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RUAG'S APPROACH TO REUSABLE PAYLOAD FAIRINGS IN FUTURE LAUNCHERS

Abstract

Over the last decade, space suppliers have started investigating re-usability for space launch vehicles. With the first successful recovery of a launcher's first stage about two years ago, the trend towards re-usability saw another major boost. Many product suppliers in space industry have now included in their strategies the development and validation of solutions for recovery and reuse of their space products. In comparison to today's expendable products, the recovery and reuse of space structures is expected to reduce the environmental impact and to contribute towards reduced cost-of-ownership.

RUAG Space, the leading provider of space products to the European market, is investigating approaches for recovery and reusability of their Payload Fairings (PLF). These structures protect the payload against the impact of dynamic pressure and aerodynamic heating during launch through the atmosphere. At the separation event, the two PLF halves are jettisoned and they re-enter the Earth's atmosphere tumbling. RUAG's approach is based in ensuring a controlled re-entry and thus ensuring the structural integrity of the two composite halves. Once recovered and refurbished, the structures would then be available for immediate re-use. Additionally, this approach would be used as technology pathfinder and could be transferred to other launcher components.

The re-usability strategy developed by RUAG is aiming at environmentally friendly space structures for the next generation of launchers. RUAG's approach is divided in two development phases for recovery and re-usability of space structures. Among others, the topics under research include the development of an independent instrumentation, end-to-end mission modeling including the re-entry and prediction of the landing area and the design and development of systems for stabilization and deceleration for recovery of space structures.

This presentation will provide some insight into our current activities.