Making Packaging Lines Run Sweeter at apetito

A radical departure from conventional end-of-line case packing machines, Versapack, has beaten off competition from traditional robots to automate end-of-line packaging at apetito.

Frozen food manufacturers like Trowbridge-based apetito are facing tough economic conditions, especially when considering that the majority of its sales are to public sector organisations such as hospitals, care homes and local authorities.

In the drive to improve competitiveness and efficiency, apetito instigated a project to automate its two desserts hand packing lines. This was the company's first venture into automated packing: a test-bed for future improvements across the whole menu.

With a packaging head based upon the Quin Rtheta™ technology Versapack readily achieves 70 cycles / minute, putting it far ahead of filling machines or packaging machinery in conventional solutions. Plus, the 1.8m square footprint is compact enough to fit easily into existing hand-packing space.

Moreover, compared with conventional robotic solutions Versapack is simple to operate and set-up for different products and case sizes. Faster, with lower operating costs and maintenance requirements, it promised to deliver outstanding return on investment. So there were ample reasons to pit Quin's solutions against the alternatives offered.

Meeting specifications

The project specification dictated product in two types of packaging; PET and Foil. Both are variations of a tray with a lid: foil trays 122 x 96mm in footprint and 42mm in height, weighing 130g to 180g; and PET trays 137 x 94 x 35mm with mass from 120 to 180g.

The requirement was to retain the general layout of the hand-packed lines. Here products exited a spiral freezer at high level, whence they were conveyed down a modular decline belt for hand packing. Two product lines ran in parallel down a common conveyor system and hand packing stations were located either side of the product feed conveyor. Cases were erected by hand, packed, and then fed to a top-sealing machine. The nominal production rate for each line was specified as 84 packs per minute.

One of the challenges to be overcome was inconsistent orientation of the products prior to packing, caused mainly by the diverter system upstream of the spiral freezer and downstream changes in conveyor level.

All products are packed flat in the case, and the hand-packing lines used typically three packing formats. In moving to automated packing, apetito wished to standardise the layer format and cases. Moving to automated packing did influence the specification of board

used for cases, as board characteristics are less critical with hand packing. Quin were involved in these conversations with apetito's case supplier to ensure correct and consistent case supply. The flexibility of the Versapack will allow apetito to change product, packing format or cases, should this need arise in the future.

The Versapack solution

Quin's proposal was to supply the Versapack with a flat infeed conveyor featuring their layer collation system. This infeed system would automatically collate the product into the layer format required, and has the flexibility to vary the number of products in a layer, allowing for changes to be made in the future. The standard Versapack machine caters for open case sizes from 200mm to 500mm long, 150mm to 400mm in width and 175mm to 600mm high.

The trays would enter the Versapack narrow-edge leading, in their 'as packed' orientation, which entailed some modifications to the existing conveyor system to ensure the trays are consistent in their orientation.

An infeed rate of 84 products per minute is well within the capability of the Versapack. As standard the Versapack is capable of 70 pick and place cycles per minute and packing 15 cases per minute. Handling one layer at a time, the fastest cycle rate would be for the PET 12's, requiring 14 pick and place cycles per minute and 7 cases per minute.

As standard the Versapack seals the base of the case with adhesive tape, but apetito's preference was to use the optional hot melt glue system, which offers superior sealing quality and overall efficiency. Production would not be interrupted by stopping the machine to replace tape, for example. Closing and sealing would be completed by a tape machine.

Proving the winning concept

Within a week of the request for quotation Quin had a demonstration project running on the Versapack packaging machine with dummy product and actual cases. A further demonstration at Northern Foods' Uttoxeter plant was all that was needed to move the project further. Consequently the Versapack system was demonstrated in Trowbridge to apetito's full board of directors and Quin was awarded the contract.

Commissioning and final acceptance test was carried out at Quin's headquarters packing real frozen product into actual cases with the required overlap of lids. Each machine ran successfully for one hour without missing a beat.

Two Versapack machines were readily installed into the existing hand-packing area. It proved necessary to knock down some walls down to accommodate the whole package, but this was considerably less structural work than would have been needed with conventional robots.

Before Versapack could start production proper, existing packers were trained as operators and, although this was new territory for the management team, many useful insights have been gained to guide future recruitment and training procedures. Again, this would have been a significantly greater issue with robots, where additional skills would be needed to operate the vision systems as well as machinery.

Success – and the future

Over the last 9 months the new Versapack packing lines have met all expectations, with

further improvements in line efficiencies identified for the future.

There are plans to extend automation to the other meal packing lines with more Versapack machines. This next phase will benefit further from experience gained with the desserts. For example, it is likely to include more comprehensive line monitoring, fault and alarm logging, reduced maintenance costs and lower downtime.

ENDS