THE PROTAGONIST IN ROBOTICS: COMAU SPA

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The increased use of robots in factories derives from a series of functional and technical considerations related to the development of innovative technologies, both hardware and software, applied to robots: the miniaturization of components, new materials, advanced sensorization systems, the strengthening of control softwares, and more. All together, these aspects contribute to the development of robots with increasingly higher performances in terms of speed, precision, reliability and ease of use.

In such a virtuous context, Comau Robotics is certainly one of the main protagonists of this development on the world stage, with products which are in many respects, unique, and show Comau’s strong sense for technological advances. Comau has designed and manufactured high quality industrial robots since 1978. Currently, the continuous innovation, the advanced technologies, the complete solutions, the turnkey plants and Comau’s robotic cells – with the support of highly qualified system integrators – help companies be more competitive and successfully face the most demanding challenges of the market.

Comau Open Gate Cell: High density cell with 18 robots cooperating

New forward-looking objectives

The business is growing and expanding. Let’s bear in mind that since 1994, when we started to measure the field of robotics, the market has grown by 4.5 times. In particular, in 2013, 179,000 robots were sold in the world where Japan is still the country with the greatest use of robots, followed by Korea. But, according to the forecast for the next few years, China will move to first place. In Europe there was a slight decrease in the shares absorbed by the market, due to the trend of the automotive industry; anyhow, it remains higher than the U.S. market, which is expected to return to grow soon, as well as South America.

A central role with respect to the business of Comau Robotics is that of systems integrators, which lead us towards a broad range of industrial sectors. It is therefore strategically crucial for Comau, on the one hand, to identify highly trained system integrators specialized in each specific field of application, and, on the other hand, to
understand and anticipate their needs to provide the best solution for the plants in which they will operate. Recently, applications have been diversified with respect to the automotive world, where Comau Robotics holds shares of excellence and offers cutting-edge high-tech products.

Over the past few years we decided to carefully keep an eye on the growing world of the general industry and other productive sectors where Comau's challenge of is to offer an increasingly wider portfolio of products to better respond to the needs of customers; therefore, we support medium-large robots, which are typical of automotive applications, those of smaller size. In particular, the general industry requires flexible, accurate and reliable solutions which will be employed for deburring, palletizing, in electronics, in sealing/bonding; therefore, they will be high-performance solutions with an Italian design, which remains a very important aspect appreciated around the world».

It is noteworthy that the latest generation of Comau robots is suitable for various industrial sectors, from automotive to the general industry. The robot cells and the solutions integrated in the plants use the most advanced technology and provide fast and precise movements, minimum dimensions, larger volumes of work, while offering varying levels of flexibility and customization, based on the specific needs of customers. We are able to provide our system integrators with bare robots in addition to all the hardware and software options needed to create a complete package. Moreover, thanks to the specific skills acquired by some of our centers of excellence, we can also provide turnkey installations, such as Comau Poland for press-to-press robot lines, or the Adaptive Solutions business unit for all applications that require medium and large plants, a field that is not generally covered by system integrators.

Additionally, we provide them with sophisticated 3D simulation software tools that support our partners in the phases of plant engineering and installation, with significant benefits in terms of time, costs and risks.

Press-to-press robot lines: Comau and sheet metal stamping new skills for all-around automation

Already in the mid-70s, we developed specific robots to automate the handling of sheet metal in stamping lines, facilitating a significant increase in productivity and safety for the operators. For this I consider Comau a true pioneer. Since the beginning, when the need emerged to increase the performance of these types of applications and of the robots, the company has employed workers and resources and obtained two important results: 1) strong research and development activities— to offer mechanisms and software to meet the demands of the customers – and 2) the need for new skills which, used in largely automated applications, might be able to study the mechanisms, controls, safety devices and software of the robots in order to integrate the robots with the presses, to develop software capable of handling the production at an integrated level, to lead a fully automated line and to interact with high-level technologies.

Over time, the early robotic solutions have been further developed to better meet the changing needs of customers, including different sizes of stamped parts, high number of production batches and new materials employed. Today, after more than 30 years of business and hundreds of lines installed, we offer a new generation of robots to give customers – mainly within two categories – increasingly efficient advanced solutions. On one hand there is the car manufacturer who produces in-house sheet metal components for exterior parts (which have large dimensions and tend to have highly numerous production batches). On the other hand, there is the Tier-one that produces both structural and external parts (which are smaller, with less numerous production batches) and works for multiple customers. Their needs are different.
In the first case there is the need for a high production rate; on the other hand, the need for plant flexibility. However, they share the objectives of cost reduction and improved quality. This situation, among other things, happens both when the use of the robot is limited to stamping presses, and in the case in which the robot is employed in production cells where other phases are integrated, such as the flaking, brushing, and washing of sheet metal, racking it in containers that are subsequently transported to the assembly lines, or other processes.

These multiple needs require increasing skills by those who design, install, start, manage, monitor and maintain the stamping line. Used within hot or cold stamping lines, Robotics (this is one of the most obvious cases) such as the systems proposed by Comau, can achieve these objectives, thereby improving the working conditions of the operators, creating new jobs and increasing performance, efficiency and productivity.

This is a trend that, at least for Comau, is not likely to change direction. A series of examples confirms this. First of all, the advent of the servo press implies the need for a stronger link between the robot and the press and to manage the machine almost like a controlled axis. In this way, it is possible to optimize the synchronization in order to have a sort of continuous motion of the press. It's a highly current issue for which Comau is investing heavily, both at a software level and at a mechanical level of the robot. This example demonstrates how new skills are being put to work in tandem with an increase in productivity and the removal of people from potentially dangerous work positions.

We can also add to the discussion the use of new types of boron steel for hot stamping, or, more generally, the issue of hot stamping itself. Hot forming, as it is called, in which the sheets pass through an oven that heats them up to about 950 °C after which they are inserted into the press using molds equipped with a cooling circuit to bring the temperature of the sheet metal to 250°C. This process of stamping and tempering sheet metal is intended for the production of structural elements of small and medium-size cars.

These are examples of new technologies and new materials whereby, once again, the professionalism and technique applied to automation, under the drive of constant innovation, is what defines Comau.

In this way, robotics can offer a concrete boost for better working conditions and the creation of new jobs without relinquishing performance, efficiency and productivity.