

IAF SPACE PROPULSION SYMPOSIUM (C4)
Electric Propulsion (4)

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VALUE PROPOSITION FOR INNOVATIVE HEMPT ION THRUSTERS IN A CHALLENGING
SPACE ELECTRICAL PROPULSION MARKET

Abstract

Thales has developed and qualified a new type of ion propulsion system based on the HEMPT thrusters (High Efficiency Multistage Plasma Thrusters) dedicated to station keeping for small geostationary satellites and is currently acceptance testing it for a commercial program.

HEMPT is an ion propulsion technology that is based on the use of permanent magnets for plasma confinement. Through this confinement there is no discharge channel erosion and the technology provides excellent lifetime. In addition, HEMPT has a very good usage of both Krypton and Xenon which is a unique feature of the HEMPT technology.

Following the constellation market trend and the apparition of full electrical satellites in GEO and LEO, Thales has derivated its HEMPT technology from a 1.4kW GEO station keeping engine to a complete family of ion thrusters from 700W for LEO to 5kW for GEO orbit raising. Today Thales is able to propose HEMPT thrusters or complete HEMPT based EP system for satellite application from LEO to the GEO.

This paper will propose a discussion around the HEMPT differentiators based on market's needs. First we will analyze EP market segmentation and review the most important value drivers. Then we will confront HEMPT differentiators to those market drivers and review HEMPT value propositions for each market segment.