

# APPLICATION BRIEF

## 2020

### ***ELECTRO-MECHANICAL DEVICE TEST SYSTEM***

#### **Brief Description:**

Emerging Technologies, LLC. was called upon to develop and build a custom Electro-Mechanical Device Test System. The system electrically closes and close/opens the device for a configurable number of cycles. The system can perform close/open cycles as fast as four times per second with a delay between close to open as little as 0ms. The duration of close and open pulse signals can also be adjusted to accommodate various DUT styles. The total number of cycles is configurable with the cycles stopping when the breaker state feedback does not correspond with the systems last command. The system also counts and records the total number of cycles performed and is capable of restarting a test without resetting the cycle count, allowing a test to be stopped and restarted at a later time.

The system is equipped with four power sources used to generate up three different control voltages. The system will automatically adjust and select the appropriate source for each signal based on the operator's specifications.

A Mechanical Device Analyzer was integrated into the test system, adding the capability to measure the timing of close and open operations.

This system was designed to replace an existing system. Enhancements were made to reduce operation risk, improve test consistency, and bring the test system up to current industry standards.

#### **Customer Benefit:**

The customer is able to automatically test a DUT for a configurable number of cycles with minimal operator interaction. The customer received a fully validated, custom test system with proprietary software.



#### **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 – USB, RS232, Ethernet, Modbus
- ✓ System Integration
- Other

#### **Special Features:**

- ✓ Automatic DUT Cycling
- ✓ DUT Endurance and Break-In Testing
- ✓ Control Power Ranging from 0-300VAC and 0-300VDC
- ✓ Independent Voltages for up to Three Control Signals
- ✓ Monitors up to Three Poles and Two Aux Contacts
- ✓ Integration of Mechanical Device Analyzer
- ✓ Monitors Timing of Operations
- ✓ Test Results Stored in CSV File Format
- ✓ System Safety Circuit Hardware