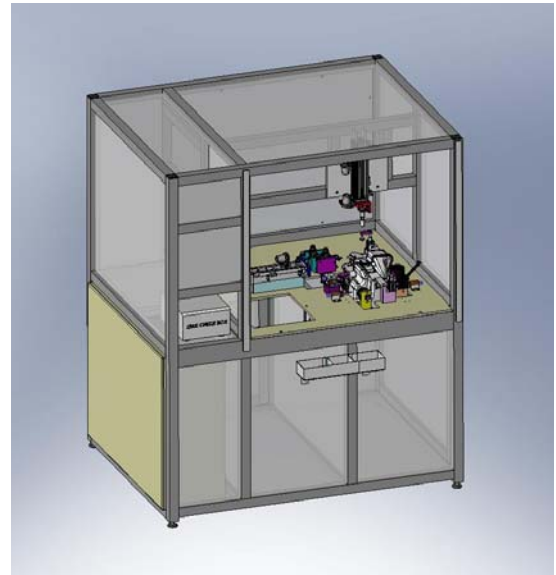


Automated Assembly & Test Cell For Kautex Screenwash Containers

Industrial automation specialist, Barr & Paatz of Totnes, Devon, has designed and built an innovative screenwash container Assembly & Test Station for Kautex Textron, a leading supplier to the global automotive industry. Integrated into the existing assembly line at the Kautex Textron CVS site in Hengoed, Mid Glamorgan, the station will automatically produce and leak-test some 75,000 units annually and is currently demonstrating a 99% success rate, to the customer's considerable satisfaction.



Having gained the contract in a competitive tender, Barr & Paatz designed the 1450mm wide x 1100mm deep x 1750mm high workcell, using advanced 3D solid modelling software; it then fabricated the automated assembly & test station entirely in-house, using a compact Mitsubishi controller and operator display panel, Furness Control leak detector, Sauven Codamark marking device, Sick safety light grid, Bosch Rexroth extruded aluminium framework and customer free-issue parts. The cell was supplied and commissioned within 18 weeks and is now producing single- and twin-pump containers for the latest Land Rover.

“Barr & Paatz were competitive on price and showed a distinct technical edge, by coming up with innovative means of testing the float level switch and checking the pump motors before assembly, enabling faulty components to be replaced more easily,” says Richard Millward, Manufacturing Engineer at Kautex Textron CVS. “It’s a very good system and the container failure rate is running at just one per cent.”

As a major subcontractor to the automotive industry, Kautex Textron produces a Clear Vision Systems (CVS) range that covers vehicle screenwash and headlamp cleansing systems, including injection-moulded water tanks, telescopic jets and hose assemblies. Its extensive experience of plastics processing enables the production of cost- and space-efficient parts, which meet special requirements such as fluid and air tightness, heat resistance and stability, allowing it to build an impressive list of clients that includes Aston Martin, Audi, Bentley, BMW, Nissan, Toyota and Volvo, as well as Land Rover.

The group’s twenty-eighth plant to be established worldwide, Hengoed manufactures CVS equipment for the UK and European automotive sector, even exporting parts to Japan. All system components are injection-moulded and assembled on site and, previously, water containers were assembled and leak-tested manually, to meet the part quality standards demanded. Having decided to automate this small, yet critical process, Kautex Textron CVS invited design and price tenders from three companies, including Barr & Paatz, which had earlier built a machine for another application.

In this latest application, two injection-moulded halves of the Land Rover headlamp/screenwash water container are hot plate welded together, then an operator loads each unit into the assembly & test station. The machine pre-tests each container and, if this is OK, fits various components to the moulding, carries out functional testing, then finally leak checks the whole assembly and codes it with an approved ink mark. Any rejected items are dropped through an aperture in the machine's baseplate into a lockable bin, a sensor detecting the reject has actually fallen into the chute and allowing the process to recontinue.

