

SACOMAR

Technologies for Safe and Controlled Martian Entry

LANDING SAFELY ON MARS

Spacecraft descending towards the surface of Mars have to navigate through an extremely challenging environment before landing. SACOMAR performs detailed investigations with a view to improve spacecraft design for future Mars entry missions.

Safely landing on a planet is one of the most challenging parts of any space missions. In the case of our own planet Earth, spacecrafts risk to burn up in the atmosphere if their Thermal Protection Shields prove inadequate to deal with heat fluxes that are sometimes extreme. Although Mars has an atmosphere with lower density, for a safe touch down of spacecraft on the Red Planet is still very challenging. The main reasons for this being the presence of different gas compositions and significant dust content of the atmosphere.

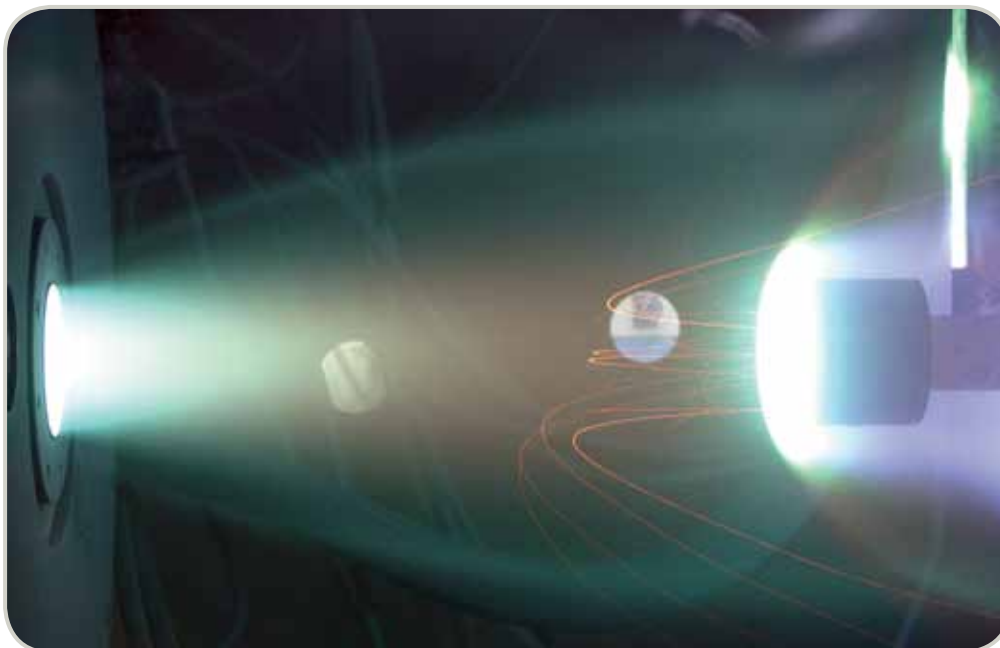
The SACOMAR project is set to enhance our understanding of the environment near Mars that a spacecraft has to

travel through safely, for future European space missions to be successful. Given the geographical distance to Mars, Computational Fluid Dynamics (CFD) research has proven to be a valuable means to enhance our knowledge of this alien environment. CFD is a branch of fluid mechanics, which makes use of numerical methods and algorithms with a view to solving and analyzing problems that involve fluid flows. Computers are used to perform the calculations required to simulate the interaction of liquids and gases with surfaces defined by boundary conditions.

In this respect, SACOMAR will seek to perform an experimental and numerical study of gas surface interaction phenomena in the high enthalpy flow field behind the bow shock in front of a model at Martian entry flow conditions.



ALI GÜLHAN
IS PROJECT COORDINATOR



© SACOMAR

SACOMAR will perform experimental and numerical investigations on Martian entry conditions.

QUESTIONS & ANSWERS

What do you want to achieve with this project?

The main objectives of the SACOMAR project are the improvement of experimental and numerical design tools for a safe Martian entry. This project should intensify the cooperation between the key institutions of EU and Russia in the field of Martian entry technologies.

Why is this project important for Europe?

Until now Europe did not succeed in performing a successful Martian entry, and landing a rover on Mars. The reason of the loss of the European lander Beagle 2 is still unknown. SACOMAR tries to support a better understanding of problems and improve the design of a spacecraft.

How does your work benefit European citizens?

Obtained knowledge from the SACOMAR project will be transferred for future European interplanetary missions. A new generation of researchers will take advantage of working on future activities that can meet the future needs of aerospace science and engineering.

SACOMAR

Technologies for Safe and Controlled Martian Entry



LIST OF PARTNERS

- Deutsches Zentrum für Luft- und Raumfahrt, Germany
- ASTRIUM, Germany
- CIRA, Italy
- Thales Alenia, Italy
- TsNIImash, Russia
- IPM, Russia
- TsAGI, Russia
- ITAM, Russia

COORDINATOR

Deutsches Zentrum für Luft- und Raumfahrt,
Germany

CONTACT

Dr. Ing. Ali GÜLHAN
Tel: +49 2203 601 2363
E-mail: ali.guelhan@dlr.de

PROJECT INFORMATION

Technologies for Safe and Controlled Martian Entry
(SACOMAR)
Contract no: 263210
Starting date: 01/01/2011
Duration: 18 months
EU Contribution: € 499.484,94
Estimated total cost: € 690.530,85

