

Stability Assessment of Electric Power Systems for 'More Electric' Aircraft

Antonio Griffo, Jiabin Wang
The University of Sheffield
Department of Electronic and Electrical Engineering, Mappin Building, Mappin Street
Sheffield, United Kingdom
Tel.: +44 / (0) – 114 222 5817
Fax: +44 / (0) – 222 5196
E-Mail: A.Griffo@sheffield.ac.uk, J.B.Wang@sheffield.ac.uk
URL: <http://www.shef.ac.uk/eee/research/emd>

EPE 2009, September 2009

Abstract - This paper presents a comprehensive assessment of small-signal stability for a "more-electric" aircraft power system consisting of a synchronous variable-frequency generator which supplies several power electronic controlled loads via an 18-pulse autotransformer rectifier unit (ATRU) for AC-DC conversion. Functional models for key power system components and loads are derived. Numerical tools employed for the automatic calculation of linearized equations and operating points are described, and the influence of leading design and operational parameter on system stability is evaluated