Abstract
“Integrated Intelligent Gate Driver and Interface System for Medium Voltage Converter Applications”

The objective of this PA project is to develop and demonstrate the commercial grade intelligent gate driver and interface system for SiC devices. The research team at NC state has developed the highest voltage gate driver for 15 kV SiC IGBT and 10-15 kV MOSFETs. The expertise of the team is utilized in developing an intelligent gate driver system for SiC devices with a programmable controller that allows configuring the gate driver with no or minimal hardware change for wide range of HV SiC devices from 3.3kV to 15 kV. The gate driver will also have several protection features and optical data communication for backend data logging to enable diagnostics and online prognostics. The online diagnostics and prognostics are essential for enabling reliable, resilient and overload capability of renewable energy integration to the grid due to the intermittent power cycling burden imposed on the MV power converter systems.