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AUTOMATIC LINE FOR CR HP VALVES



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CR HP VALVES

In a quality-oriented production with high production volumes there is the need to determine rapidly and reliably the characterization of 100% of manufactured parts: to cope with this necessity, the Loccioni Group has designed and developed an automatic test line for the characterization and testing of Common Rail High Pressure valves.

The line has been built for the calibration and the functional test on the 100% of flow proportional electrovalves production of a common rail diesel injection system. During the test cycle the valves are calibrated by rotating the screw that exerts the preloading of a spring trip, so that they may open at stated pressure and guarantee the passage of a precise quantity of liquid (eg.: 200 bar calibration with passage test of 6 liters/h min. and control that at 2100 bar the passage of the liquid is at about 40 lt/h). The test station tests the calibration together with the valve seal at lower pressures than the calibration ones. (1600-1800 bar). The line has a cadence of a valve tested in exit every 8 sec.

The system is composed by a pallet transport line, a loading pneumatic manipulator of the valves to calibrate, two test stations respectively composed of 4 independent stations interblocked for the loading and unloading by a Scara robot, a control station for valve clip, a laser marking station with separation between good parts and damaged ones according to the types. The transport line is managed by a supervision PC while each test station is managed by a local PC.

The valves traceability is guaranteed by an alphanumeric code laser marking. The information concerning the single valve are transported up to the discharge of a memory system on pallet.

TECHNICAL FEATURES

Test Stations are composed by the following components:

- > High pressure generation unit through oil-liquid test cylinder. Gear ratio relation 1:10 with max working pressure 3000 bar. The system is managed by a proportional valve retro-acted at closed loop with a pressure transducer. Through this valve it

is possible to manage the low pressure chamber pressure so that to have the desired outing pressures. (Constant pressures and pressure ramps).

- > Hydraulic power unit for the filling of the pressure multiplier cylinder with testing oil (ISO 4113) at the end of each cycle.
- > Power control unit to supply the pressure and the necessary flow to the proportional valve for the multiplier management.
- > HP Pipes and connections.
- > Valve placement with hydraulic blocking in the test position.
- > Linear motorized actuator for positioning the testing valve's charging spring pusher in the testing right position (pressure-flow as requested).
- > Valve crimping for fixing the spring pusher in the calibration point. (Through plastic material deformation).
- > N° 2 massic flow measurers at Coriolis effect for the testing flow measurement and the leakage verify.
- > N° 1 pressure transducer for the testing pressure control.
- > N° 1 temperature control system for testing liquid.

