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MOLEX AND SALVAGNINI COLLABORATE TO FUEL DEVELOPMENT OF FLEXIBLE INDUSTRIAL AUTOMATION SOLUTIONS, EXPEDITING A FAST, EFFICIENT PATH TO INDUSTRY 4.0

CUSTOMER-FOCUSED COLLABORATION POWERS TECHNOLOGY INNOVATIONS, SEAMLESS COMMUNICATIONS AND INDUSTRY-LEADING OPERATIONAL EFFICIENCIES FOR GLOBAL SHEET-METAL MANUFACTURER

CHALLENGES

- High-speed communications needed to connect complex sheet-metal manufacturing machines and processes
- Flexible industrial automation required flawless exchange of real-time data with factory-floor and cloud-based systems
- Customized Industrial Ethernet connections required for addressing increasingly powerful and rigorous customer applications

SOLUTIONS

- Molex's proven knowledge of Industrial Ethernet architecture expedites delivery of customized solutions with higher stability and connection quality
- Broad portfolio of industrial communications products drives next-gen architecture and flexible industrial automation
- Production ramp of standard parts in different sizes eases supply chain constraints

BENEFITS

- Shared Industry 4.0 commitment accelerates development of compact, IP67-rated products for increasingly smaller, demanding applications
- Improved machine diagnostics and predictive maintenance reduces machine repair times
- Molex hardware and software fuel huge potential for growth across vast IIoT ecosystem

CASE STUDY



“Salvagnini has been designing, manufacturing and selling flexible machinery and systems for sheet metal manufacturing since 1963. Our R&D team is constantly working to implement the most advanced, pioneering solutions to increase the potential of our systems.”

Tommaso Bonuzzi
Sales Director, Salvagnini

The promise of Industry 4.0 looms large for companies worldwide as plans ramp to digitize and transform the operation of complex machines, control systems and factory floors. The Industrial Internet of Things (IIoT) is ushering in the Fourth Industrial Revolution by synchronizing manufacturing processes with advanced technologies that produce real-time data, intelligent interconnectivity and increasingly flexible automation.

For many organizations, the opportunity to realize the value of Industry 4.0 is still on the horizon. At Salvagnini, however, an overarching commitment to process optimization and efficiency is yielding tangible benefits today.

Based in Sarego, Italy, Salvagnini has installed more than 7,000 systems in 75 countries to process sheet metal, using punching machines, panel benders, press brakes and fiber laser cutting machines. Customized solutions are delivered by 1,992 employees across five manufacturing plants, 35 service centers and 23 operational sites to customers around the world. “Salvagnini systems are complex,” adds Alessandro Bano, Commodity Manager at Salvagnini. “They demand high-quality standards and conformity with the certifications and regulations established in all of the markets we serve.”



AN IIOT IMPERATIVE

To that end, the idea of a connected, integrated factory is a major pillar of Salvagnini’s approach to processing sheet metal into a wide variety of finished products. Dating to the ‘80s, Salvagnini installed an Automatic Job Shop featuring a lights-out factory with a combination of interconnected, automatic machines that communicated directly with the customers’ Enterprise Resource Planning (ERP) systems. “Our aim is to create a cooperative, integrated ecosystem where machines work in synergy,”

Bonuzzi adds. “This reduces the occurrence of errors while optimizing the performance of the entire production plant.”

To ensure seamless collaboration among operators, machines and instruments, Salvagnini prioritizes the use of IIoT, cloud software, big data and flawless interconnectivity. “We have to guarantee high-connectivity standards and secure communications between on-site sheet metal machining systems and servers in the cloud,” says Bano.

“We turned to Molex after dealing with communications loss issues on an EtherCAT line, which is the smart communications backbone for our machines. Together we tackled the wiring issue and investigated different connector types to determine how best to achieve higher stability and connection quality.”

Bruno Sambì
Head of the Technical Department,
Salvagnini

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High-speed connectivity not only exchanges data with factory-floor systems and smart sensors, it enables a wealth of information sharing. “Today our machines not only communicate with the cloud to send updated production data, but they also transfer real-time information to each other and with ERP systems,” explains Bonuzzi. “The feedback from our customers on these initiatives is very positive, both in terms of greater possibilities for services and the benefits to boost the productivity of the whole process.”

For that reason, among others, Salvagnini cannot compromise when it comes to connectivity, which is why the company reached out to Molex after encountering stability issues with a legacy connectivity solutions provider.



TAILORED SOLUTIONS

Molex applied proven knowledge of Industrial Ethernet architecture and devices to find and fix this critical challenge. “Trying to determine the root of our issue was very complicated,” remembers Bano. “Not only did Molex quickly analyze and solve the problem, but they offered a unique solution for Ethernet, EtherCAT and Canbus cables, which we later adopted at all of our production sites in Italy.”

Flexibility was a major consideration across the board, as the various components of Salvagnini’s systems often are



adapted to different production configurations. At the same time, maintaining the typical features of standard products is prioritized to simplify sourcing and parts replacement. “The initial catalyst for working together was Molex’s suite of existing connectors, cables and cordsets,” says John Newkirk, VP and General Manager, Industrial Solutions at Molex. “We were an attractive partner from an electromechanical and connector standpoint, which gave Molex a window into Salvagnini’s longer-term needs and requirements.”

According to Luciano Rosa Marin, Senior Business Development Manager at Molex, the company’s intimate knowledge of Industrial Ethernet architecture and devices played a pivotal role. “There are three main reasons for our competitive advantage, starting with our wide portfolio of products and local technical support that quickly identifies critical issues on Industrial Ethernet connections,” he says. “Moreover, our ability to find new solutions and implement them in a short time has led to a very open and fruitful relationship that extends to the collaborative design of Salvagnini’s next-gen machine design architectures.”



