

Testing a Sealed Pneumatic Device

Development of a production test system to increase productivity by reducing unit test time and fault diagnoses.

Introduction

In the manufacture of sealed pneumatic systems, the final inspection of product is an important part of the quality control process. Often such systems require numerous checks on the pneumatic circuit including the lines, valves and switches. To improve traceability, accuracy and speed of test it is often necessary to automate such systems. In addition to providing a pass/fail result it is useful to help the operator to diagnose faults when a test step fails.

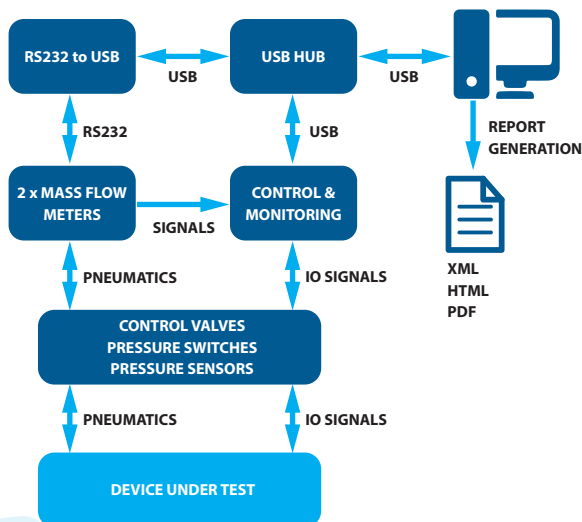
The Challenge

To develop a test system that could improve productivity in the manufacture of sealed pneumatic test system by reducing test time and improving fault diagnoses. In addition to testing the product the software also had to maintain a record of the test results for traceability and produce test records/certificates as printable PDF documents.

The Solution

Control Software Solutions Ltd developed an end of line test system capable of:

- > Controlling valves and relays in both the test system and device under test using NI hardware.
- > Monitoring pressures and flows in both the test system and device under test using NI hardware.
- > Improving reproducibility of results by correcting readings for effects of atmospheric pressure.
- > Reducing test time for a single device by half (from approximately 1 hour to 30 minutes).
- > Generating test records PDF and HTML reports.
- > Providing the operator with a pass-fail result.
- > Fault diagnoses of failing test steps.
- > Ability to search test records for previous device under tests.



Overview of the production test system showing the main hardware elements

Hardware/Software Used

- NI LabVIEW
- cDAQ-9174 CompactDAQ Chassis with C-Series modules for IO
- Bronkhorst mass flow meters with RS232 and analogue interface



Software user interface