Emerging Technologies

APPLICATION BRIEF
2020

MICROCONTROLLER-BASED SUB-ASSEMBLY TEST SYSTEM

Brief Description:

Emerging Technologies, LLC. was called upon to design and build an automated sub-assembly test system. The DUT was to be configured, calibrated, and functionally tested.

Emerging Technologies, LLC. worked from a customer provided test specification and sample product. Challenges included DUT configuration via Modbus, automated screw driver for calibration, milli-ohm measurement, and fixturing for limited access electrical connections.

The product to be tested consisted of variations in range for calibration. Model identification, configuration, calibration, and verification, as well as functional test were core to the requirements for the system.

3D solid modeling was utilized to ensure correct fit of customer provided DUT models prior to manufacture of fixturing.

The project cycle consisted of engineering, system design, application programming, system fabrication, and system operational verification. Frequent communication and joint effort with the customer were employed to ensure the success of this test system.

Customer Benefit:

The customer is able to identify, configure, calibrate, and functional test, sub-assemblies, using the Emerging Technologies, LLC. developed test system prior to assembling final product. Additionally, the results of testing each product is accessible via database over the plant network.

ET Responsibilities:
Functional Specification Generation
- ✓ Design / Engineering
- ✓ Fabrication
- ✓ Programming – Software
- Programming – Firmware
- Circuit & PCB Design
- On-Site Commissioning
- ✓ Post Commissioning Support
- Other

Technologies:
- Embedded Computers
- ✓ Microcontrollers
- Visual Software
- ✓ Control Software
- ✓ Data Acquisition
- ✓ Computer Based Control
- ✓ Communications – Modbus via RS485, GPIB
- ✓ System Integration
- ✓ Other – Dual Action Clamping Fixture
- ✓ CAD - 3 D Modeling

Special Features:
- ✓ 4-Wire Kelvin Resistance Measurement.
- ✓ DUT Configuration VIA Modbus.
- ✓ Automated Screw Driver System for Calibration.
- ✓ Manual Dual Action Clamping DUT Fixture.
- ✓ On-Fixture Pass/Fail Indication.
- ✓ Network Database Results Storage.
- ✓ Mobile Enclosure.

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