



**Project**

Control Electronics

**Application**

Diesel-Fired Military Tent Heater

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**Customer Need**

MIL-compliant electronic control of all aspects of a military tent heater including start/stop sequence, closed-loop temperature control, fuel/air mixture, fan motor control, power management and battery charging with system power provided by a Thermo-Electric Generator (TEG). Additional requirements included a remote temperature sensor and user-set point input, with CO monitor.

**AVID's Solution**

Our engineering services extended beyond board and firmware design to satisfy all of the needs listed above as it included system level operational aspects, use cases, diagnostics, addressing unit to unit variations of the burners and TEGs, and corner case conditions. AVID was responsible for the complete board level design, embedded and system firmware, and system verification to Military requirements. AVID assisted in electronics packaging, cable harness design, and release to manufacturing. We also created a real-time executable for the PC that allows test engineers to monitor and modify run-time parameters during system test without the need to reprogram the system.

**Value Added or Technologies Applied**

- System Operation and Use Case
- Control Architecture
- Hardware and Firmware Design and Implementation
- Prototyping and Validation
- PC Application Development
- System Qualification Support
- Manufacturing Engineering



**Project**

Custom Trackball Interface

**Application**

Control System

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**Customer Need**

An industrial trackball interface that communicates over a proprietary serial channel to a custom MIL-SPEC VME CPU. The trackball electronics transmit actual X-Y position over an SDLC communication channel using a proprietary protocol. All inputs and outputs are isolated.

**AVID's Solution**

The SDLC channel was implemented in a FPGA which also received the pulses from the trackball and calculated actual position. A SDLC core was purchased and modified for this application.

**Value Added or Technologies Applied**

- Specification Development
- Product Architecture and IP Evaluation/Acquisition
- VHDL Development
- PCB Design and Implementation
- Product Mechanical Packaging Design and Implementation
- Test Software Development for Validation
- Prototyping and Validation



**Project**

Portable Bench Top Test System

**Application**

Shipboard Control System

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**Customer Need**

Sailors aboard nuclear-powered submarines and ships require the ability to fully test electronic assemblies prior to installing in an operating system. AVID was requested to develop fully automated portable testers that duplicate the factory acceptance testing of 10s of different electronic assemblies. These testers need to be rugged for shipboard uses as well as take up as little physical space as possible.

**AVID's Solution**

AVID developed a chassis system which included self-storing characterization boards for each unique board to be tested. Various PC programmable test and measurement equipment was used to simulate inputs and monitor outputs. A master test executive PC application program was developed to run the tests and included step by step instructions, pictures, and test logging. The specific test sequence and acceptance criteria are defined by an Excel spreadsheet which allows non-programmers to easily modify the steps or parameters. A final compile function allows the Excel sequence and limits to be built into a single run-time executable to prevent unauthorized changes.

**Value Added or Technologies Applied**

- Test Specification/System Specification
- Hardware, Mechanical, PC Application Design
- System Prototype and Validation
- Build-to-Print Drawings and Documentation
- Six Test Systems for Actual Sea Trials