Application: Arc Welding

ARC Mate robot offers consistent welding.

Industry: Metals
Products Used: (2) FANUC ARC Mate 100
FANUC ARC Welding Software

Challenges:

A major automaker recently contracted a component manufacturer to weld brackets to the bumpers of its economy-sized vehicle.

The engineering team evaluated the welding process closely to find a way of meeting high production volumes without increasing costs. Because the new job would require multiple weld orientations, several options, including “hard automation.” were ruled out.

Solution:

It was determined that robots would offer greater weld consistency, higher production speed and more flexibility than dedicated equipment. Since the engineers had worked with FANUC Robotics on past projects, they were confident that FANUC Robotics would design a process solution to fit their needs.

“We did a comprehensive search of the available robotics suppliers before we made the final decision,” said the welding engineer at the component manufacturer. “But the first robots we purchased from FANUC Robotics had allowed us to improve our quality and throughput levels considerably and we were also very impressed with how easy the robots were to use.”

FANUC Robotics worked closely with the component manufacturer on the design of the system which incorporates two welding stations, each equipped with two six-axis ARC Mate 100 welding robots, application-specific software, R-J Series Controllers and peripheral equipment. A dual linear shuttle was custom designed for manual loading and auto shuttle into the weld zone and automatic unloading after welds are completed.

Alternating between each work cell, an operator loads left and right brackets into fixtures and positions hold-down clamps over the brackets. A bumper beam is then placed into a rough locator nest below the brackets.

Solution *(cont.)*

Next, the operator steps back from photo-eye cross beams and touches an optical sensor finger pad to pneumatically clamp and position brackets and lift the bumper beam into position. A second pair of optical buttons are touched to send the clamped assembly and fixture into the weld zone.

When the fixture is in position, the ARC Mate 100s move forward and simultaneously weld the right and left brackets of the bumper assembly. As assemblies are completed, the robots return to a home position and wait for the next part to enter the weld zone.

After the robots are clear, the fixture opens and ejector rails lift the part out of the fixture. The welded bumper assembly slides out under the robots and onto an outgoing conveyor. The empty fixture then shuttles back to the load station for the next set of brackets. Only one operator per shift is required to run the entire system.

The automated welding system works consistently and reliably. Weld rejects are now virtually nonexistent, and daily production schedules are easily attained.

“We’re pleased with the results of the system and the support that FANUC Robotics provided throughout the project,” said the welding engineer.