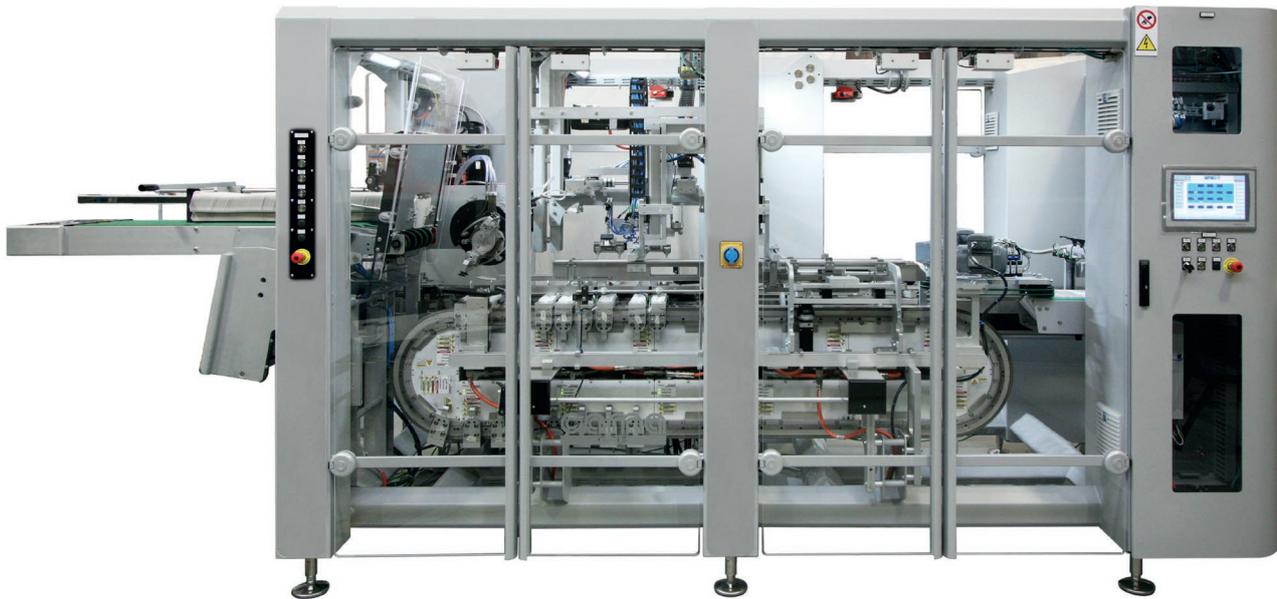




Independent cart technology underpins integrated packaging concept



Advanced packaging solution integrates seamlessly into modern component fabrication line thanks to innovative in-machine and between-machine transportation technology

Cama Group prides itself on the way it designs, develops and deploys new technologies, in order to bring heightened integration, throughput, accuracy and quality levels to the packaging industry.

Its machines, which see action all over the globe in a huge variety of packaging applications, are designed to offer the perfect blend of modular, accessible and hygienic mechanical frameworks, coupled to the very latest technology the automation world has to offer; including advanced and tightly integrated in-house-developed robotic pick-and-place solutions.

In a recent project, Cama's high-tech pedigree was really put to the test, when it was tasked with designing and integrating

one of its Breakthrough Generation (BTG) CL 175 cartoning machines into an electrical component fabrication line at one of the world's largest automation vendors, Rockwell Automation.

In addition to proving the integration capabilities of the control solution, Cama had to demonstrate that its machine would fit seamlessly into the rest of the line, the majority of which had been developed and built by US company Calvary Robotics, a specialist in the design and build of automated assembly, test and material-handling systems.

According to Giovanni Panzeri, Automation Project Leader at Cama: "The line with which we were integrating is for the assembly of a



the cartoner can work intermittently or continuously depending on the product and throughput required.

“The CL 175 comprises three main operating stations,” he elaborates. “In the first, carton boxes are picked from a magazine and opened out as they are placed into pockets on the iTRAK carriages. Once placed, two pockets/boxes at a time are presented to the insertion station, where the contactors are pushed into the boxes. Following insertion, the boxes are closed and sealed before passing to a printing station, where the

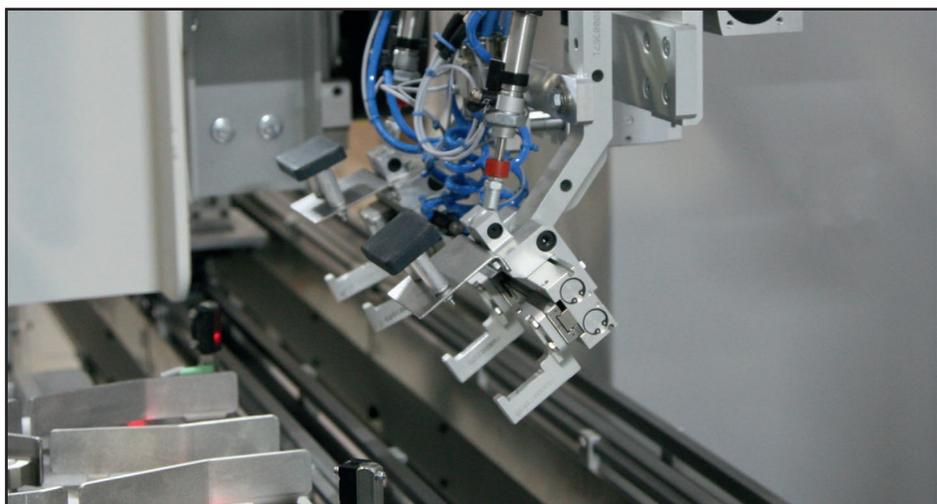
wide range of contactors, the model type of which vary depending on the contact configuration, the voltage and the applicable local certifications, such as CE and UL. The line is designed to be as flexible as possible, so that small batches of the various contactor models can be fabricated – to order in a just-in-time fashion – as efficiently as possible, with minimum re-engineering and downtime. As a result, our packaging solution had to deliver a commensurate level of flexibility, to adapt and change to the various product throughputs.”

