

IAF SPACE PROPULSION SYMPOSIUM (C4)  
Interactive Presentations - IAF SPACE PROPULSION SYMPOSIUM (IP)

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MAGNETOPLASMODYNAMIC ELECTRO-JET PROPULSION DEVICE FOR ORBIT CORRECTION  
AND MANEUVERS IN SPACE

**Abstract**

This method is based on the use of outer space as a working body. Magneto-plasma thrusters Hall effect is considered to be the best. But the problem is that power requirements on the order of hundreds of kilowatts are required for optimum performance. Another problem has been the degradation of cathodes due to evaporation driven by high current densities (in excess of 100 A/cm<sup>2</sup>). We have developed, manufactured and tested on the ground working model of an engine with a thrust of up to 1G (9,81 • 10<sup>-3</sup> H). The diameter of the working area of 8.5 cm. The supply voltage 30000 volts, pulse duty cycle 10-3s. and filling of 0.7 MHz. Power consumption 350 watts. The working fluid is air the Earth's atmosphere at a pressure of 10 Pa (2.10 mm. Hg. V.) In the propulsor has been used alternating electric current of high frequency and voltage it has been used to generate electrodynamic forces, and not to heat the plasma or plasma ionization. This create conditions for the appearance of all modes to speed up the working fluid in the core propulsion: volumetric thermal heating of the working fluid followed by thermodynamic expiration; low-temperature plasma ion acceleration by the electric field and "electron wind"; action Ampere force on the moving plasma ions and charged particles drift plasma extending perpendicular lines of force of the magnetic and electric fields generated by an engine design. The design of our propulsion has the unlike all the other designs. The plasma is created "naturally" in the engine, that is, without additional special devices. The design of propulsion used all the physical processes that are known to science, and in this sense, the working scheme will be clear for the analysis of the processes taking place in it. Propulsor has another amazing feature. The mechanical part of the propulsion unit can be scaled, ie increase or decrease thrust force. This property does not have none of the known science of propulsion. In connection with this, our propulsor can be used for different purposes: from precision micromotors orientation of space telescopes to propulsion thrusters interplanetary spacecraft We offer to make propulsion for the maintenance the orbit of the International Space Station (ISS). ropulsor will use the space environment as the working fluid and will run without refueling. Engine resources is not limited.