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Modeling and Simulation of a Cycloconverter with a Bond Graph Approach

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Abstract : The modeling of a single-phase cycloconverter in Bond Graph is presented, which includes an alternating current power supply, hybrid dynamics, switch control, and resistive load; this approach facilitates the integration of systems across different energy domains and structural analysis. Cycloconverters, used in motor control, demonstrate the viability of graphical modeling. The use of Bonds is proposed to model the hybrid interaction of the system, and the results are displayed through simulations using 20Sim and Multisim software. The motivation behind developing these models with a graphical approach is to design and build low-cost energy converters, thereby making the main contribution of this document the modeling and simulation of a single-phase cycloconverter.

Keywords : Bond Graph, Hybrid System, Rectifier, Cycloconverter, Modelling
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