ICARUS

INFLATABLE CONCEPT AEROSHELL FOR THE RECOVERY OF A RE-USABLE LAUNCHER STAGE

KEY FACTS:

Start date	End date	Partners	Countries
1/6/2024	29/2/2028	11	6

OVERVIEW

ICARUS aims to increase the European know-how and technology capabilities in the field of Inflatable Heat Shields (IHS) with the challenging objective to design, realize and fly a demonstrator of a re-entry system based on an IHS. Building on the significant achievements of its predecessor projects, ICARUS will implement the necessary advancements to improve the current TRL for future re-entry missions.

The project pillars are:

1. Contribute to the maturation up to TRL 5-6 of enabling new technologies and subsystems (including common building blocks) in the field of re-entry solutions for space transportation;

2. Mature technology demonstration at subsystem and system levels for the recovery of Space Transport vehicle elements, specifically launcher stages.

In this regard, the project will develop an innovative re-entry solution based on Inflatable Heat Shields (IHS), applicable for the recovery of Launch Vehicle stages.

Funded by the European Union

Inflatable Heat Shields are fundamental for decelerating and protecting space systems during re-entry, thus providing a key contribution to re-entry and descent functions.

Particularly, ICARUS will contribute to:

a. Completing the maturation on the ground of key technologies enabling Inflatable Heat Shields: Flexible TPS and Inflatable Structure;
b. Conducting a mission/system design loop to create and fly a meaningful-scale demonstrator of an Inflatable Heat Shield on a sounding rocket, where the upper part of the rocket will be recovered thanks to the IHS Demonstrator;
c. Executing post-flight analysis and rebuilding to evaluate technology performance, identify system behaviour, and verify/cross-correlate models.

PROJECT PARTNERS

- DEIMOS Engineering & Systems S.L.U.
- ELECNOR Infrastrutture Aerospaziali srl
- DEIMOS Enghenaria
- Deutsches Zentrum für Luft- und Raumfahrt e.V.
- Centro Italiano Ricerche Aerospaziali SCPA
- Office National d'Etudes et Recherches Aérospatiales
- Pangaia Grado Zero srl
- Polytechnic University of Turin
- Klaus Space Transportation
- High Density Energy Systems Service & Engineering BV
- DEMCON high-tech systems Delft B.V.