Electrical and Electronic Technologies in More-Electric Aircraft: A Review

Kai Ni, Yongjiang Liu, Zhanbo Mei, Tianhao Wu, Yihua Hu, Huiqing Wen, Yangang Wang

Abstract— This paper presents a review of the electrical and electronic technologies investigated in more-electric aircraft (MEA). In order to change the current situation of low power efficiency, serious pollution, and high operating cost in conventional aircraft, the concept of MEA is proposed. By converting some hydraulic, mechanical, and pneumatic power sources into electrical ones, the overall power efficiency is greatly increased, and more flexible power regulation is achieved. The main components in an MEA power system are electrical machines and power electronics devices. The design and control methods for electrical machines and various topologies and control strategies for power electronic converters have been widely researched. Besides, several studies are carried out regarding energy management strategies that intend to optimize the operation of MEA power distribution systems. Furthermore, it is necessary to investigate the system stability and reliability issues in an MEA, since they are directly related to the safety of passengers. In terms of machine technologies, power electronics techniques, energy management strategies, and the system stability and reliability, a review is carried out for the contributions in the literature to MEA.

For the published version of record document, go to:
http://dx.doi.org/10.1109/ACCESS.2019.2921622