

Delicacy, speed & precision. Fancy treats get fancy treatment





Peru's supply of chocolate tea cakes is in good hands, thanks to Cama Group's BTG secondary packaging solutions. High speed, high accuracy and gentle handling combine on advanced robot-based packaging machine.

Chocolate-coated marshmallow treats, or chocolate tea cakes as they are more commonly known, are subject to a lot of conjecture in terms of where they were invented; but what is certainly true is that these delicate snacks are enjoyed in a variety of guises the world over. Indeed, their popularity is reflected by their Wikipedia entry... which is over 5,000 words long!

delicate skin With their thin of chocolate, they present an interesting challenge from a packaging perspective... a challenge which is compounded by the speed and volume by which they are normally manufactured. So, rather than throttling production to match the capabilities of the packaging machines, the packaging machines instead have keep up with production ... while still to handling the products very gently and packing them correctly.

Cama Group was given just such a challenge for a packaging line at a plant in Peru that belonged to one of the world's biggest confectionary and snack companies.

Tailored fit

According to Alessandro Rocca, Engineer Director at Cama Group: Sales "Due to the layout constraints at the plant, the only option was deploy a coflow layout that was tailored to precisely fit the limited real estate. Counterflow is normally preferred in these fast-moving applications, as there is less chance of unpicked products exiting off the end of the conveyor. Indeed, the order criteria actually included a maximum figure for unpicked products. We were up against other machine suppliers. Those with co-flow solutions were unwilling to take the risk and the others only offered counterflow.



"The existing plant has several very established production lines," Rocca adds, "but most of the secondary packaging operations are manual. This new line is one of the customer's first automatic secondary lines and will actually undertake the work of 40 people, freeing them up to work on other lines."

Technology built for one purpose

The reason behind Cama's confidence in its machines' capabilities, is its in-house developed robotic solutions. "Our robotic technology has been developed in-house specifically to undertake secondary packaging," Rocca explains. "These are not universal robots; these are robots with one single purpose – secondary packaging in a Cama machine – it's perfect machine/robot synergy. There is no trade-off of capabilities that you may

see with general-purpose robotic solutions, and by removing third-party robotic controllers, we can sidestep any potential communication conflicts that can affect output. And, when closely the advanced allied to vision systems we use, the combination is second to none, and more than up to the challenge of applications like this. In fact, by enhancing the common working envelope of the robots we have actually minimised the chances of products being



The advanced robotic solution is just one part of the full Industry 4.0 control architecture Cama has developed for its Breakthrough Generation (BTG) machines, which are setting the standard in secondary packaging. They comprise contemporary automation solutions, including advanced rotary and linear servo technology, tightly coupled to inhouse-developed robotics, to deliver the allimportant speed, flexibility and adaptability required by modern packaging operations. All of this advanced technology is housed in modular, scalable frameworks that offer easy entry and access, coupled to a hygienic machine design.

Fully connected control solution

This fully interconnected digital control architecture delivers significant advantages when it comes to the operational performance of the machines, but the recent COVID-19 pandemic has also highlighted another major benefit and that is remote access and simulation. "Due to the lockdown in both Italy and Peru, we were unable to visit the customer site for acceptance testing," Rocca explains. "But due to the control solution on board, we were able to offer a Virtual factory acceptance test (FAT) which comprised testing, simulation and eventual acceptance – all within a virtual environment. The Virtual FAT was very long, but proved beyond doubt that smart digital technology is the way to go."

The co-flow line, where products and cartons

move at the same speed and direction, comprises two primary interconnected modules - FA series two head box-forming machines and IG Series multi-Delta, visionguided robotic loading units. In operation the teacakes exit a cooling tunnel at a rate of 400 products per minute, in multiple rows on a main transport conveyor. Upon entry to the IG series packaging machine, а vision system ascertains the individual product's positions on the belt and this data is

fed to the central PLC for disbursement to the eight robots along the 10 m long packaging area. The





products, which are still at 20 °C, are gently picked and placed into cartons (pre-assembled by the FA Series machines) running on a track parallel to the main conveyor. A subsequent vision system is used to ascertain optimum filling, before two more robots are used to close and seal the cartons in multiples based on the format count. After weighing and metal detection the filled cartons are transported to a tertiary packer.

Future-proof design

"The entire run is visible and controllable using a single Allen-Bradley HMI from Rockwell Automation," Rocca explains. "What is more, this machine has been developed to allow the addition of two more robots, meaning that the production and packaging speeds could go up by as much as 20%. As these machines are designed to package 'nude' products, hygiene was a primary requirement too. As a result, we equipped them with features that prevent contamination and all components are designed specifically for food industry applications, based not only on global standards, but local Peruvian standards too.

"With such a demanding production environment, you might think that

changeover times could be an issue," Rocca adds, "especially seeing as the customer packages in three different product counts - 2, 9 and 20. 20 makes up 60% of production with 2 at just 5%. The products are still the same, only the box size changes. Using change guides and phasing units, where the feed is automatically controlled by servo motors, switchover is straightforward, with all the instructions being delivered from the HMI. The closing unit needs changing too. From first forming unit to second closing robot, with two operators, the whole process takes just 30 minutes, which is impressive for such an entire line, especially when you consider that a standard case packer takes 20 minutes to change!"

Cama Group, since 1981, is an international leader in engineering and production of high-technology secondary packaging systems. We offer completely integrated packaging lines, from primary packages up to final packaging, ready for palletizing, serving the Food (Bakery, Confectionery, Coffee, Ice Cream, Dairy, Ready Meals, Grocery), Non Food (Personal, Health & Home Care) and Pet Food industries. Via Como 9 – 23846 Garbagnate Monaastero – LC - T. +39 031 879811 commerciale@camagroup.com - www.camagroup.com

