

Aircraft electrification is currently the best alternative to address the rising demand for more air transportation and deal with anticipated economic and environmental impacts. Although the all-electric-aircraft (AEA) concept is not yet a feasible solution, the more-electric aircraft (MEA) is gaining significant attention. Electrical systems either partially or entirely replace the large and inefficient hydraulic, pneumatic, and mechanical conventional aircraft actuating systems. The upgrade could also encompass the propulsion system, as in hybrid- and turbo-electric aircraft. This upgrade reduces the aircraft weight, reduces the usage of pollutant fluids, increases fuel efficiency, reduces carbon emissions, and increases aircraft controllability and reliability. This article reviews various application areas of electric machines in electrified aircraft, such as actuation, taxiing, propulsion, and generation. Moreover, it reviews the main types of currently/to be utilized electric machines and the critically required specifications. Finally, a comparison between the different considered machines and potential future research is discussed.