

# Beyond 4.0, Sustainable Smart Factories

The evolution of intralogistics as the driver of our future. Flexibility and integration with no trade-offs to respond to the exponential technological evolution that imposes rapid market changes

E-commerce, the product blend and the need to implement increasingly sustainable and safe technologies, reducing waste and inefficiencies, are driving the choices of many consumer goods manufacturers. To cope with rapid market changes, manufacturers are called upon to rethink and re-engineer not individual production lines but the entire factory process with a broad and long-term vision, using increasingly more flexible layouts, innovative software, reliable services and high levels of expertise that allow quick reconfigurations. In this scenario, distribution and, even more importantly, intralogistics play a major role with effects on the entire life cycle of the company. "The rational and intelligent conduction of logistical flows, the ability to adapt to changes by moni-

toring and analyzing information in real time are now strategic elements for many companies", Andrea DelGrosso, Executive Vice President for Sales of Elettric80 Group & CEO of Elettric80 GMEA explains. "There are enormous potentials for improvement in this area. Over the last twenty years, the focus has been mainly on production plant efficiency, achieving excellent results. Today, competitiveness is played out almost exclusively in intralogistics and distribution. It is here that we can say there is room for improvement". We are talking about a radical transformation spawned from the Industry 4.0 concept that impacts society as a whole in addition to the world of manufacturing. "The change we're seeing doesn't just affect the manufacturing process", Andrea DelGrosso adds. "It impacts the entire value chain with its ability to interconnect

and make all resources cooperate. The choices made over the years by Elettric80 provide innovative answers to this transformation by offering factories and distribution centers integrated intralogistics automation solutions that allow them to adapt quickly to the today's needs and even more importantly those of tomorrow. The hardware and software innovations we have developed have allowed us to create the first Factory 4.0 back in the 1990s, where intralogistics was the fundamental link to enable the principles of lean production and smart manufacturing". Sustainability, safety, interconnection, traceability, customer service... These are the key concepts of Industry 4.0. The Elettric80 Group, founded in the 1980s in Viano, in the province of Reggio Emilia, Italy, started developing and connecting them thirty years ago, also with what is now its the robotics division BEMA, designing cutting-edge solutions for consumer goods manufacturers in the beverage, food and tissue sectors, but also other areas. With their farsighted vision, founders Enrico Grassi and Vittorio Cavirani, President and Vice President of the Group respectively, created the first model of Smart Factory in Caldonazzo di Trento for Costerplast back in 1992. As of today, the multinational based in Viano has completed nearly 300 Smart Factories worldwide and installed over 2000 robotic systems, more than 5000 automatic laser-guided vehicles and 35 automated high-density warehouses. In addition to hardware systems, pal-



The SM.I.LE80 software platform ensures complete factory integration and full traceability of the handled products

letting robots, automatic laser-guided vehicles, robotic wrappers and labelers, pallet control systems and high-density automated warehouses, the dedicated Business Unit of Group develops the SM.I.LE80 (Smart Integrated Logistics) software platform that manages all Elettric80 systems and interfaces with the existing ones. "It is the conductor that orchestrates the plant and optimizes all operations, from the reception of raw materials to storage and shipment, ensuring complete handled product traceability and integrating the various systems", President Grassi explains. "Our 24/7 digital consulting and support services ensure the highest levels of innovation, reliability and reduced margin of error over time. A state-of-the-art example is the Barilla plant in Parma. It is a brownfield plant where we have implemented all our technologies and also a distribution hub for different parts of the world".

"All this allows companies that choose us to have a unique and reliable partner that will accompany and promote their growth", Vice President Cavirani adds. With the primary objective of always being close to customers, Elettric80 has opened thirteen branches in various countries - Australia, Brazil, Chile, China, United Arab Emirates, France, Great Britain, Mexico, Poland, Russia, Thailand, Sweden and USA - to support the headquarters in Italy. The formula for success that the Group is enjoying worldwide is a best practice that Grassi and Cavirani proudly share. "We constantly invest in research and in training young people. We expand the portfolio of solutions by listening to the market and we innovate responsibly. And there is more. We focus on establishing value-creating collaborations. Since 2007, we have been cooperating globally with Tetra Pak and since last

year also with Sidel. We have developed for several years a supply network within the local production fabric that allows us to have timely control over production, with a dramatic reduction of intervention times and inefficiencies". In other words, this is a company that looks to the future, focusing above all on the new generations. From the internal Academy to the collaboration with numerous High School Institutes, national and international Universities, up to the support to sport and social activities. "Investing in the new generations means investing in tomorrow. It allows us to have the resources we need to be increasingly flexible and effective, particularly in difficult times like these", the President and Vice President explain.



