



# International Journal for Innovative Engineering and Management Research

A Peer Reviewed Open Access International Journal

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IJIEMR Transactions, online available on 29th Jan 2021. Link

[:http://www.ijiemr.org/downloads.php?vol=Volume-10&issue=ISSUE-01](http://www.ijiemr.org/downloads.php?vol=Volume-10&issue=ISSUE-01)

**DOI: 10.48047/IJIEMR/V10/I01/52**

Title **DEVELOPMENT OF AN OIL AND GAS SEPARATOR FOR SEPARATING FOAMING OILS**

Volume 10, Issue 01, Pages: 267-269.

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## DEVELOPMENT OF AN OIL AND GAS SEPARATOR FOR SEPARATING FOAMING OILS

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**Abstract:** As a result, a stable layer of foam forms on the oil surface, which significantly impairs the gas separation process, reduces the performance of the separation equipment and increases its dimensions

**Keywords:** Reservoir oil, gas separation, gas liquid, oil

Reservoir oil, which is under high reservoir pressure, always contains hydrocarbon gases dissolved in it. When leaving the well and moving oil through pipelines of oil gathering and field treatment systems, the pressure gradually drops. In accordance with Henry's law, as the pressure decreases, the solubility of hydrocarbon gases in oil decreases, and they begin to separate from the oil. Therefore, one of the most widespread processes of oil field treatment is oil degassing and gas separation.

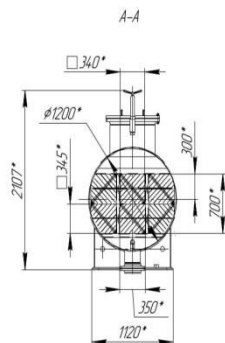
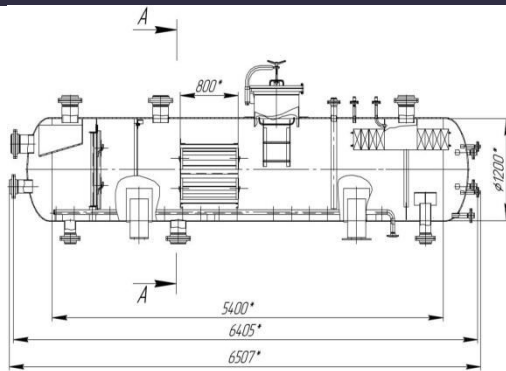
When degassing in the thickness of the oil layer, evaporation centers arise and gas bubbles are formed, which increase in volume as they rise. Upon reaching the surface, gas bubbles burst with the formation of oil splashes. To reduce oil losses, the dropping liquid must be separated from the gas flow.

In many oil fields, oil contains various natural surfactants (surfactants), which reduce the surface tension at the gas-liquid interface.

As a result, a stable layer of foam forms on the oil surface, which significantly impairs the gas separation process, reduces the performance of the separation equipment and increases its dimensions.

Therefore, the fight against the formation of foam and the extinguishing (destruction) of the foam is an extremely urgent task. Depending on the composition and amount of natural surfactants contained in oil, according to the ability to foaming, oil can be divided into:

- non-foaming;
- lowfoaming;
- highlyfoaming.



To combat foaming and extinguish the formed foam, a fairly large number of methods have been proposed:

- introduction of antifoam additives, which increase the surface tension at the gas-liquid interface and destroy foam;
- mechanical defoamers with a rotary-stator system of mechanical foam destruction;
- hydrodynamic methods of foam destruction;
- destruction of foam in thin layers when oil passes through a block of tubular or lamellar antifoam nozzles.

Based on the results of the analytical review, the development of the project of an oil and gas separator for separating 1500 tons / day was taken as the direction of research. of highly foamy oil with a thin layer defoaming section on a block of horizontal rectangular plates for the Bukhara refinery.

The oil and gas separator is designed to separate associated petroleum gas from oil before feeding it for metering using a mass meter and is used as part of automated metering units (AGZU). The design of a horizontal oil and gas separator has been developed for separating highly foaming oil at the fields of Samaraneftgaz with a defoaming unit with a capacity of 1500 tons of oil per day at a pressure of 4 MPa.

The oil is fed from above to a conical distributor over which it is distributed in a thin layer. Already in the inlet device, intensive release of gases dissolved in oil begins. The conical distributor directs the oil flow to the inner wall of the elliptical bottom, along which it flows into the receiving section. To capture large-droplet liquid at the end of the receiving section, an angle nozzle is installed, consisting of three rows of corners arranged in a checkerboard pattern.

The destruction of foam occurs in the defoamer section on six thin-layer blocks with a size of 360X360 mm and a length of 800 mm. Each block consists of a set of rectangular sheets of sheet material set at a 45 ° angle. The plates are assembled into a model using three tie rods and spacer sleeves, which set the distance between the plates to 10-25 mm. Blocks are installed in sections manually along horizontal guide corners.

During cleaning, maintenance or repair, the blocks are removed from the section.

When the foam moves through the blocks of thin-layer cleaning due to friction forces under the action of shear stresses, the oil film breaks, and the foam is destroyed. Oil flows down the inclined plates and gas rises up.

To capture the finely dispersed dropping liquid at the gas outlet from the separator, a mesh or string nozzle unit is installed.

To clean the separator from asphalt-resinous deposits (ARPD), the separator is steamed with superheated steam.

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