

HISP

High Performance Solid Propellants for In-Space Propulsion

SPEEDING UP SPACECRAFT

The space race takes a new dimension with high performance propellants for interplanetary travel. The HISP project is set to improve propulsion systems on future exploration missions.

It's a race towards far away planets; as Europe sets out for future space exploration journeys, new propellants are needed to power the spacecraft that would take us there. Today, time and mass are significant limiting factors for space exploration missions. Our spacecraft are too slow and too heavy, which in turn also makes them very costly. Thus the challenge is to develop new and more effective propellants.



Solid propellant is considered for the Mars ascend vehicle.
© NASA/JPL

HISP will develop a solid propellant, with 10% higher performance compared to the solid propellants used today.

The HISP project responds to this challenge with a novel concept for the development of a new solid propellant. HISP believes that the way to significantly improve the performance of a propulsion system is to develop propellants with higher specific impulse. Correspondingly, the objective of this project will be met by the development of a high performance solid rocket propellant with performance that is similar or higher than existing state-of-the-art liquid bi-propellants, and about 10 percent higher compared to the most efficient existing solid propellants.

In this respect, the project explores the potential of advanced chemical propulsion technologies, in particular advanced high energy density fuels that could power spacecraft on interplanetary flights.

HISP's concept for the new propellant is already well advanced. The aim of this project is thus to make theory come true, and produce 7 kg new propellant, which at the end of the project will be fired in a test motor.



NIKLAS WINGBORG
IS PROJECT COORDINATOR

QUESTIONS & ANSWERS

What do you want to achieve with this project?

The objective of HISP is to increase the scientific return from future space exploration missions by significantly reducing time, cost and mass required for spacecrafts to reach their destinations. This will be achieved by developing more efficient propellants.

Why is this project important for Europe?

Propulsion and propellants are key technologies for all space missions. Developing new propellants will strengthen the European space propulsion industry and increase its competitiveness, and will increase the effectiveness of future European space exploration missions.

How does your work benefit European citizens?

Increasing the scientific return from space exploration missions will increase the knowledge of the solar system and the universe and, in the long run, the knowledge of ourselves.

HISP

High Performance Solid Propellants for In-Space Propulsion



LIST OF PARTNERS

- Totalförsvarets forskningsinstitut (FOI), Sweden
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V (ICT), Germany
- The Inner Arch (TIA), France
- Politecnico di Milano (POLIMI), Italy
- Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek (TNO), Netherlands
- Sibtermokhim (STK), Russian Federation
- EURENCO Bofors AB (EUB), Sweden
- Avio S.p.A. (AVIO), Italy
- EURENCO France (EUF), France

COORDINATOR

Swedish Defence Research Agency (FOI), Sweden

CONTACT

Niklas WINGBORG
Tel: +46 8 5550 4181
E-mail: niklas.wingborg@foi.se

PROJECT INFORMATION

High Performance Solid Propellants for In-Space Propulsion (HISP)
Contract no: 262099
Starting date: 01/03/2011
Duration: 36 months
EU Contribution: € 1.975.683
Estimated total cost: € 2.823.326

