

## REAL-TIME SIMULATION FOR ADVANCED AIRCRAFT SYSTEM INTEGRATION

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### Abstract

Innovation in aircraft systems has been focused on improving reliability and operational efficiency, leading to an increased number of electrically driven systems on-board. The development of "more-electric" aircraft entails the use of advanced Electric Power Generation and Distribution Systems (EPGDS) that handle high levels of power and involve complex power electronics and controls. Simulation is critical to integration testing of these advanced systems along with EPGDS; however, due to the fast dynamics of electrical systems, specialized technology is needed to execute virtual testing. In this article, we review the challenges involved in simulation-based testing and validation of advanced aircraft systems, describe specific problems with EPGDS simulation along with state-of-the-art solutions, and propose an architecture for full system verification prior to flight test.

**Keywords:** Real-time simulation; system integration; electrical power generation and distribution