



Pneumatic Solenoid Valve Response Test Rig

The Challenge

The design and manufacture of a test instrument to monitor and record the response of a bank of up to 8 different pneumatic solenoid valves (e.g. 3/2, 5/2, 5/3), with up to 16 outlet ports, following an electrical signal to actuate the solenoid.

Our Solution

Individual, high accuracy, high response rate pressure transducers were mounted close to each of the 16 outlet ports, to ensure a minimum pressure lag at the transducer following actuation of the solenoid.

The test instrument was controlled from a separate industrial PC and used LabVIEW software to both control the actuation of the solenoids and acquire the pressure data curve via a number of high speed, synchronously triggered National Instruments data acquisition cards.

The software was used to set the type, order and duration of testing for each solenoid and controlled it for the duration of each test.

The instrument and solenoids were then placed in an environmental chamber for simultaneous temperature cycling.

Specification Summary

- Pneumatic response accuracy = +/- 0.4ms
- Max number of valves = 8
- 16 high accuracy (0.2%) & response (0.1ms) pressure transducers
- Max inlet pressure = 6.3 bar
- 8 potential different test regimes



Solenoid Valve Response Test Rig

Disciplines Used

- Electrical & Mechanical Design
- NI LabVIEW Software
- Manufacture & Assembly
- Project Management