

IAF SPACE PROPULSION SYMPOSIUM (C4)  
Electric Propulsion (1) (5)

Author: Dr. Vanessa Vial  
Safran Aircraft Engines, France, [vanessa.vial@safrangroup.com](mailto:vanessa.vial@safrangroup.com)

## ELECTRIC PROPULSION AT SAFRAN: PORTFOLIO AND DEVELOPMENT STATUS

**Abstract**

With nearly 50 years of experience in electric propulsion, Safran today offers products designed to meet a variety of mission constraints, i.e. robust in a wide range of operating conditions. One of the biggest challenges is to maintain performance and reliability while remaining competitive in the global marketplace. This document provides an update on the development of Safran's Hall Effect thrusters and focuses in particular on the results and milestones recently achieved in the development of the PPS®X00 and the qualification of the PPS®5000, putting them in perspective with the challenges imposed by the market. - On one hand, based on market analysis, a thruster with a power range of between 200W and 1000W is being developed to meet needs of future LEO satellites. The evolution of this market imposes a fast pace of innovation for the satellite industry. As a result, high performance, compatibility with high production rates, adaptability and competitive prices are essential to acquire and maintain a strategic position. Approaches such as design-to-cost objective, multi-point qualification and lean manufacturing which reduce recurrent costs through a more standard and common approach for all customers, are being adopted. - On the other hand, the 5 kW Hall thruster PPS®5000 is currently undergoing qualification. The lifetime test has reached 10,000 hours, with the thruster delivering a total impulse of nearly 10 MN.s. In parallel with the life test underway on the primary qualification unit, additional test campaigns are being conducted with other standard qualification equipment. These parallel activities support qualification as risk mitigation actions or as system or environmental compatibility checks. A first qualification review was successfully completed in the last quarter of 2019. A more detailed discussion focuses on the ongoing life test and the prospects for product development.