

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

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KEYNOTE: ELECTRIC PROPULSION AT ESA

Abstract

The high specific impulse of Electric propulsion systems reduces the amount of propellant required to perform an operation in space. These savings will allow space projects to use smaller launches or increasing the payload. In the commercial arena (telecommunication and constellations space missions), the strong competition among satellite manufacturers is a major driver for advancements in the area of electric propulsion, where increasing better performance together with low prices are required. Furthermore, new scientific and Earth observation missions dictate new challenging requirements for propulsion systems and components based on advanced technologies such as micro Newton thrusters. Moreover, new interplanetary missions in the frame of exploration will require sophisticated propulsion systems to reach planets such as Mercury or Mars and in some cases bring back to Earth samples from these planets. Space tugs, de-orbiting tugs and re-fuelling spacecraft will make also use of Electric Propulsion. Furthermore, Electric Propulsion systems will be used by the future EVO Galileo programme to perform orbit raising manoeuvres. Finally, electric micro propulsion for Cubsats will enhance the market of such satellites ESA is currently involved in activities related to spacecraft electric propulsion, from the basic research and development of conventional and new concepts to the manufacturing, Testing and flight control of the propulsion subsystems of several European satellites. The exploitation of the flight experience is also an important activity at ESA that will help mission designers to implement the lessons learnt to the development of these new propulsion systems. ESA missions such as Artemis, Smart-1, GOCE, Alphabus, Small-GEO, Neosat and Bepi Colombo have paved the way for the use of electric propulsion in future ESA missions: Neosat evolution, Electra, LISA etc. This key-note will present the technology and the missions that will benefit from the developments at ESA.