



VERIFICATION OF FLOW CALCULATION METHOD IN THE NEAR-DISK GAPS OF HIGH CYLINDER PRESSURE STAGE OF STEAM TURBINE

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ABSTRACT

In the multi-stage steam turbines in addition to the torque on the rotor are formed efforts along the axis of rotation, which tend to move the rotor in the direction of the steam flow. For preventing shifting of the rotor is necessary to balance or significantly decrease the acting forces in the axial direction. Therefore it is necessary to conduct research of gas-dynamic processes and determine of the steam flow influence to the lateral surface of a rotor discs and stator diaphragms.

The main research problem is the occurrence of separation phenomena in certain areas of the gap. The additional complexities are in the modeling of flow in gap with consideration of the rotor rotation and the vapor flow through the discharge orifice.

The calculation was made with using modern program complexes. Based on a comparison of experimental and numerical results “SST” $k-\omega$ turbulence model was chosen. The ranges of variation of axial gaps correspond to the values which used in the turbine stages. As a result the velocity field and the pressure distribution on the gap's walls were obtained.

Keywords: steam turbine, near-disk gap, discharge orifice