

SPACE PROPULSION SYMPOSIUM (C4)
Electric Propulsion (4)

Author: Prof. Mariano Andrenucci
Sitael Spa, Italy, mariano.andrenucci@sitael.com

KEYNOTE: ELECTRIC PROPULSION: GEARING UP FOR A SPACEFARING FUTURE

Abstract

In over sixty years of evolution, Electric Propulsion has gone all the way from infancy to full adulthood and readiness for space applications. Different types of EP technology (Hall and Gridded Ion thrusters in particular) have already proved capable of answering the propulsion needs of current mission categories, from all-electric telecom satellites on one hand, to exploration probes and interplanetary vehicles on the other; in addition, EP technology has started unleashing its potential as a game changer, enabling missions of novel conception, such as space tugs and microsatellite constellations and paving the way for a new era of colonization and exploitation of our interplanetary neighborhood. Advanced propulsion technologies combined with nuclear energy generation may help extend our reach from the cislunar to the translunar space by 2025 and to Mars and beyond by the mid 2030s. By the end of this century, the basis for the transition of our species from an earthy to a spacefaring civilization may already be firmly established. The paper reviews the trends and challenges offered by different types of EP concepts along this perspective and highlights current development trends and mid/long term programs being undertaken to sustain this effort, with special regard to the EPIC/CHEOPS projects recently launched under the European H2020 scheme.