

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Verification and In-Flight Experimentation (6)

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THE DEVELOPMENT OF THE IXV SYSTEM

Abstract

The Intermediate eXperimental Vehicle (IXV) project is an advanced re-entry demonstrator vehicle aimed to perform in-flight experimentation with atmospheric re-entry enabling systems and technologies. The IXV integrates key technologies at the system level, with significant advancements on Europe's previous flying test-beds. The project builds on previous achievements at system and technology levels, and provides a unique and concrete way of establishing and consolidating Europe's autonomous position in the strategic field of atmospheric re-entry.

The IXV mission and system objectives are the design, development, manufacturing, assembling and on-ground to in-flight verification of an autonomous European lifting and aerodynamically controlled reentry system, integrating critical re-entry technologies at system level. Among such critical technologies of interest, special attention is paid to aerodynamic and aerothermodynamics experimentation including advanced instrumentation for aerothermodynamics phenomena investigations, thermal protections and hot-structures, guidance, navigation and flight control through combined jets and aerodynamic surfaces (i.e. flaps), in particular focusing on the technologies integration at system level for flight.

Following the extensive detailed design definition performed as part of Phase C2 and culminating with the System CDR milestone, the IXV Project is currently in Phase D moving from the previous design to the current manufacturing and qualification program activities.

The present paper describes, the main achievements in the definition of the system design and provides an overview of the vehicle and the current status of the Project including AED/ATD, Mission Analysis and GNC, Electrical and Thermo-mechanical Subsystems as well as Operations and Ground Segment activities.