CUSTOMER-FOCUSED SERVICES

Molex’s highly responsive customer service aligned with the location of Salvagnini’s production sites was another major factor for Salvagnini. “Molex impressed us with the quality of their products and their ability to conform to our standards,” adds Bano. “The responsiveness of their staff in providing technical engineering explanations also helped guide our own operational model and customer approach.”

Both companies continuously work to reduce the size of connectors without compromising the reliability or quality of communications. “We are constantly improving the quality of Molex’s Ethernet connecting cables,” Rosa Marin notes. “Another major area for us is customized solutions that require a very high mix of connecting cables with a variety of lengths and connector combinations.”

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CASE STUDY



“The collective engineering teams also designed a compact over-molded solution for Ethernet patches with IP67 rating for reliable performance in highly rigorous, wet environments. Our capabilities in cable manufacturing also enabled Molex to develop a solution in a very short amount of time.”

*Luciano Rosa Marin
Senior Business Development Manager, Molex*

“With Molex’s help, we continue to tackle the challenges of today’s supply chain constraints in different ways. We are aligned culturally to deliver modular, innovative and customized solutions based on in-depth studies of customer needs—reinforced by pioneering, smart solutions that support and enhance final products.”

*Alessandro Bano
Commodity Manager, Salvagnini*

In one case, Molex devised a plastic-injected overmold connector, which is different than conventional bayonet systems to ensure high-speed communications stability in extremely compact environments.

Another standout example of teamwork is an innovative solution involving cameras that are installed on Salvagnini’s L3 and L5 lasers. These cameras acquire the image of a piece of sheet metal positioned on the worktable and transmit it via software as a Drawing Exchange Format (DXF) vector file to display the starting format for a new nesting. “Of course, these cameras have to be powered continuously,” adds Bano. “You also need real-time

communications to send video data to the system for rapid processing.” Molex designed a new solution, consisting of a single cable, which connects the RJ45 to the electrical power supply via a switch. “Delivery times for this new product were very fast,” notes Bano. “In addition to reducing the size and number of cables, we also improved the speed of communications performance between the camera and our system.”



GLOBAL REACH, LOCAL TOUCH

Molex’s ability to reach across the globe for answers and insights while leveraging a local support team keeps Salvagnini on the cutting-edge of IIoT advancements. “Having a strong local sales engineering presence, augmented by technical business development, is key,” Newkirk says. “Molex applies a lot of technical expertise to address customer requirements, resulting in the development of products that are relevant to what they need most.”

For Salvagnini, this long-term relationship has translated into benefits for both organizations. “Together, we solve any issue that may come up, while

developing new solutions to promote and create mutual value,” adds Sambì. “We hope that our work with Molex evolves into an even deeper collaboration to create increasingly innovative and well-performing solutions.”

During the COVID-19 pandemic, Salvagnini encountered delays in coding new products, which entailed months-long wait times in some cases. To alleviate this burden, Molex ramped production of standard parts in different sizes, so they could be adapted quickly to address specific customer needs. Thanks to the presence of a Molex distributor in Italy, readily available parts are stored locally while guaranteeing ample quantity of available material for both in-house production and spare parts. Additionally, the design of a standard wiring solution gave Salvagnini a one-year overview of supply to support strategic order planning.

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ACCELERATING INDUSTRY 4.0 ADVANTAGES

As part of a shared Industry 4.0 journey, Molex and Salvagnini remain steadfast in the collective pursuit of technology and service excellence. “Molex brings strong capabilities in industrial communications as well as a global point of view,” says Rosa Marin. “Salvagnini has deep knowledge of the applications related to these technologies, as well as what is needed to develop a new industrial Ethernet network architecture.”

A combined Industry 4.0 focus guides the design, development and delivery of more compact, IP67-rated products to support increasingly smaller and more powerful machines that must perform reliably in the most rigorous environments. Opportunities to improve machine diagnostics and expedite repair times also are being explored.

“We have a suite of hardware and software products that are very relevant to the IIoT space,” Newkirk adds. “Molex will continue to set itself apart by applying a deep knowledge of solderless terminals, circular cables and industrial electronics that enable new levels of flexible automation.”

As a result, Molex is becoming Salvagnini’s preferred provider for next-generation automation communications, including Single Pair Ethernet (SPE), Time-Sensitive Networking (TSN) and Fail Safe over EtherCAT (FSoE), among others.

“Our ultimate goal is to go beyond manufacturing and offer customized solutions to support our partners in their own evolution,” concludes Bonuzzi. “Having interconnected machines and available data to analyze and use for future choices is essential. We see huge potential for growth across the vast IIoT ecosystem, both in terms of the technical side of our systems and the business applications of our consulting services.”

ABOUT SALVAGNINI

Salvagnini provides innovative solutions in the field of machine tools and automation for flexible sheet metal processing. The Group’s state-of-the-art technologies are implemented in smart systems such as punching/shearing machines, panel benders, press-brakes, fiber laser systems, integrated FMS/FMC and automatic storage systems. Handling automation devices and proprietary software complement the highly flexible, Industry 4.0-compliant Salvagnini solutions. www.salvagninigroup.com

ABOUT MOLEX

Molex makes a connected world possible by enabling technology that transforms the future and improves lives. With a presence in more than 40 countries, Molex offers a full range of connectivity products, services and solutions for markets that include data communications, medical, industrial, automotive and consumer electronics. For more information, visit www.molex.com.

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