Collaborative robots enhance productivity at CLECA

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The use of collaborative robotics (cobots) in the manufacturing of food and beverages can bring many advantages in terms of savings and efficiency for both large and small manufacturers. Automation is a cost-effective way of reducing waste and human errors, leading to higher quality products. One leading company, CLECA SpA, has recently automated some of its processes using cobots from Omron, leading to higher productivity in its packaging department.

CLECA was formed in Italy in 1939 and has since developed creative cuisine solutions, leading to the company becoming a point of reference in the food sector, due to the high quality of its products. The key to its success is its blend of innovative products and great classics, as shown by its S. Martino pudding.

The company recently decided to improve its maintenance and shipping operations by boosting the productivity of the entire packaging department at its main plant in San Martino dall'Argine. An essential element of this has been the introduction of a pair of Omron cobots.

Trends in automation

This move towards greater automation is because in today's environment, food production processes are in many ways as important as the product itself. Consumers are asking more and more questions about the supply chain; the resources consumed by the industry; and the working conditions and safety of the workers. On the one hand, there is this increasing consumer attention to issues such as sustainability, safety, well-being, and quality (at the right cost). On the other hand, the food industry needs

to establish the rules of interaction between people and machines. As with many changes, people might not fully understand - at least at first - the impact of the fundamental changes introduced by robotics. This includes how cobots can take a vital role in helping companies to adapt to the changes in the current landscape; and how companies can also make the technological and cultural adaptations needed in response to the fifth industrial revolution.

The basis for such trends can be seen as far back as 1970, when Dr. Kazuma Tateisi, the founder of Omron, developed the Sinic theory with the aim of aligning the company's strategy with the future needs of a modern society. According to this theory, the current era represents the stage of interaction and collaboration between people and machines. In today's factories, robotics, the Internet of Things (IoT) and Artificial Intelligence are already being combined for the purpose of acquiring data efficiently from a production site and enabling robots to work together with people in perfect harmony. From automation where the operators' activity is physically separated from machines, new and efficient scenarios are now arising due to collaboration between people and robots, resulting in increases in productivity.

To make this collaboration possible, automation must meet specific requirements for safety, ergonomics, ease of use and rapid implementation. Traditional robotics may not always be able to meet some of these requirements, and this has resulted in a move that goes beyond the current process-driven integration. Cobots are leading the way in this paradigm shift, by connecting people with machines in automated processes. This echoes the motto of Omron's founder: „To the machine the work of machines, to man the thrill of further creation". Cobots have created a meeting point between man and machine. This flow achieves the goal of efficient automation and relieves operators from strenuous and repetitive tasks, whilst leading to the production of goods of the highest quality.

Cobots help to power CLECA forward

So how does this work in practice? Following CLECA's review of its packaging processes, it decided to deploy a pair of Omron TM12 cobots at the end of the packaging line, in a palletising application. This decision was received very well by the operators, who soon noticed a clear improvement in their work conditions. They experienced a reduction in repetitive operations (as these were delegated to the machine), as well as improved change-over times.

Automation using Omron's TM12 cobots, with a payload of 12Kg and reach of 1,300mm, has enabled the company to achieve its objectives.

The Omron TM12 cobot is equipped with an integrated vision system: the built-in camera locates objects in a wide field of vision, while lighting for image enhancement ensures image recognition in almost all conditions. The vision system improves the reliability, uniformity, and accuracy of the positioning of items. It also includes features such as pattern-matching, barcode reading and colour identification, enabling the company to carry out inspection, measurement and sorting activities at no additional cost or effort. The harmony between people and machines enables them to work side-by-side. However, they still need to meet high safety standards: fortunately, the Omron cobot was designed to promote a safer working environment.

Safety regulations require machine manufacturers to carry out a project-based risk assessment in the design and construction phase, even if the machine is produced for internal use. This risk assessment helps CLECA to comply with the machinery directive 2006/42/EC and the safety requirements of the technical standard ISO 10218 and the technical specification ISO / TS 15066. The Omron cobots don't require protective fencing, due to their integrated safety functions and can be installed without resorting to cumbersome (and expensive) investments in hardware and software. The TMflow ™ programming environment, based on flow charts, enables high application flexibility, allowing production processes to be quickly reconfigured.

As any downtime can be expensive, the Omron cobots needed to be able to be operational rapidly, to ensure business continuity. Fortunately, they are equipped with plug-and-play software which makes them ready for use immediately after they 've been installed. This is an intuitive process that allows operators to perform rapid programming activities during start-ups and production changes, which in turn ensures production continuity as quickly as possible. The operators at CLECA work with smart systems with which they can interact and which they can easily operate without the need for long training. Programming is simple and does not require an additional keyboard or push buttons.

Cobots enhance productivity

The introduction of Omron's cobots at CLECA coincided with the implementation of key automation solutions relating to Industry 4.0, including the connection and interface with the factory's manufacturing execution system (MES). The integration of the collaborative cell and the machines present in the plant was made possible by the Ethernet communication integrated between CLECA's various Omron programmable logic controllers in its San Martino dall'Argine plant. The increase in productivity and process efficiency achieved by using the cobots, combined with the reduction of indirect costs, will enable CLECA to achieve a return on investment (ROI) in less than a year from the start-up of the collaborative cell.

About CLECA S.p.A.

Cleca is an important reference in the food sector, thanks to the quality of its product range, which has always been the key to its success, and a mix of innovative and classical products, such as the Budino S.Martino (S.Martino pudding). Back in the 1930's, the founder started to work in a small workshop where a few preparations were made for bread and desserts. There, he discovered his skills and passion for cuisine, which would lead him to establish the company Cleca. Today, focusing on training, research, staff qualification, and quality system and integrated control, Cleca continues to bring creativity to the Italians'households, transforming the most innovative ideas in simple dishes, to make and taste.

About Omron

OMRON Corporation is a global leader in the field of automation, based on its core technology of 'Sensing & Control + Think.'OMRON's business fields cover a broad spectrum, ranging from industrial automation and electronic components to social infrastructure systems, healthcare and environmental solutions. Established in 1933, OMRON has about 30,000 employees worldwide, providing products and services in some 120 countries and regions. In the field of industrial automation, OMRON supports manufacturing innovation by providing advanced automation technologies and products, as well as extensive customer support, to help to create a better society. For more information, visit OMRON's website at www.industrial.omron.eu.