

166. SOLID-STATE TRANSFORMER FOR POWER MANAGEMENT IN DC MICROGRID

S.Gunasekar#1 and S.Amirtharaj*2

#M.E, PSE (II Year), G.K.M College of Engineering and Technology, Chennai, India

*Assistant Professor, G.K.M College of Engineering and Technology, Chennai, India

A novel distributed power management scheme is proposed in this paper for a DC microgrid system, which is enabled by Solid-State transformer (SST). The proposed system includes distributed renewable energy resource (DRER) and distributed energy storage device (DESD). The proposed distributed control algorithm, which only relies on the local information and guarantees full utilization of each module in the system based on their characteristics, is applied to both SST and DC microgrid. To this end, a simulation platform is developed in MATLAB/Simulink, in which Photovoltaic (PV), fuel cell and battery are selected as the typical DRERs and DESD, respectively. Lastly, several typical case studies are carried out and the simulation results verify the proposed distributed power management.

Index Terms—Battery, DC microgrid, distributed control, fuel cell, power management, PV, solid-state transformer.

Journal of Science and Innovative Engineering & Technology