

Streamlines: Paths of Fluid Flow through Sandstone Samples Based on Computed Microtomography

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Abstract : The study presents the use of the numerical calculations based on high-resolution computed microtomography in analysis of fluid flow through Miocene sandstones. Therefore, the permeability studies of rocks were performed. Miocene samples were taken from well S-3, located in the eastern part of the Carpathian Foredeep. For aforementioned analysis, two series of X-ray irradiation were performed. The first set of samples was selected to obtain the spatial distribution of grains and pores. At this stage of the study length of voxel side amounted 27 microns. The next set of X-ray irradiation enabled recognition of microstructural components as well as petrophysical features. The length of voxel side in this stage was up to 2 μm . Based on this study, the samples were broken down into two distinct groups. The first one represents conventional reservoir deposits, in opposite to second one - unconventional type. Appropriate identification of petrophysical parameters such as porosity and permeability of the formation is a key element for optimization of the reservoir development.

Keywords : grains, permeability, pores, pressure distribution

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