Methodology of the output airflow momentum determination in channels of variable cross-section

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The flow momentum is an important gas dynamic parameter characterizing the combustion and mixing processes in channels of variable cross-section. Development of procedure based on the recalculation of parameters diagnosed in experiments with the use of a specialized physical and mathematical apparatus is required to determine it during experimental studies of combustion chambers model flow duct of advanced power-generating plants.

The developed algorithm and the results of its approbation with reference to ramjet module of a perspective power plant traction characteristics determination are presented. Calculation and following comparison of the data obtained with the use of the developed algorithm with the results of direct measurement of the force created by the experimental object are carried out. Inaccuracy of calculations is less than 8 percent. On this basis, conclusions about the operability and the possibility of applying the proposed algorithm for determining the output momentum of the airflow in the variable cross-section flow paths are made.