

Intensification of the fuel components mixing in gasdynamic ignition system

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Efficiency enhancing of ignition system is the major task in the development of high enthalpy flow generators (HEFG) with multiple restart, including the pulls operation mode. One of the promising methods to resolve this problem is to use the gasdynamic ignition system (GDIS) which consists of a supersonic nozzle and a co-axial resonator. It is necessary to achieve high temperature and certain concentration of fuel mixture in the stagnation region of the resonance cavity for reliable GDIS operation. The article presents the modeling results research directed at the intensification of fuel components mixing by using an open resonance cavity. The obtained results allow getting the optimal values of geometrical and operational parameters, which make it possible to reduce significantly the time of HEFG transfer to the nominal mode. The results of the research may be used in developing prototypes of power and energy units, including low-thrust rocket engines, technological units for deposition of coatings, the abrasive cutting of materials, etc.

Keywords: *high enthalpy flow generator, gasdynamic ignition system, mathematical modeling, intensification of mixing.*

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