Paper ID: 27989
poster

66th International Astronautical Congress 2015

SPACE PROPULSION SYMPOSIUM (C4)
Interactive Presentations (IP)

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EXPERIMENTAL SIMULATION INVESTIGATION OF DIAPHRAGM RUPTURE AND WASHING FOR ROCKET ENGINE IN ARC HEATED AIR FLOW

Abstract

To check the rocket engine diaphragm rupture state under certain differential pressure when the rocket engine begins igniting and to study the diaphragm state as enduring long time washing in high temperature air flow field, based on the arc heater test facility, the special pipe test simulation system has been developed, and the natural deficiency of diaphragm rupture happening in advance during the cold air supplied to arc heater before ignition has been resolved. Using this system, the diaphragm rupture process in thermal air flow has been successfully simulated, and the diaphragm long time enduring washing reliability in the high temperature air flow has been proved. The results provides guarantee for the successful rocket launch.