Success Story

KION and CLOOS further expand global cooperation

Intelligent system concept for the automated welding of masts for industrial trucks

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HAIGER/STRIBRO ¬– As a global leader in material handling and supply chain solutions, the KION Group relies on CLOOS automation solutions for welding industrial trucks. In total, the group uses more than 70 CLOOS robot systems at eight manufacturing sites worldwide. "In the years of collaboration with CLOOS, we were able to jointly develop new technology standards that have created added value for both sides," explains Jürgen Grünewald, Senior Project Manager Welding & Automation Production Technologies at the KION Group. For example, CLOOS and KION have developed a chained robot system for the automated welding of masts for the Stribro site. This concept is used several times around the world.

"With more than 40,000 employees in over 100 countries, KION's solutions improve the flow of materials and information in production plants, warehouses and distribution centres. More than 1.6 million forklift trucks and warehouse trucks and around 8,000 installed systems are in use worldwide - at customers of various sizes in numerous industries on six continents.

High level of automation ensures one-piece flow

In 2015, KION opened a new site in Stribro in the Czech Republic for the production of reach trucks and pallet stackers. As at all its sites, KION relies on innovative production technologies and invests continuously in automation and digitisation along the entire production chain. The Stribro site has grown very strongly since opening. Around 70 of the approximately 400 employees work in the welding area. Due to the general shortage of skilled workers and many industrial companies in the region, it is not easy to find qualified employees. KION wants to counter this with a high level of automation. "The safety of our employees is our top priority," emphasises Jakub Stajner, Project Leader Industrial Engineering at KION in Stribro. "In addition, our goal is to achieve a one-piece flow in our production, where we make the best possible use of the space available. Last but not least, we want to meet and exceed our customers' requirements in terms of quality, cost and delivery time."

Photo 1: The complex robot system for welding lifting masts offers maximum quality and flexibility.

Welding as key manufacturing process

Therefore, the company relies on the CLOOS automation solutions regarding welding. In the meantime, KION uses seven robot systems in Stribro. Another one is currently in the assembly process.

"We chose CLOOS because the company is the best provider on the market when it comes to combining welding processes and robot systems," Grünewald emphasises. "This is a big advantage for KION because welding is a key manufacturing process for us."

Complex robot system offers maximum quality and flexibility

In the new robot system for welding the lifting masts, the system operator receives information from the SAP system which component is to be processed next. The operator then first places the component in the loading station manually or with a crane and records it in the system with the scanner. Then he prepares the component for the automatic welding process. Individual spots are also tack-welded with the QINEO NexT manual welding power source from CLOOS.

Photo 2: The fixtures for holding the components automatically adjust to the different sizes.

The length of the masts varies between two and six metres - in total there are more than 80 different component variants. To ensure maximum flexibility, the fixtures for holding the components automatically adjust to the different sizes.

The component is then automatically transported via two synchronised telescopic units on the floor-mounted linear track to the welding station where two QIROX QRC-350 welding robots mounted overhead take over further processing. The welding program takes between 20 and 45 minutes, depending on the size of the component.

After the welding process, a gripper takes the welded component from the fixture and places it on an outfeed conveyor belt. After the component has been automatically unloaded, the empty fixture is transported forward to the system operator. The three fixtures in total move continuously through the system in one cycle.

The latest development stage of the mast welding systems offers a higher output with a smaller space requirement compared to previous systems. The concept enables a full one-piece flow within the required sequence and, at the same time, a consistently high level of quality in the welds produced. "Another important feature in these volatile times is the high product variant flexibility," Grünewald

explains. "This allows us to move different product types between the welding systems to achieve optimum capacity balance."

Photo 3: Two QIROX welding robots QRC-350 mounted overhead take over the welding process in the production line.

Relief for the employees

In addition, the entire production line for welding the masts can be operated by only one employee. The high level of automation eliminates human error and unergonomic work.

"Our employees are enthusiastic about the new system concepts," emphasises Michal Kriz, Senior Plant Director at KION Stribro. "Because the robots do the physically heavy work, there is less general exposure to arc radiation and welding fumes. This allows employees to focus more on

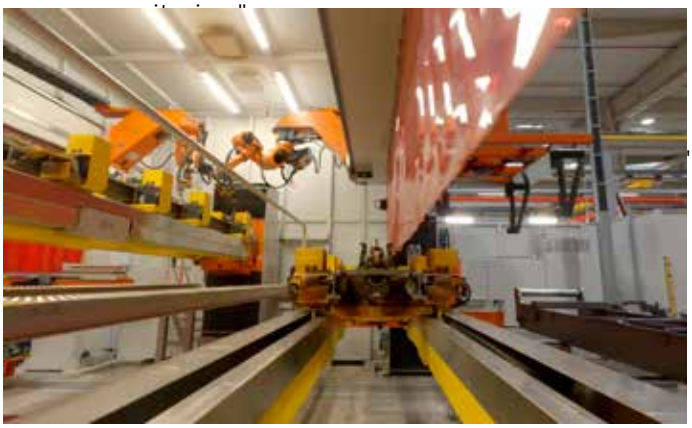

Photo 4: The three fixtures move continuously through the line in one cycle.

Transfer of the system concept to other sites

Within KION's global network of production sites, further investments in the welding area are imminent. For example, KION has ordered two identical CLOOS robot systems for the Summerville plant and is also preparing to invest in the CLOOS system concept for the Luzzara plant. Thus the company wants to increase flexibility between the individual sites.

A permanent team of CLOOS project managers supports KION in planning and implementing the system concepts. On-site support as well as service and training at the Stribro site is provided by the Czech subsidiary CLOOS Prague.

"During our decades of collaboration, CLOOS has always reliably demonstrated very good quality and professional project management," Grünewald explains. "Together we have always been able to keep to the project schedule and have also managed critical issues very well."

Photo 5: The gripper takes the welded component from the fixture and places it on an outfeed conveyor belt.

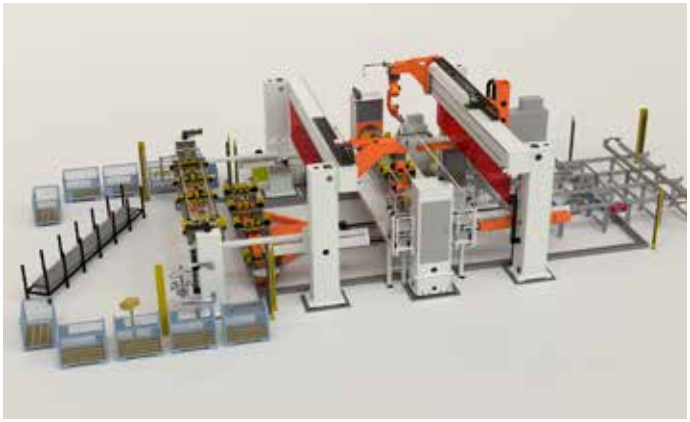

Photo 6: KION uses the CLOOS system concept at several locations worldwide.

Video om CLOOS TV

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