

Battery Crashworthiness Abstract

The advent of electric vertical take-off and lift vehicles (eVTOL) and other electrically powered aircraft has prompted many questions and research opportunities pertaining to certification, aircraft flight behavior, powertrain reliability, and the general incorporation of eVTOL into the national airspace system. Ensuring the safe implementation of these new age aircraft includes a multi-pronged, multi-disciplinary approach. Crashworthiness characteristics should be incorporated during the primary design phase to work towards a safer aircraft system, as opposed to only measuring safety through its components.

This presentation focuses on a new research effort evaluating the applicability of a battery drop tests to evaluate the safety of battery packs, modules, and cells in eVTOL systems. This research is being conducted at the FAA William J. Hughes Technical Center in a multi-disciplinary team of the Structures and Propulsion branch. The battery drop test will produce data to evaluate against current regulations of rotorcraft and fixed wing aircraft, including data on pack-level gas venting safety requirements, battery structural encasement performance, return to service criteria, and thermal runaway propagation.