

A components library for simulation & analysis of aircraft electrical power systems using Modelica

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Abstract: A library of components for simulation and analysis of large vehicular electrical power systems using Modelica language is presented. Components are described using different levels of model complexity, catering for both detailed high fidelity transient switching dynamics and averaged value descriptions which, being time invariant, are a computationally efficient and useful tool for design, stability and sensitivity analyses. The merits of employing the Modelica based modelling tool are discussed, and its utilities and effectiveness are demonstrated through a test system consisting of a three-phase, variable frequency synchronous generator which feeds high voltage DC loads via an auto-transformer rectifier unit.