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DORBIT SYSTEM BASED ON VACUUM ARC THRUSTER FOR MICRO SATELLITE

Abstract

In this article presented Vacuum Arc Thruster (VAT), which was designed and manufactured in Kyushu Institute of Technology. Presented principle of work and design. Thruster, firstly, will be operating on-board satellite Horyu-4, which will be launch in 2015 and will be demonstrate work with direct power source- High Voltage Solar Array (300 V). For VAT presented main discharge and power characteristics measured in experiments. Was calculated thrust (1,6 nN) and efficiency (2.6 %). Specific impulse is 1200 sec, impulse bit $2 \mu\text{Ns}$. The total weight of the system including circuit and mounts to satellite is 110 grams. Presented results for efficiency improving methods, such as new type of propellant using in the thruster and magnet system. Calculated deorbit time dependence to satellite mass and power consumption of Vacuum Arc Thruster and dependence to thruster geometry.