

High Pressure Fuel Injection Test Rig

Mecelec Design has designed and built a machine for testing high pressure fuel injectors. This machine uses extremely high pressures during testing which are required for the correct operation of the injectors. The machine also supplies lower pressure test fluid and lubricating oil to the high pressure pump itself. The machine also allows identification of the part on test and the detailed results of the test to be passed back to a main factory network. The machine monitors a wide range of meters and probes to monitor numerous aspects of the machine including oil flow rates, temperatures of various components and pressures.



Technical Data	
Maximum Test Pressure	3000 Bar (45,000 PSI)
Air Supply	6 Bar (90 PSI)
Hydraulic Supply (Internal)	200 Bar (Max)
Electrical Power Supply	3 Phase 415VAC @ 16A
Control System	Allen Bradley CompactLogix/PC
Control Software	RS Logix 5000



This machine was fitted with a heavy duty door with a sliding safety glass hatch to allow loading of parts to test. This was to prevent operator injury in the event of component failure while operating at such high pressures

The machine was required to produce as little noise as possible to comply with the customers factory noise policy. Not an easy task in a machine with air actuation, a hydraulic power pack and a very high pressure supply however this was achieved with the aid of compound stages of vibration isolation and lining the panels of the machine with acoustic foam tiles



Integrated flash detection system triggers CO₂ fire extinguisher system in the event that an ignition is detected. This system is capable of displacing all the oxygen inside the machine and so extinguishing any fire very quickly.



This machine required some quite intricate tooling to allow four high pressure fuel injectors to be tested at once. Each injector requires clamping in position with a high load to prevent leaks while also allowing access for several fluid connections.