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Author: Mr. Giorgio Tumino
European Space Agency (ESA), France, Giorgio.Tumino@esa.int

THE ESA IXV PROJECT FROM DESIGN TO DEVELOPMENT

THE EUROPEAN TECHNOLOGY PLATFORM FOR ATMOSPHERIC RE-ENTRY

Abstract

The atmospheric re-entry domain is considered a cornerstone in Europe for a wide range of space applications, from robotic to manned transportation and exploration.

Since its beginning, the Intermediate eXperimental Vehicle (IXV) was conceived as the technology platform to perform the step forward from the successful Atmospheric Re-entry demonstrator (ARD) flight in 1998, with the objective to increase the know-how at technology and system level through a second European development with flight experience in 2012.

On the basis of the ARD and the IXV development and flight experiences, Europe will consolidate its know-how on different system and technology choices, be able to trade different design approaches, and take informed decisions on key design and development aspects of future operational space transportation systems.

The IXV main objective is to design and develop, up to in-flight verification, an autonomous lifting and aerodynamically controlled re-entry system, integrating most critical technologies at system level. Among such critical technologies, the focus is on the advanced instrumentation for the investigation of aerothermodynamics phenomena, the different thermal protections and hot-structures solutions, the advanced guidance, navigation and flight control through combined jets and aerodynamic surfaces.

The IXV design activities are well in progress, having concluded the preliminary design reviews at system and subsystem level, now entering the full development phase up to completion.

The 60th IAC presentation and article will give the insight on the IXV project design and development phase, focusing on the technical and programmatic aspects.