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## **OPTIMISATION OF THE PRODUCTION PROCESS OF BLOCK GRAVEL FILTERS**

Block gravel filters are widespread efficient filtration systems used in oil and gas wells. Their use increases oil production and reduces well contamination. It extends the service life and reduces well maintenance costs. They reliably protect the well from accidents and minimise environmental risks.

They consist of layers of gravel of different grain sizes, which are stacked on top of each other and connected by a filter string. Hydrocarbons coming from the well seep through the gravel layers, which retain mechanical particles, providing purified fluids at the outlet.

The main difficulties in the manufacture of traditional gravel filters are the need for a significant amount of manual labour, difficulties in positioning and heterogeneity of the layers, and the complexity of quality control - all of which make mass production difficult. Therefore, it is necessary to introduce new technologies and methods of creating and manufacturing block gravel filters.

Some of the options for improvement include automation and optimisation of the production process, the use of specialised equipment, standardisation, modularity and the use of new materials for connecting gravel layers.

Modern technologies also allow for the production of block gravel filters in various shapes and sizes, which increases their adaptability to different well conditions. For example, filters can be made with a denser gravel filling to prevent sand from entering the well, or with larger gravel sizes to increase hydrocarbon flow.

In addition, high quality materials such as stainless corrosion-resistant steel can be used in the production of block gravel filters. This increases the reliability and duration of their operation, as such materials do not corrode or degrade over time, ensuring stable hydrocarbon quality.

Today, the department of oil-and-gas engineering and drilling at Dnipro University of Technology is actively engaged in researching new binding materials and their application technologies in the manufacture of block gravel filters for wells. This is confirmed by scientific publications, participation in scientific conferences and cooperation with industrial enterprises.

In addition, students, postgraduates and researchers of the department are actively working on developments that contribute to the deepening of knowledge and development of new technical solutions in the field of well drilling technology using block gravel filters.

### **References:**

1. Sudakov A. K., Femiak Ya.M., Chudyk I.I. Fedyk O. M. Shchutskyi V.I. Burinnia sverdlvyn na vodu: navchalnyi posibnyk – Drohobych : Posvit, 2022. – 344 s.
2. Kozhevnykov A.A. Otebaiev M., Sudakov A.K., Ratov B.T. Hraviini filtry sverdlvyn na ridki ta hazopodibni korysni kopalyny. - Almaty: KazNTU, 2015. - 346 s.