

APPLICATION BRIEF

2020

HIGH PRESSURE LEAK TESTER

Brief Description:

Emerging Technologies, LLC was called upon to design and build a custom High Pressure Leak Test System. Leakage flow monitoring of less than 25CCM was required. The system was planned as standalone system to leak test DUT galleries, adjacent to exterior surfaces, for leakage at pressures up to 60PSI.

Two DUT halves needed be tested at the same time via two separate fixtures. The DUT halves were to be manually placed, and then automatically clamped in preparation for the test. Light curtain safety controls are required to protect the operator during the clamping process.

Emerging Technologies custom developed seals, seal molds, automated fixture clamping, operator safety controls, electrical design, pneumatic design, hydraulic design, custom test application, operator interface configuration, data acquisition, and DUT ID tag printing with pass/fail indication. Additionally, the aluminum DUT was automatically stamped on passing of leak testing.

Basic guarding was required, which consisted of aluminum panels on three sides with light curtain across the front.

The complete design was prepared and reviewed with the customer prior to fabrication of the system. The system was then fabricated, installed at the customer site, validated, and modified where required to ensure compliance with the test requirements.

Customer Benefit:

Previous to the implementation of the leak test, all machined DUTs were required to be sent through an impregnation process. By leak testing the DUTs, the need for impregnating all of the cases is expected to be significantly reduced.

The operators are able to automatically test two mating DUTs simultaneously or individually. Results are stored to the plant networks via Ethernet connection.



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 – Enet
- System Integration
- ✓ Other - Hydraulics

Special Features:

- ✓ Custom designed and fabricated DUT mating seals
- ✓ Light curtains for easy and safe operator access
- ✓ Heavy duty machine base table
- ✓ Mass flow leakage meters
- ✓ Hand held barcode scanner
- ✓ Label printer
- ✓ Automated clamping with pass casting stamp
- ✓ Network connectivity for results storage