



Project Title: SiC Inverter for Heavy-Duty Vehicles

Objectives: 200 kW 1050 Vdc WBG Inverter manufacturing and commercialization

Major Milestones: Deployment of SiC dual inverter in 644K Hybrid Loader

Significant Equipment Acquisition: None

Deliverables: SiC dual inverter deployed in JD 644K Hybrid Loader & fuel economy benefits established



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WBG Technology Impact

1. Higher DC bus voltage, higher switching frequency, higher junction temp and heat flux, higher kW/L and kW/kg, smaller passives and system level advantages.
2. Heavy-duty off-highway and on-highway vehicles.
3. Commercialization by end of 2019
4. Switching frequency (> 15 kHz with SiC versus 8 kHz with Si). DC bus cap (300 μ F - 400 μ F with SiC versus 1500 μ F with silicon). Inverter power density (> 25 kW/L with SiC versus 17 kW/L with silicon)

Additional Impacts of WBG Technology

1. Engine coolant power electronics
2. **WBG tech suitable for innovations by 8C solutions:** copper, capacitor, cable, connector, coolant, case, control, and cost
3. WBG product manufacturing jobs in Fargo
4. WBG power electronics workforce development
 - Summer internship opportunities
 - Co-op student opportunities
4. Current Technology Readiness Level: TRL 3/4
5. Projected TRL at end of project: TRL 6/7