
Computational and experimental study of reliability of rocket-engine firing and starting operation of low thruster on the gaseous components oxygen + methane with electric spark ignition

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Expansion of the domestic rocket raw material base, as well as increased environmental requirements involve the use of cryogenic methane as a fuel component in space and aerospace propulsion systems. The problem of creating thrusters on non-hypergolic components for use in the spacecraft orientation and stabilization systems becomes urgent. Thus there is a need to determine the conditions of a reliable ignition of gaseous fuel components oxygen + methane for different structures of ignition units with varying ignition unit power. The article analyzes the electrical ignition system capable of providing multiple engine firing, shows the results of theoretical and experimental studies of the low thruster with the zonal component feeding in a wide range of geometrical and operational parameters. Practical recommendations for the designing the combustion chambers are presented.

Keywords: rocket engine, low thruster, electric ignition systems, reliable ignition, bench tests

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