



aerospace



Special Issue Reprint

Electro-Mechanical Actuators for Safety-Critical Aerospace Applications

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Aircraft electrification is one of the most important and strategic initiatives currently supporting the innovation of the aviation industry. This manifests in the well-known more-electric aircraft concept (with the ultimate aim of achieving the all-electric long-term target), which aims to gradually replace onboard systems based on mechanical, hydraulic, or pneumatic power sources with electrically powered ones to reduce the weight and costs, optimize energy, and increase the eco-compatibility and reliability of future aircrafts.

A key technological enabler for pursuing these challenging objectives is electro-mechanical actuation. The applicability of electro-mechanical actuators (EMAs) in aerospace has been proved in terms of dynamic performances, but it still entails several concerns in terms of reliability/safety and operation in a harsh environment. In civil aircrafts, EMAs are often avoided for safety-critical functions (flight controls, brakes, landing gears, and nose wheel steering), essentially because the statistical database on the components' fault modes is poor.

This Special Issue is thus focused on advancements and innovations in the design, modelling/simulation, architectural definition, reliability/safety analysis, control, condition-monitoring, and experimental testing of EMAs developed for safety-critical aerospace applications. The research papers included in this Special Issue will undoubtedly contribute to progress towards the objective of more electric flights.



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