

SPACE PROPULSION SYMPOSIUM (C4)
Electric Propulsion (4)

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DEVELOPMENT OF HIGH-VOLTAGE HALL EFFECT THRUSTERS AT KELDYSH RESEARCH
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Abstract

The optimum values of specific impulse for electric propulsion grow in connection with the increase in the spacecrafts lifetime and power. Until recently, the Hall thruster flight models had a discharge voltage of 300-350 V and their specific impulse was much smaller than for ion thrusters. The main challenge in terms of increasing the hall thruster discharge voltage is providing of acceptable lifetime and stability. The results of these works allow to speak about significant progress in terms of increasing the Hall thrusters specific impulse. Hall thruster KM-60 has been developed and is undergoing flight tests. This thruster has a discharge voltage equal to 500 V and the average for the lifetime specific impulse 1850 seconds at a power of less than 0.9 kW. Research and development of the KM-88 thruster with a specific impulse of more than 2000 seconds at a power of 1.65 kW has been completed. The work on the KM-75 thruster, which has a specific impulse in excess of 2680 seconds at a power of 2.3 kW is in a final stage of development (lifetime test). This paper presents the main results of the thrusters test campaign and the achieved parameters.