Cama and Rockwell Automation had already worked very closely before on a number of industry-leading packaging machines, so the relationship had a significantly strong foundation. But it was Cama’s experience with the global automation supplier’s independent cart technology (ICT) that helped seal the deal... and provided the all-important physical link into the rest of the line.

“Cama was one of the first companies to deploy the iTRAK ICT in a customer application,” Panzeri explains, “so we already had a good grounding in its operation and how it could be leveraged to deliver the additional flexibility many end users require. Using iTRAK, with its near limitless motion profiles, the individual product carriers within our machine, controlled by the central PLC, are pitched automatically based on the width of the product or product groups that require insertion into the cartons. Thanks to this,

individual product-specific information is printed and verified, before the cartons leave on an exit conveyor. After the products leave on the conveyor, the iTRAK carriages recirculate under the track ready for loading with the next round of cartons. The carton-insertion system exploits a software interpolator, which delivers coordinated movement between the iTRAK and the servo-controlled pushers. As well as delivering far greater accuracy and axis synergy compared to a more traditional pneumatic systems, this approach also reduces mechanical stresses.

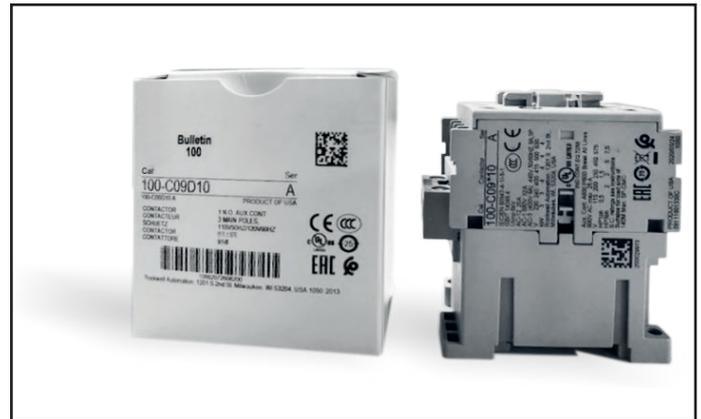
“Advanced in-machine automation is second nature to us, thanks to our broad experience using robotics and linear/rotary servo technologies,” Panzeri adds. “But a vital element of this installation was the way in which the CL 175 integrates with the downstream assembly processes, so as not to cause any bottlenecks. This, as it turns out, was made possible using another of Rockwell Automation’s ICT technologies, MagneMotion Lite.”



Preceding the CL 175 cartoning machine, the Calvary Robotics line comprises three assembly machines, a product-printing module and two testing stations, arranged in a 'U' shape. All of the assembly and testing steps are interlinked using the MagneMotion ICT, so the best possible solution would see the MagneMotion technology extended into the packaging operation.

"Thanks to the complete integration and the holistic control environment, having MagneMotion as the in-feed supply solution was a straightforward proposition," Panzeri explains. "The Allen-Bradley control architecture delivers seamless interactions across all elements of the line, as if it is one large machine, so our packaging solution was simply another step in a larger process. Full EtherNet/IP connectivity across the machines and larger devices and I/O Link at the component level means that full integration is possible, as is the creation of fully transparent data pathways, creating a true Industry 4.0 solution. This interconnected architecture also means that all stations along the line work in harmony with each other. As each batch variation is fed from the primary MES system, every machine is geared up to undertake the correct assembly, printing, testing and packaging processes - with absolute minimal human interaction."

Rockwell Automation's choice of Cama for this application is testament to the strength of their mutual relationship and reinforces the capabilities of modern integrated control solutions. "We are



often selected by Rockwell Automation to act as product testers for new hardware and the fruits of this testing and evaluation are evident in an application such as this," Panzeri adds. "This line is a graphic example of three engineering teams working together with a common goal, which is underpinned by a very powerful integration model.

"Indeed, this line is a great shop window for all of our technology, teamwork and capabilities and reflects the direction in which the packaging industry is moving," Panzeri concludes. "ICT technology both in machine and between machines is creating the foundation for flexible manufacturing and production, where the idea of a production line will soon become redundant. Smart-conveying solutions are creating the basis for production grids, or matrices, where products only visit the stations they need, but without creating mechanical complexity, batch-adaptation hurdles or transportation conflicts."

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.
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