gas from oil fields for processing, which will be transported to refineries and processed to obtain degassed dry gas (free gas-free degassed gas), a wide fraction of light hydrocarbons (NGL) and stable gasoline (SB) turns out. In addition to the wide fraction of light gas (C_4 and higher), the gas is collected in the fractionation unit for the separation of liquefied hydrocarbon gases.

At a number of facilities, associated petroleum gas and petroleum products are flared in large quantities, even if they are expensive raw materials for the petrochemical industry.

The reasons for the combustion of associated petroleum gas in a flare include:

- Remoteness of the processing site;
- Lack of the necessary transport (pipeline) infrastructure;
- The need to build a gas processing plant.

To date, the most effective direction of oil refining in the energy sector is to reduce the cost of building networks and transformer substations when using petroleum gas as fuel at gas piston power plants.

When using gas generators, environmental problems cannot be solved by using auxiliary gases supplied to the flare, since the greenhouse effect is associated with the atmosphere and the Kyoto Protocol. The adoption of the Kyoto Protocol poses a threat to the environment associated with human activities, abrupt changes in the Earth's climate, an increase in temperature from 1.4^0C to 5.8^0C due to uncontrolled emissions of Celsius, changes in atmospheric precipitation, and sea level rise.

The Republic of Uzbekistan ratified the Kyoto Protocol on October 12, 1999 and entered into force on February 16, 2005.According to the Kyoto Protocol, 6 types of exhaust gases are controlled: carbon dioxide (CO_2), methane (CH_4), nitrogen oxide N_2O, per carbons (PFCs) and hydro fluorocarbons (SF_2).

Based on this, the "Shurtan Oil and Gas Production Department" joined the Northern Shurtan, Garmiston, Kumchuk and Shakarbulak fields into one block. A project for utilization of associated gases has been developed, a large amount of work is underway.

When burning associated petroleum gas, not only expensive hydrocarbon raw materials are lost, but also great damage to the environment is caused: thermal pollution, environmental pollution, the release of toxic gases into the atmosphere.

Together with CO and CO_2, all toxic organic compounds are emitted into the atmosphere. Their number is estimated in thousands of tons. When burned, satellite petroleum gases consume large amounts of oxygen. CO_2 emissions and heat radiation increase the greenhouse effect of the atmosphere.

The greenhouse effect changes the composition of gases in the Earth's atmosphere. As the concentration of gas in the atmosphere increases, it absorbs the "infrared" rays that hit the Earth and traps some of the heat in the atmosphere, which in turn leads to global warming of the planet.

One of the main tasks in solving problems in this area is the use of a developed and manufactured design of mini-plant modules that process small volumes of gas under normal conditions, separating large fractions of

light gases according to a simplified scheme. By installing such devices in the gas fractionation sections, it is possible to separate liquid hydrocarbons (propane-butane, gasoline, diesel fuel) from the final product.

CONCLUSION

The situation with the use and disposal of associated petroleum gases today does not suit anyone. It is necessary to develop economical technologies and modern methods to prevent air pollution by various gases. Oil companies are unable to fully utilize associated gases in oil. This is due to the high cost of existing technologies and the fact that they do not cover the costs incurred in their implementation. Therefore, in turn, it is impossible to prevent environmental pollution and emissions into the atmosphere, as well as the spread of various diseases.

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