AK Tech Training and Placements

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Controller Design and Implementation of Solar Panel Companion Inverters

In this project, dynamic analysis and closed loop current controller design of SPCI is presented. Solar Panel Companion Inverter (SPCI) is a single stage C-AC power converter, installed with each solar panel. Each SPCI synthesizes an AC quasi-square wave voltage with variable pulse width. Width of AC output voltage of each SPCI is proportional to available power on the solar panel. Output voltages of SPCIs are aggregated across multiple solar panels connected in series, and a sinusoidal AC voltage is synthesized. Simulation results demonstrating the dynamic response of the closed loop SPCI are included. The closed loop current control scheme to demonstrate the grid tied operation of SPCI results is presented. Maximum Power Point Tracking (MPPT) algorithm is implemented for Sorted Stair-Case Modulation (SSCM) in MATLAB Simulink.

Domain: Power Electronics / Multilevel Converters
Technology: Electrical