University of Tennessee, Knoxville

THE UNIVERSITY OF TENNESSEE KNOXVILLE

Academic Member

Project Title: Multi-functional High-efficiency High-density Medium Voltage SiC Based Asynchronous Microgrid Power Conditioning System (PCS) Module

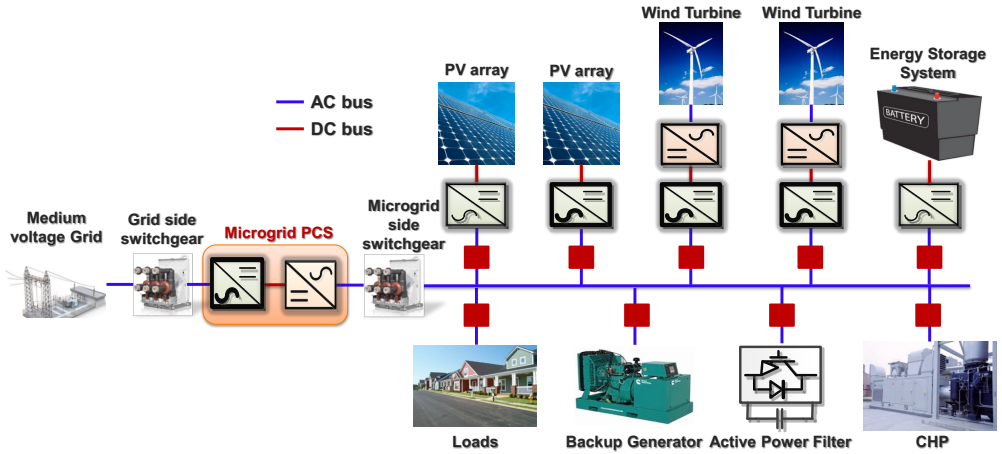
Objectives: Develop a multi-functional high-efficiency high-density PCS module at medium voltage level (13.8 kVac) using 10 kV SiC power semiconductors

Task No. BP5-4.28

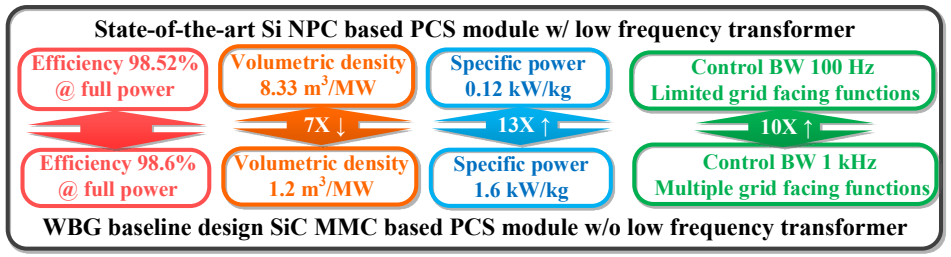
PI: Fred Wang

Email: fred.wang@utk.edu

Phone: 865-974-2146



WBG Technology Impact

1. Fast switching high frequency for improved efficiency, density, control bandwidth, and resultant multiple grid facing functions compared to Si devices
2. Promote proliferation of power electronic converters in medium-voltage distribution and microgrids
3. Timeframe for commercialization: 2 to 3 years
4. 

Accomplishments/Outcomes

1. Specification and grid requirement determined for the asynchronous microgrid PCS module.
2. Grid requirement impact on the PCS design.
3. 10 kV SiC MOSFET characterization.
4. PCS control algorithm development and validation in Hardware Testbed.
5. Medium voltage test platform building.
6. Three-phase DC/AC PCS converter developed and tested at rated power and voltage.