

LuK USA LLC increases production 22 percent with new weld cell

Challenge

LuK USA LLC, a drive train component supplier for the global automotive industry, needed a new welding cell that met lower cycle time requirements and provided a cleaner environment.

LuK had an existing assembly cell that welded torque converters over the part pallet and assembly line. The part would be lifted from the pallet and into a clamshell that was supposed to protect from spatter and arc flash. This cell could not provide adequate protection, making the pallets very dirty and possibly contaminating the converters. This contamination was unacceptable for LuK's customers. In addition, the existing cell could not meet the new cycle time requirements due to the load and unload cycle time being added to the welding time.

Solution

Motion Controls Robotics recommended a new welding cell that utilizes a turntable for welding with a tooling bed on each side. The robotic system includes a pick and place unit that allows the loading and unloading of the part to be done while another part is being welded, which greatly reduces overall cycle time.

Since the new cell removes the part from the assembly line, there is no chance of spatter from the weld collecting on the pallet. LuK can use the pallets for a longer time before they need to be cleaned.

Motion Controls Robotics built a turnkey system for LuK that was built and run off at the company's headquarters in Fremont, Ohio. Once the system passed run off, Motion Controls Robotics shipped it to LuK's facility for installation and integration. Motion Controls performed the complete installation and integration to the LuK assembly line.

The Details

The system consists of three Fanuc R-J3/Arc Mate100iB robots equipped with Lincoln PW455 welding systems and Binzel VTS torches. The robots sit on a Genesis pneumatic turntable with one tooling bed per side. The custom tooling clamps the parts and rotates via a Siemens servo drive.

The part is removed from pallet by a pick and place unit, set into the tooling and clamped in place. The weld table indexes the part into the weld cell. While the welding is done on the inside of the cell another part is being loaded onto the other side of the table. Once the first part is welded, the table rotates and the pick and place unit removes the welded part.

Result

According to John Kachline, LuK USA LLC welding engineer, the new welding system provides a reduced cycle time and 22-percent increase in production. It also keeps the pallets and conveyer belts cleaner than the previous system. He says that the cleaner belts lead to longer belt life. This system can also accommodate a larger diameter part.

“This system is duplicated on all of our assembly lines and will continue to be the standard for future assembly lines,” said Kachline. “We had a very aggressive delivery schedule. This system had to be installed during the plant shutdown over the Christmas and New Year’s holiday. Motion Controls personnel put forth the extra effort to deliver the machine on time and get it up and running before our shutdown ended.”

Kachline also noted that Motion Controls Robotics then responded very quickly to any issue that crept up during the first few weeks of production to ensure that LuK did not have any delivery delays to its customers.

“This is the eighth cell that we have purchased from Motion Controls and they are now the only vendor of robotic MIG cells at our plant,” said Kachline. “I’m sure that as we are growing we will continue to rely on them for new systems.”

LuK USA LLC, located in Wooster, Ohio, supplies drive train components for the global automotive industry. With the latest technology, equipment and tools, LuK takes the product from concept to customer and has consistently earned the automotive industry’s highest awards. LuK has more than 7,000 employees globally and has been in business in Wooster for 28 years.

Motion Controls Robotics, based in northwest Ohio, is a leading provider of automation solutions to manufacturing industries since 1995. The company provides full service robotic solutions from concept to installation and service/support that keep manufacturers competitive.

Motion Control Robotics creates solutions for Fortune 500 and small- to medium-sized manufacturers in general industries, food, food containers, building products, plastics companies, tier one and two automotive suppliers. They also automate small production shops and machine job shops. Motion Controls Robotics provides automation solutions to manufacturers for a variety of applications including material handling (case packing, palletizing and machine tending), material removal, sanding, deflashing, arc welding and vision-guided systems.