

Comparison of the efficiency of rectifier devices using three-dimensional numerical simulation of flow in a channel

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Honeycombs and straightening gratings are devices that significantly reduce or completely eliminate flow vortices. An array of cellular type channels has shown a certain efficiency in achieving the required flow uniformity parameters [1, 2]. The purpose of this work is to compare the efficiency of some rectifier devices considered in [3] based on selected criteria for the degree vorticity of the flow and hydraulic resistance. The vorticity of the flow was created by tangentially supplying gas to the designed area. As a tool for solving this problem, software complexes for modeling gas dynamics based on solving the Reynolds-averaged system of Navier–Stokes equations by the finite volume method were used. As a result of a series of calculations, the minimum values of hydraulic resistance for each type of device and geometric parameters corresponding to these values were obtained.

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- [2] Yuan L, Zhiyong Z, LIU C, Qi L, Lishuai S and Junbiao W 2023 *Chin. J. Aeronaut.* **13**
- [3] *Measurement of flow and quantity of liquids and gases using standard constricting devices* (GOST: 8.586.1-2005)