

Hanover Displays automates PCBA testing with cobots

UK-based Hanover Displays Limited needed a new system for testing printed circuit board assemblies (PCBAs) and selected OMRON TM cobots for the job, supplied and installed by Absolute Robotics, part of the Absolute Automation Group.

Hanover Displays manufactures and designs passenger information systems for use by the public transport industry and places a great emphasis on the very high standard of quality of its products. The company uses printed circuit boards in its display panels. These were originally produced in the Far East. However, Hanover decided to start manufacturing them in-house.

Reece Mills, the company's Production Control Manager, explains: "We invested in high-speed production equipment to make the PCBs. This decision gave us greater flexibility in our production control, but also enabled us to continue with product development."

Automating the testing and inspection process

However, this presented the company with a new set of challenges. It needed to be able to both test and inspect the boards. Initially, this was a very manual process – although it involved automated test equipment, the process was very hands-on and depended on complete concentration from the operator. The company processes



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some 240,000 PCBAs each year, so there was a very real risk of the operators suffering from repetitive strain injury.

Hanover therefore took the decision to automate the process more fully. Operations Director, Sean Winter, observes: "As well as addressing the issue of health and safety of our employees, we also wanted to guarantee a consistent cycle time. Unmanned running was really important to me, so we wanted to ensure that the cobots could run at night time. This would give us more throughput, but with less effort."

During the search for a solution, the company was introduced to Absolute Robotics, a small robot integrator based in the UK in Bristol. Absolute Robotics is an integration partner of OMRON Industrial Automation, a global leader in automation and the development of robots for industrial applications.

Geoff Ferguson, Managing Director of Absolute Robotics, comments: "Hanover initially showed us how they were testing circuit boards with manual operators." He recommended a move to OMRON TM cobots. These feature simple programming along with innovative integrated vision capabilities, designed to deliver a true Industry 4.0 solution. There are several different models, offering different levels of payload and reach.

Geoff Ferguson continues: "One of the key drivers was that Hanover wanted the cobots to interact with the existing manual test equipment. The cobots therefore have special tooling that allow them to open and shut the manual testing equipment."

Deploying the new cobots

Hanover wanted to use the cobots with both its processing boards and display boards, which meant exploiting their full potential. This included using the built-in vision systems, particularly on the display boards, to ensure that the LEDs were lighting up in the correct sequence. Subsequently, the company invested in a further six OMRON TM cobots.

The cobots have been installed in two production lines at Hanover. These take the LED display boards from a standard storage rack and test them. One of the challenges that Absolute Robotics faced was that Hanover Displays produces a wide variety of sizes and shapes of circuit boards for the display panels. The cobots needed to be able to handle the different types of boards. Absolute Robotics therefore built flexible tooling that can self-adjust to allow for the different sizes and shapes. The programme can also handle any number of LEDs, from hundreds to tens of thousands.



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Reaping the rewards

Reece Mills reports: "We realised the benefits of the cobots quite quickly after implementing the first system. What we'd planned and hoped for was that we'd be able to run unmanned and this happened quite quickly. The return on investment for the whole system was just two years. The tests involve very repetitive processes, and I think the biggest thing for me is being able to redeploy and upskill our staff."

Sean Winter adds: "From a quality assurance point of view, we have full traceability of our PCBAs. This means every time we inspect a PCBA, we get a record that tells us if it's passed or failed. We've also benefited from an additional 1,100 hours per annum of unmanned running. At Hanover, we always want to invest in our future. It's about looking at technology, how it's moved forward and how we can apply it to our business."

The final word goes to Geoff Ferguson of Absolute Robotics: "It's been great working with Hanover Displays. We've really appreciated the challenges they've thrown at us. We've enjoyed equipping the robots to process the circuit boards that they need, and we feel we've provided a really good technical solution that's given them thousands of extra hours of operation."

About Hanover Displays

Hanover Displays is a family-owned, UK-based company and has been designing and manufacturing passenger information systems for the public transport industry since 1985. It has subsidiary offices in France, Spain, Germany, Italy and Australia and a second production facility in the US. The company has customers in over 75 countries worldwide. It has more than 300 employees plus an extensive global network of additional local support personnel and commercial representatives. Hanover has achieved ISO 9001: 2015 and 14001:2015 accreditation.

About Absolute Robotics

Absolute Robotics was formed in 2018 and is part of the Absolute Automation Group, a successful, global industrial automation specialist. The company supplies, designs and implements fit-for-purpose cobot solutions. This includes identifying the most appropriate uses of a cobot and delivering tooling solutions that allow it to perform tasks efficiently. The solutions are specially designed to optimise production processes.

About OMRON Corporation

OMRON Corporation is a global leader in the field of automation, based on its core technology of 'Sensing & Control + Think'. OMRON's business fields cover a broad spectrum, ranging from industrial automation and electronic components to automotive electronic components, social infrastructure systems, healthcare, and environmental solutions. Established in 1933, OMRON has over 30,000 employees worldwide, working to provide products and services in 120 countries and regions. In the field of industrial automation, OMRON supports manufacturing innovation by providing advanced automation technologies and products, as well as through extensive customer support, in order to help create a better society. For more information, visit OMRON's website at: industrial.omron.eu.