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Denroy's 1.6 million hairbrush line reports a 90% efficiency increase with Endline

Demonstrating its engineering agility, Endline Automation has assisted Denroy by adapting a line originally created for packing facemasks to work on the Northern Ireland company's flagship hairbrush line - which is now delivering significant efficiency gains of up to 90%.

As a world-leading innovator in the design and manufacture of engineered polymer components and solutions, Bangor-based Denroy is the supplier to sister company, Denman, owners of the world's most iconic hairbrushes.

Sales of Denman's flagship D3 and D4 hairbrushes reach over 1.6 million every year and are sold globally.

During the Covid-19 pandemic, Denroy began manufacturing and supplying FFP3 face masks. Due to the scale of demand and restrictions on manual labour at the time, Denroy reached out to Endline Automation for a solution that not only met immediate needs but also paved the way for long-term efficiency in their flagship hairbrush line's packing operation.

Endline designed a fully automated end-of-line packing operation incorporating its fully automatic 221 case erector, robotic system to pack and palletise the cases and a 602 case taper system. The full system also including conveyors and full electrical control to provide a full turn key solution.

Ahead of the installation, with demand for facemasks beginning to reduce, Denroy decided to switch the line to automate its flagship D3 and D4 hairbrush lines.

"We recognised that the line would deliver significant operation efficiencies, and felt it would be better suited to our hairbrush line which would deliver long-term results" comments Steven McCord, Process Engineer for Denroy. *"We discussed this with Endline and they quickly adapted the line to meet our needs."*

Endline meticulously reconfigured the line to transition from packing facemasks to hairbrushes.

The process now involves the forming of cases by the 221 case erector which are then transported via a conveyor to a 'Fast Pecker' Delta Robot where a cylinder pushes down into the formed case to make the packing of the brushes seamless. Each brush is manually sleeved before being precisely packed into the open case by the robot in two rows of three.

The filled cases are then transported via a second conveyor to the 602 case sealer for closing and tape sealing for a secure finish before the closed boxes flow down a roller conveyor to a "Spider" palletiser with a stretch wrapper. Finally, stacked and wrapped pallets are wheeled away by an operator for distribution.

With a seamless flow from start to finish the line is capable of sleeving and packing a hairbrush every 2 seconds - a significant improvement from the 20 seconds previously recorded, marking a 90% increase in efficiency.

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Packing two separate case sizes, Endoline programmed the different dimensions into the systems and educated operators on quickly reconfiguring the machines to seamlessly switch between the two sizes.

While overcoming challenges relating to sourcing manual workers, since the line was deployed, the company has upskilled workers to manage the entire operation.

“We have been delighted with the solution Endoline has provided,” Steven concludes. “As with all manufacturers we were facing issues sourcing manual workers to operate the line. Since automating the process we have been able to upskill workers while significantly increasing efficiency and meeting global demand for the hairbrushes quickly. We now also have the ability to increase production if required.”

End

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