

APPLICATION BRIEF

2020

ELECTRO-MECHANICAL SUB-ASSEMBLY TEST SYSTEM

Brief Description:

Emerging Technologies, LLC. was called upon to design and build an Electro-mechanical Sub-assembly Test System capable of testing eight separate units simultaneously and independently.

The control program was written using National Instruments LabView 7. Upon opening the control application, saved preferences and configurations are loaded into memory. The operator starts the process by securing up to eight units to the fixture plate and entering the DUT serial numbers. Once the start button is clicked, the system begins to test the DUTs using the loaded or user-modified settings. The user configurable multi-step functional test automatically applies various loads and verifies: voltage, current, and position information. An optional, configurable, life cycle test can be automatically started after completion of the functional test. The results of the tests are appended to a CSV (comma separated value) file.

The system provides on-screen information and testing status for all eight, independent tests. Once the user presses the "Start" button no further user input is required unless a system fault is detected.

This system is an excellent compromise of efficiency versus cost. This system offers the functionality and capacity of eight separate systems in the convenience and cost-effectiveness of a single test system.

Customer Benefit:

The customer is able to test up to eight units simultaneously and independently with a reasonably priced, automated, PC based test system. The results of each test are recorded for future reference. The user can customize the testing parameters to accommodate special tests or different unit revisions.



ET Responsibilities:

- ✓ Functional Specification Generation
- ✓ Design / Engineering
- ✓ Fabrication
- ✓ Programming – Software
- Programming – Firmware
- Field Installation
- On-Site Commissioning
- Post Commissioning Support

Technologies:

- Embedded Computers
- Microcontrollers
- ✓ Visual Software
- ✓ Control Software
- ✓ Data Acquisition
- ✓ Computer Based Control
- ✓ Communications – RS232, RS-485
- ✓ System Integration
- ✓ Other – Fixture Design & fab
- ✓ Other – Graphic Overlay Design

Special Features:

This system significantly exploits WindowsXP and LabView 7's multithread capability. Multiple threads run allowing the execution of multiple tests independently and concurrently. Consequently, all eight devices can be tested at the same time.