

# HiPER

## High Power Electric propulsion: a Roadmap for the future

### TOWARDS NEW FRONTIERS IN SPACE

*We can dream about taking space travel to new frontiers, but we can't live the dream without transportation. In the future, **advanced space transportation** systems will allow for interplanetary space missions. Today, Europe is working to improve the nature of the systems that will make such space transportation and exploration possible.*

Embarking on a long journey, knowing what will take you there is essential. As Europe prepares for a new era of space exploration, **new technological solutions for space transportation** are now needed.

The HiPER project will **perform basic research and proof-of-concept experiments** on key space transportation technologies, allowing for the development of high power electric propulsion and power generation that may enhance space exploration and transportation capabilities.

HiPER will be the first comprehensive RTD project in Europe devoted to a spacecraft with power levels well in excess of 10 kW and an initial target of 25 kW, well beyond the present European state-of-the-art. High power electrical propulsion is currently seen as the only technology which can offer a satisfactory level of agility for future planetary missions.

The project's main objective is to initiate technological and programmatic consolidation in the development of innovative electric propulsion technologies, including its related power generation, which is needed to fulfil future European space transportation needs.

Such expertise is also paramount to ensure the development in Europe of assured independent access to efficient in-space propulsion technologies.



**GIOVANNI CESARETTI**  
IS PROJECT COORDINATOR

### QUESTIONS & ANSWERS

#### What do you want to achieve with this project?

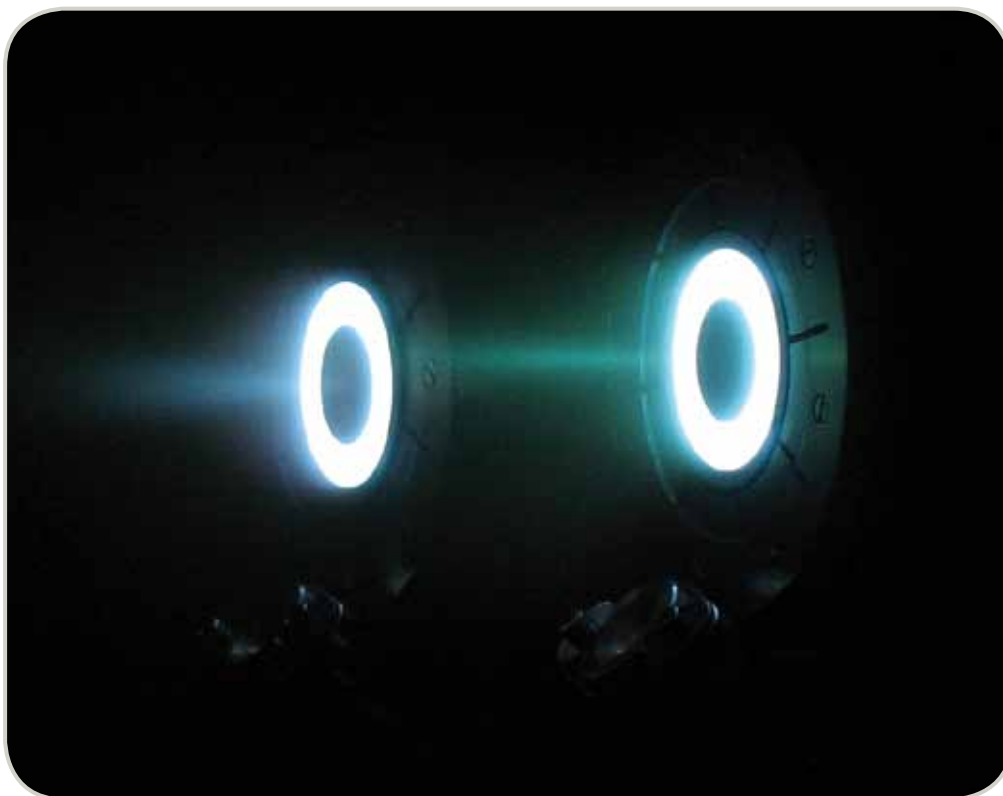
The goal is to draft a roadmap for the future development of high power electric propulsion and power generation, in order to enhance space exploration and transportation capabilities. Both the European Space Agency and national agencies will be involved to produce the best scenarios.

#### Why is this project important for Europe?

Firstly, because it groups most of the European actors in the field. Secondly, because it will provide a strategic workplan for the European Commission and ESA for future space endeavours. Finally, because it would have a very positive industrial and technological impact on the competitiveness of the European space industry.

#### How does your work benefit European citizens?

Obvious benefits will come from advances in technologies and exploration capabilities: more power and thrust onboard of a spacecraft implies a longer life and cost reduction. Possible transfer of the technology to "ground" sectors (industrial plasma, solar panels, power generation) would bring additional benefits.



Alta HT-100 Hall Effect Thruster (HET) firing in cluster configuration inside a vacuum chamber. HT-100 is one of the smallest HEs developed, and has been fully designed at Alta. Source: © HiPER

# HiPER

High Power Electric propulsion: a Roadmap for the future



## LIST OF PARTNERS

- Alta SpA (ALTA), Italy
- SNECMA SA, France
- Galileo Avionica SpA, Italy
- Space Enterprise Partnerships Ltd. (SEP), United Kingdom
- Domaine de Beaugard Eurl (DdeB), France
- Astos Solutions GmbH, Germany
- Politecnico di Milano (PoliMi), Italy
- Centre National de la Recherche Scientifique (CNRS), France
- Office National d'Etudes et de Recherches Aérospatiales (ONERA), France
- Institute of Fundamental Technological Research of the Polish Academy of Sciences (IPPT), Poland
- Fundación Inasmet (TECNALIA-INAS), Spain
- KopooS Consulting Ind. (KopooS), France
- Consorzio RFX (RFX), Italy
- Centre National d'Etudes Spatiales (CNES), France
- University of Stuttgart – IRS (USTUTT), Germany
- University of Southampton (SES), United Kingdom
- Fraunhofer Institute – ISE, Germany
- Rolls Royce plc (RR), United Kingdom
- Acta Srl, Italy

## COORDINATOR

**Alta S.p.A. - ITALY**

## CONTACT

**Giovanni Cesaretti**  
Tel: +39 050 967224  
E-mail: g.cesaretti@alta-space.com

## PROJECT INFORMATION

High Power Electric propulsion: a Roadmap for the future (HiPER)  
Contract no: 218859  
Starting date: 01/10/2008  
Duration: 36 months  
EU Contribution: € 3.633.702  
Estimated total cost: € 5.397.023  
[www.alta-space.com/hiper](http://www.alta-space.com/hiper)

