

SPACE PROPULSION SYMPOSIUM (C4)
Electric Propulsion (4)

Author: Prof. Wei Yanming

Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China,
wei5025@sohu.com

Dr. Gao Jun

Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China,
johngao2006@163.com

Dr. Shen Yan

Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China,
Shenyan1978@gmail.com

Ms. Wu Conglong

Beijing Institute of Control Engineering, China Academy of Space Technology (CAST), China,
wuconglong2013@163.com

IN-FLIGHT EXPERIMENTS AND DEVELOPMENT OF ELECTRIC PROPULSION SYSTEM ON
SATELLITE SJ-9A

Abstract

Satellite SJ-9A is the first spacecraft for China to accomplish the in-flight experiments of electric propulsion system, the primary mission of which is to demonstrate both the XIT(Xenon Ion Thruster) and HET(Hall Effect Thruster)technologies on the same satellite, including compatibility with space, performance and reliability in space, etc. SJ-9A was lauched in October 2012,and till December 2012 the in-flight experiments of first stage had been completed. The thrust and specific impulse was tested, thrust of XIT 36.1mN, specific impulse of XIT 2727s, thrust of HET 37.8mN, specific impulse of HET 1485s. The electric propulsion system works extremely well after the parameters were adjusted initially, and the performance is close to the same type of electric thruster with equivalent power in USA and Europe. The results indicate that the electric propulsion technologies in China have been successfully verified in space. This paper provides an overview of the development of SJ-9A electric propulsion system and the experiments on ground, including the compatibility test with platform, the matching test with power system and the performance test of system. Finally, the in-flight experiments of SJ-9A electric propulsion system are presented in detail.