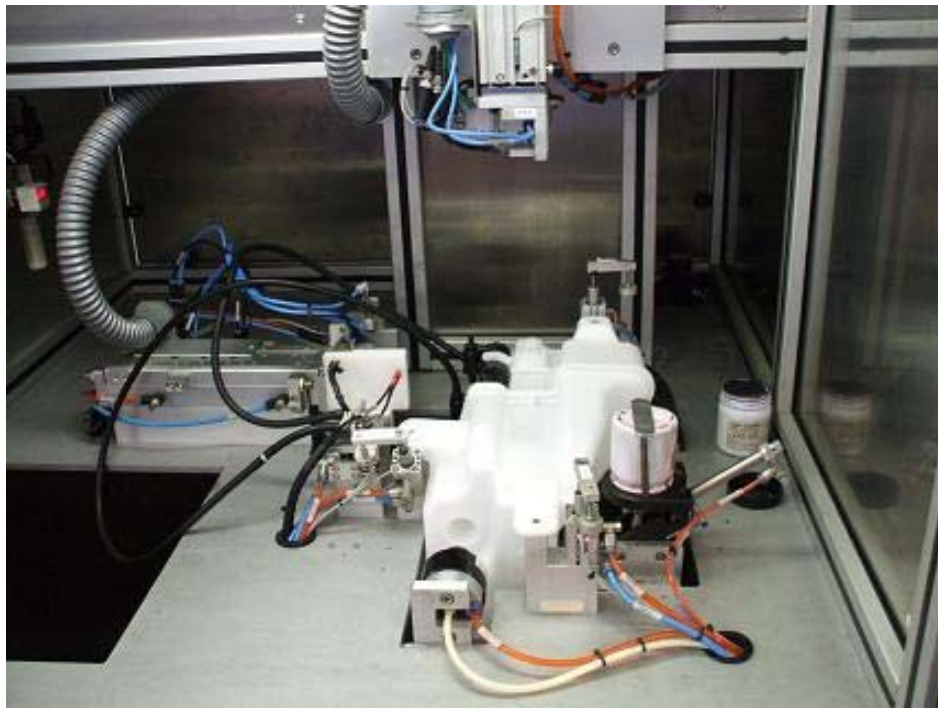
The machine is controlled by a Mitsubishi MELSEC PLC, offering outstanding functionality in a compact package, which is linked directly to a Mitsubishi E600 HMI, for simple touchscreen operation. In practice, the containers come in two variants – one with a single pump for screenwash only, the other with two pumps for screen and headlamp wash – and, as appropriate, the pump or pumps are manually loaded into component nests, where they are retained by vacuum cups, only activated on use as an energy-saving measure. The operator then loads a float switch, which is again held by vacuum, and once he is clear, the working area is guarded by a Sick LGT safety light grid system, for protection of fingers, hands and personnel.

Operating in fully automated mode, the machine makes the electrical connections, inserts the pump/s into the container and seals the pump ports, before inserting the float switch and wiring. It then runs the pump/s, measures the working current and rotates the float switch through 120 degrees to check proper switch operation. Next, the container is sealed and pressure is applied, via a WEH quick coupling connection to the neck, then checked for leaks with a Furness Control FCO730 detector; if the rate of decay is within acceptable limits, the completed assembly is marked by a Sauven Codamark reciprocating ink printer and released for operator removal.

The workcell's structural framework is made from Bosch Rexroth modular aluminium extrusion, with stainless steel infills below the container fixture and clear polycarbonate panels above, providing a protective barrier system; reject assemblies are collected in a lockable bin within the frame. Access to load and unload the machine is through the safety light grid, which has a response time of <50 milliseconds, and triggering of the assembly process is by means of an Allen Bradley Zero-Force touch button, ergonomically designed to prevent repetitive interface disorders.

Further enquiries to Barr & Paatz, Ford Road, Totnes Industrial Estate, Totnes TQ9 5LQ, telephone 01803 869 833, email s.paatz@barr-paatz.co.uk

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Interior shot of innovative screenwash container Assembly & Test station, designed and built by automation specialist Barr & Paatz for leading automotive supplier Kautex Textron (BP124)