Neftyanoe Khozyaystvo - Oil Industry 2016 N11, pages 56-59

Investigation of the porosity and absolute permeability coefficients of carbonate reservoir using the X-ray computed microtomography

Zakirov T., Galeev A., Korolev E., Statsenko E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The authors describe the methodology and results of the evaluation of porosity coefficient and absolute permeability tensor for typical carbonate reservoir based on digital models of the pore structure obtained by X-ray computed microtomography, and the numerical simulation of fluid flow in the pore scale. We reveal considerable heterogeneity of the internal structure of carbonate reservoir. It is shown that the porosity of the sample is controlled by the porosity of the matrix, whereas the filtration characteristics - by cracks. On the basis of investigations showed that chosen size of the carbonate samples (cubes with size of 25 mm) for the X-ray computed microtomography may not be enough to assess their macroscopic properties.

Keywords

Absolute permeability, Modeling, Porosity, X-ray computed microtomography