

## Case Study

### Research and Development in Silicon Carbide (SiC) Electronics

**CUSTOMER:** NASA Glenn Research Center  
**CONTRACT #:** NNC06CA70C, NNC07CA13C  
**PROJECT NAME:** SBIR Phase I & II Project, "A High Efficiency Compact SiC-based Power Converter System"  
**PROJECT DURATION:** 2006-2009

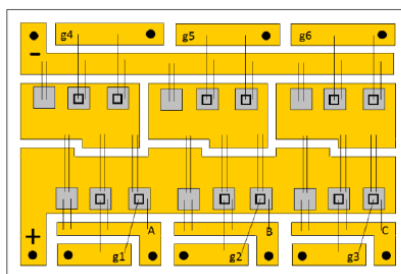
#### OVERVIEW

NASA Glenn Research Center solicited a SBIR/STTR request for proposal (RFP) for new high efficiency and compact power converter systems, to be used for aerospace applications. Such power converters are used for electrical power conditioning, power distribution, and power management for electrical drives and energy storage applications. The resultant SiC power converters operate at high power densities, high power efficiency, and have reduced size and weight. Aegis Technology was awarded the project in 2006 and successfully completed the project in 2009.

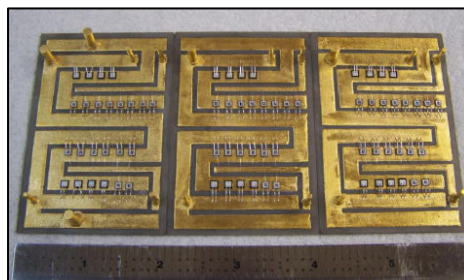
#### DELIVERABLES

Aegis Technology designed and delivered prototype 5 kVA and 25 kVA SiC based DC-to-AC inverters. In the process, Aegis Technology conducted:

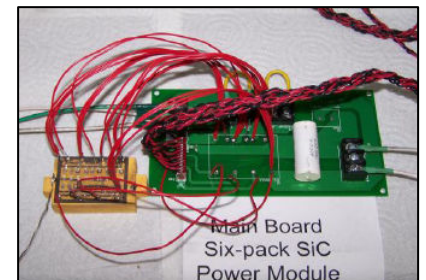
- Circuit level & System level design
- Computer modeling and simulation
- Layout & Processing
- Measurements & Testing
- Ancillary circuits and systems design
- Gate Driver design
- DC Power Source design



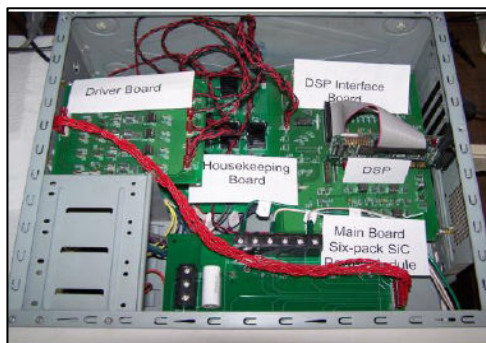
(a)



(b)



(c)



(d)



(e)

(a) SiC Power Module Layout, (b) Prototype SiC Power Modules, (c) Main Board & SiC Power Module, (d) 5 kVA inverter, (e) DC Power Source

#### CONTACT

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