

# APPLICATION BRIEF

## 2020

### MEDIUM VOLTAGE CONTACTOR TESTER

#### Brief Description:

Emerging Technologies, LLC. was called upon to develop a functional test system for a medium voltage contactor. The system incorporated a customer-supplied fixture and other hardware. The system test requirements included pickup tests and HiPot test. The provided fixture incorporates two DUT test locations to run pick-up and HiPot tests simultaneously (pick-up test in one location and HiPot test in the other).

In control of the test system is an Eaton Electrical D50 PLC, D50 digital I/O expansion module, and custom-written software. The use of the PLC eliminated the need for a PC making for an easy to operate, stand-alone, dual test system.

The test system simultaneously tests proper contactor operation on one DUT while the other DUT undergoes a 20kV AC HiPot test. Photoelectric sensors in the fixture indicate whether a DUT is present, allowing the 2 tests to run independently if desired.

For operator safety, the test system also incorporates optical touch buttons that must be activated to start the test. Additionally, several safety interlocks implemented in software and hardware help prevent operator exposure to hazardous voltage.

Fabrication included mounting & wiring of all devices, custom machined components for mounting internal devices, and modification of the provided test fixture.

#### Customer Benefit:

The customer is able to test 2 DUTs simultaneously while maintaining the ability to run independent tests. Proper contactor operation and AC withstand ability are verified. By providing their own test fixture and other hardware, the customer was able to take advantage of cost savings.



#### ET Responsibilities:

- Functional Specification Generation
- ✓ Design / Engineering
- ✓ Fabrication
- In House Verification
- ✓ 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, GPIB
- System Integration
- Other

#### Special Features:

- ✓ Tests 2 DUTs simultaneously, independently
  - Tests Contactor Operation
  - Tests 20kV AC withstand ability
- ✓ Only runs tests for DUTs detected by photoelectric sensors
- ✓ Optical touch buttons for operator safety