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CNC Robotics and Brainboxes develop innovative flexible manufacturing solution

A collaboration between an industrial electronics manufacturer and robotics integrator has deployed a bespoke flexible automation solution to drive up productivity, profitability and sustainability.

Brainboxes, based in Liverpool, whose industrial products are used globally, including by the British Antarctic Survey, and in the Large Hadron Collider, was partnered with another Liverpool company, CNC Robotics, a specialist in advanced machining applications, through Made Smarter's adoption programme in the North West.

Nicole Ballantyne, Knowledge Transfer Manager for Digital Manufacturing at KTN, said: "One thing that we must never underestimate is that there's no there is no plug and play digital technology that will work in every factory in every use case. Collaboration with the right partner and taking small steps towards developing a sustainable and long-lasting solution to a particular challenge is key."

"This is exactly what Brainboxes and CNC Robotics has achieved - and with fantastic results."

"Joining communities together to drive positive change and transform UK manufacturing is exactly what we are looking to achieve with the Made Smarter Innovation Network over the next four years."

THE INSPIRATION

Brainboxes design, manufacture and ship 100,000 electronics products each year.

They have refined their electronics production line to enable a product to be manufactured in just 40 seconds using machinery.

However, they then rely on a series of disjointed, manual steps to apply labels to the products and cases.

With more than 100 different types of products and batch sizes of between 20 and 2,000, the task of labelling between one to eight labels for any given product is extremely labour-intensive and time consuming. There are also the additional challenges of designing, printing and storing millions of labels.

Brainboxes identified an opportunity to use automation to remove this significant bottleneck in its process, improving productivity to become more efficient and profitable.

Luke Walsh, Managing Director at Brainboxes, said: "Over the past 35 years our engineers have become experts at designing all the electronics for our devices, and we have continuously developed a lean manufacturing process. But the sticking point and the block to our flow was always labelling."

"We had a few ideas about how to solve this challenge but we needed the right sort of support and collaboration to make sure we adopted the right technology in the right way to avoid wasting unnecessary time and resources."

THE INNOVATION

Through Made Smarter's North West adoption programme Brainboxes were able to access free impartial experts who helped create a digital transformation roadmap to ensure

the solutions they were investing in matched the challenges the business faced.

The process identified a UV print solution which prints a multi-colour label directly onto the product or its casing.

While this automated one part of the labelling process, they also needed to overcome the challenge of the labour needed to load and unload the printer.

Brainboxes engaged with CNC Robotics who recommended introducing an KUKA KR6 Agilus industrial robot to enable high speed and repeatability.

Philippa Glover, Managing Director of CNC Robotics, said: "There was no plug and play solution on offer for Brainboxes, so we had to start the process with a collaborative conversation to really understand what the challenges were, find solutions to each element and put the component parts together to ensure that that machine offered the right long-term return on investment. Developing that strong relationship with all stakeholders in the project was important, and meant that technical challenges became much easier to overcome."

"Another of the most fundamental elements of the process was a risk assessment and safeguarding people who interface with the robot."

THE IMPACT

While the solution has not yet been fully deployed, Brainboxes have experienced significant gains.

Using a UV printer for labelling is more than 20 times cheaper than using



the sticky labels, and that is before devoting the manual labour to apply the labels.

The process of designing and producing custom labels for customers has now reduced from 14 days to one day. Meanwhile, the introduction of robotics to load and unload the printer has resulted in a fivefold reduction in manual labour.

The solution also gives Brainboxes oversight of the energy consumption via a dashboard, so they can measure the cost to run cells and different parts of the factory, to drive efficiencies and reduce their carbon footprint.

Luke added: "Innovation hasn't been a bed of roses. There were certainly

challenges along the way. But these are two different new technology areas which have been combined. With a strong working relationship we have been able to overcome any hurdles and implement an incredible flexible manufacturing.

"The collaborative approach has also allowed us to bring the workforce along on the journey. Initially there was scepticism among our production staff about what a robot would do to their livelihoods. Now my production staff aren't saying to me 'the robot has taken my job' but instead are suggesting where else the technology could be adopted. By involving our team throughout the process we converted digitisation sceptics into champions."