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**JUSTIFICATION OF THE APPLICATION OF CRUDE OIL GRENULATION TECHNOLOGY IN OFFSHORE OIL FIELDS**

Currently, oil from offshore production platforms is transported on an industrial scale via main pipelines. This is cheaper, safer and more convenient than transporting it, for example, by tankers. However, the situation may change if the technology for converting liquid oil into solid granules is applied.

The transformations occur due to high temperatures and pressures. The final product is similar to candy with filling - a hard, asphalt-like outer layer and a liquid core [1].

Oil granules have a huge advantage - they do not sink in water and practically do not collapse spontaneously. Such raw materials can be reloaded and transported using any non-specialized vehicles. This will help to avoid environmental disasters that occur during oil spills at sea, the granules can be easily collected.

Of course, transporting huge volumes of oil even in granules will require large energy costs, but without special requirements they become comparable to organizing the pumping of raw materials through a pipeline. Oil granulation plants can be placed right next to the wells, making them mobile in the future, which will fundamentally change the entire logistics of the industry. Taking into account the peculiarities of the development of offshore deposits, this invention could well become revolutionary.

The granulation process is usually carried out in a horizontal rotating drum [2], in which the material particles are overturned and poured, forming weak agglomerates. The latter, upon further pouring and drying in a rotating drying drum, are compacted and transformed into strong granules. The main requirement for the granulation process is to obtain the maximum number of granules of a given size that have sufficient mechanical strength. The granulation process can either be limited to the formation of granules that already have sufficient strength, or include additional operations that give the granules strength, such as drying them.

For example, granulation (pelleting) processes of powders are widely used in various industries [3]. Therefore, the use of magnetized water to obtain raw pellets is of interest. However, there are no publications on the conduct of work in this direction, with the exception of one, which deals with the use of magnetic treatment in obtaining raw pellets of iron ore concentrates of the enrichment plant of the Kursk Magnetic Anomaly. The granulation process requires significant improvements. In the described design, it is cumbersome and contains a serious contradiction. This excess moisture is then removed in a drying drum, which is associated with additional fuel consumption. For plants that produce only a granular product, granulation of superphosphate obtained by decomposition of apatite with acid of reduced concentration may be of interest

The processes of granulation by crystallization of melts (close to the granulation of oil), when the stages of formation and structuring of granules are separated in space and time, are carried out with direct contact of the crystallized granules with a refrigerant or on cooled surfaces.

The proposed technology for obtaining oil granules is based on the experience of production, in which there are two components - amorphous-plastic with the possibility of subsequent hardening under special conditions (for example, caramel shell) and a liquid inner part. As an amorphous-plastic part, a heavy oil fraction with a high content of asphalt and resins can be used. Light fractions will be introduced inside the amorphous-solid shell. Therefore, the following requirements are imposed on oil as a raw material for the application of this method of preparation for transportation:

the extracted oil must meet the classification criteria as high-resin;

the density of the oil obtained from the well must meet the classification criterion of "heavy" with a density of more than 880 kg/m3.

An example of such oil is oil obtained from exploration wells at the Subbotinsky field of the Black Sea.

Thus, the preparation of heavy oil for transportation in the form of pellets from an offshore field (especially at the initial stage of operation) should include the initial separation of the oil into heavy and light fractions. In addition, during the production of the amorphous-solid shell, some light hydrocarbons (up to 5-8%) will be separated, which are also collected and introduced into the light fraction.

**Література**

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