

## **Numerical research of parameters of interaction of the gas flow with rotary valve of the gas pipeline**

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### **Abstract**

© Published under licence by IOP Publishing Ltd. Conducted numerical research of static characteristics of the rotary gate valve at different angles of its deviation. For this purpose were set different values of pressure differential on the valve depending on which, was determined the mass flow and torque on valve axes. The mathematical model is provided by continuity equations, average on Reynolds, Navier-Stokes and energy, the equation of the perfect gas, the equations of two-layer k-e of model of turbulence. When calculating the current near walls are used Wolfstein's model and the hybrid wall functions of Reichardt for the speed and temperature. The task is solved in three-dimensional statement with use of conditions of symmetry. The structure of the current is analyzed: zones of acceleration and flow separation, whirlwinds, etc. Noted growth of hydraulic resistance of the valve with reduction of slope angle of the valve and with the increase in mass flow. Established increase of torque with reduction of the deviation angle of the valve and with increase in the mass expense.

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