

DEVELOPMENT OF STAND FOR VISUALIZATION AND EXPERIMENTAL STUDY OF WORKING PROCESS IN VORTEX JET DEVICE

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The work is devoted to the development of a stand for physical modeling of the workflow and visualization of gas flow in the flow cavity of a vortex jet device. Based on the literature review, a number of examples are found for visualizing the workflow in the flow cavity of a vortex jet device. The developed stand allows performing physical modeling of working processes in the flow cavity of a vortex jet device using its incomplete layout. Using similarity criteria, the developer can get the necessary workflow parameters in a real research object. The developed stand also allows us to study the distribution of gas flows in the flow cavity of a vortex jet device. The study of the gas flow process in various models of vortex jet devices using the developed stand will allow the developer to make a conclusion about the influence of geometric design parameters on the aerodynamics of the vortex chamber, as well as to study the flow of gas in the flow cavity. The stand is recommended to be used as a tool in the design methodology of vortex jet devices based on multi-criteria optimization of geometric parameters of the flow cavity based on the zero-order method (simplex method).

Keywords: vortex amplifier, optimization, swirl chamber, gas flow regulation, fluidics.

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