

## **PWM INVERTERS IN DECENTRALIZED GENERATION SYSTEMS: CHARACTERIZATION OF THE DYNAMIC BEHAVIOUR UNDER UTILITY FAULT CONDITIONS**

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*Keywords:* coupling interface; distributed energy; distribution networks; LV-grid; micro turbine; utility faults

### **ABSTRACT**

This paper introduces the concept of dispersed generation and its impact on the utility distribution network, focusing on four energy sources: solar energy, fuel cells, wind power and micro turbines. Specific models for each type of source as well as coupling interfaces are developed. It then presents the control necessary to connect and synchronize these sources with the grid. For each of the four sources, a detailed and an average model are developed. Introduction and validation of the average model through comparison with the detailed model and field tests enable simulation of long time constants phenomena such as faults, loss of phase, motor starting etc. Finally, an example of the utilization of the models is given: it shows the simulation results obtained in the micro turbine case for a few faults occurring on the utility low voltage grid.