

AUTOMATED PARTIAL DISCHARGE TEST BOOTH UPGRADE

Brief Description:

Emerging Technologies was called upon to upgrade an existing Partial Discharge Test Booth for Medium Voltage Products. The upgrade was requested to improve throughput, reduce downtime, and migrate to newer technology hardware and software.

This effort included replacement of the existing PD detector hardware and software as well as some of the booth automation hardware and PLC controls. Additionally, the existing custom HV test set was installed into new enclosures and a new LabVIEW control application was deployed. The test application was derived from a standard test application used in other areas of the plant. Access to the plant test systems' database and RFID interface were applied. Rework of the booth grounding system for high voltage test was also performed. Since the system controls voltages up to 100KV, Fiber-optics were deployed for communication to the operator's console for safety.

The design included the development of a documentation package, updated LabVIEW test application, procurement of new control and measurement hardware, four new panel builds, field installation, and joint customer validation period.

Customer Benefit:

The customer is able to verify quality of the DUT quicker and in turn, increase throughput. Aside from DUT connection, the majority of the test system functions are automated, including booth door operation, HV set remote control, and PD detection, requiring little effort from the operator. This system re-used portions of the existing system hardware and plant standard software resulting in quicker turnaround time, inherent familiarity with the user interface, as well as a lower overall cost.

Special Features:

- Configurable System Hardware & Configuration Files.
- Fiber-optic interface to Operator Console.
- Operator RFID Interface.
- Plant Test System Database Interface.
- Test Booth Automation.
- Mobile Power Source Enclosure for easy transport.



Key Components Used:

- Partial Discharge Measurement System.
- LabVIEW based custom Test Application.
- Programmable AC Power Source.
- AC Power Analyzer.
- PLC for booth automation.
- RFID Interface.

Emerging Technologies, LLC.

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 - GPIB, USB, Serial, Fiber
- ✓ System Integration
- Other

Customer Category:

- ✓ OEM
- Contract MFG
- Custom Equipment
- Utility
- R&D

SPECIALISTS IN TEST, MEASUREMENT, AND DATA ACQUISITION