
Control volume approach for hydraulic circuit calculation

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The solution of the flow distribution is an integral and extremely important issue in the modeling of oil and gas pipelines, as well as water supply and heating networks (hereinafter — the hydraulic network). Typically, modeling procedure of these systems are based on the first and second Kirchhoff's circuit laws, the law of conservation of mass balance and the law of conservation of energy. On these laws are based and numerical methods of solution of hydraulic networks up to date software products. The authors have made a transition from methods based on the combined solution Kirchhoff's circuit laws, the numerical solution of the flow distribution in the hydraulic network with a sampling of the continuity equation, which is given to the difference analogue of the second order differential equation in terms of pressure. This method has been successfully tested.

Keywords: hydraulic network, control volume method, pressure field, flow, continuity equation.

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