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Topic:

Crash Dynamics – Cabin Safety

Title:

Development and Dynamic Evaluation of ISOFIX and LATCH Child Restraint Anchorage Systems for Aerospace Seating Applications

Abstract:

A child restraint system (CRS) provides specialized protection for small occupants whose body structures are still immature and growing. Child restraint designs vary with the size of the child, the direction the child faces, the type of internal restraining system, and the method of installation. Current Federal Aviation Administration recommendations for child restraints are based on Federal Motor Vehicle Safety Standards and typically involve the use of child safety seats restrained by aircraft lap belts. Newer automotive restraint standards use the vehicle structure to restrain the child safety seat. These standards differ between North America (LATCH) and Rest of the World (ISOFIX). Development and testing to determine the optimum means of child restraint and a solution that works in both North America and Rest of the World has been conducted at NIAR. Based on the results from the dynamic sled tests (14 CFR 23.562 and 25.562) , there is sufficient data to conclude that the ISOFIX and LATCH system can solve the interface issues found in the past between the CRSs and aircraft seats. Both the ISOFIX and the LATCH attachment methods offer similar level of safety for the 12 month and 3 YOLD occupants. The results of this project may be used in the future to define static and dynamic test requirements for the CRS anchorage systems.