Archive photo (year 2018) - from left to right, Enrico Grassi, Andrea DelGrosso, Vittorio Cavirani

## Intelligence and flexibility inside the box

Automated warehouses capable of ensuring high safety and productivity standards for companies are key systems in Industry 4.0 perspective. "Storage is a key step for integrating the intralogistics flows of factories and distribution centers to ensure the best handled product traceability. We have been installing innovative and tailor-made warehousing systems for greenfield and brownfield plants worldwide for years, helping companies to achieve their goals and maintain performance through consultancy and assistance services", President Grassi explains. Elettric80 designs AVS/RS SMARTSTORE and AS/RS Stacker Crane high-density automatic warehouses, in addition to VNA, Block Storage, Gravity Rack, Selective, Drive-In and Twin-Iode, capable of increasing storage density and raw material and finished product availability and selectivity by exploiting the perfectly integrated management of automatic laser-guided vehicles - fitted with induction-charged lithium batteries - and by interconnecting all intralogistics systems and production. So, while SMARTSTORE warehouses are characterized by multi-depth pallet storage and independent handling on all levels by using shuttles and satellites, AS/RS are characterized by the use of stacker cranes equipped with automatic product handling devices for single, double and multi-depth storage. The remarkable heights of over 40 meters that can be reached increase the storage capacity per unit of surface.



Integrated management of a high-density automated warehouse with laser-guided vehicles

"The main factor that differentiates us from our competitors is how we move the products to and from automated warehouses. Most of the solutions on the market handle goods through hundreds of meters of conveyor belts or vehicles moving on tracks. This creates a rigid system that is binding and penalizing in terms of energy consumption. By using various types of automatic laser-guided vehicles managed by the SM.I.LE80 software platform, Elettric80 moves all the products with no fixed constraints, without closing off passages or areas, adapting to changes in flows, routes and missions and reducing energy consumption by more than one third compared to traditional systems", Cavirani continues. Another important benefit is the consulting service offered

to customers, from the first contact throughout the entire relationship to create a strong, high-value bond. "We own a discrete-event simulation software called SmartDesigner, modeled and integrated according to the intralogistics management principles required by the customer. It is an essential tool for designing future operating scenarios and identifying the right intralogistics solution for existing and new plants alike", Andrea DelGrosso adds. "This empowers us to maximize process optimization in plants where many variables are in play, verifying flows, identifying potential criticality issues well in advance, and validating the most appropriate control logics with 95% reliability".

Another key service is that of factory virtualization by applying three-dimensional scanning technology. "Its use is becoming a standard in all our installations and offers several advantages precisely in the design phase of storage systems", Cavirani adds. "It is a complex task that requires a detailed and accurate model of an industrial building and its contents, taking all the other involved elements into account, such as the laser-guided vehicle routes and the connection between the various automation areas. By digitizing the environment, we overcome the limitations of traditional surveying by developing and implementing our systems virtually. In this way, we can gain a full understanding of the spaces through models that reflect reality so that we can anticipate the problems that may arise during system installation. For instance, we intervene by homing in working only in targeted points of the floor and this drastically reduces costs". These services, paired with the Group's expertise and digital support, make it possible to work in all types of plants with scalable and modular solutions and integrate third-party systems without ever stopping production, especially in brownfield projects, achieving a clear reduction in project implementation times. Elettric80 stands out as a reliable partner also because of its after-sales service, which always guarantees maximum system availability and efficiency to optimize and protect the customer's investment.

## Sustainable and safe Smart Factories



"Sustainability is a value that we share with customers, partners and employees by promoting the adoption of business practices that aim at achieving sustainable growth and profitability goals with a positive impact on people and the environment. We strive to be a regenerative company that creates value inside and outside our Group. We think, design, produce, install and support in an increasingly sustainable way", Grassi and Cavirani explain. "We take care of the environment right from the design stage", Andrea DelGrosso adds. "We carefully select materials investing in solutions capable of minimizing environmental impact, both during production and assembly and during installation at the customer's premises. Over the last three years, we reduced internal energy consumption by 19%, processing waste by 13%, noise pollution by 7% and production and assembly times by 23%. All this while our business has grown year after year. The philosophy that guides our actions and the technologies that we develop allow us to offer complete solutions that significantly contribute to reducing the carbon footprint and eliminating errors, damage and accidents in companies worldwide". Above all, increasingly sustainable Smart Factories also mean increasingly secure Smart Factories.

"The integration of all processes allows us to make our customers' factories safer and safer while ensuring full traceability of the handled products. First of all, we maximize the safety level by implementing technological protection systems in addition to those established by the regulations in force. We design tailor-made layouts for each plant, we train all personnel keeping their skills up-to-date, and we use data analysis to monitor all operations in real-time. Investing in safety is no longer an option. It is a top priority for any company looking to the future", DelGrosso explains. Another highlight is the 24/7 digital assistance service. Currently, 93% of requests from customers all over the world are managed remotely from the Viano headquarters. "This ensures the continuity of activities in the systems", DelGrosso specifies. "On-site interventions by our technical staff have been limited and dropped by 40% since 2015. The results are fewer production and distribution stops on customer side, saving in terms of travel costs and less CO2 production. Customer service activity optimization also ensures a better quality of life for our employees and, in general, cleverer management of time and resources". The advantages trickle down the entire supply chain because they maintain a high level of service offered to the consumer and significantly contribute to creating a regenerative ecosystem.



AS/RS Stacker Crane high-density automated warehouse



Building of a high-density automated warehouse