



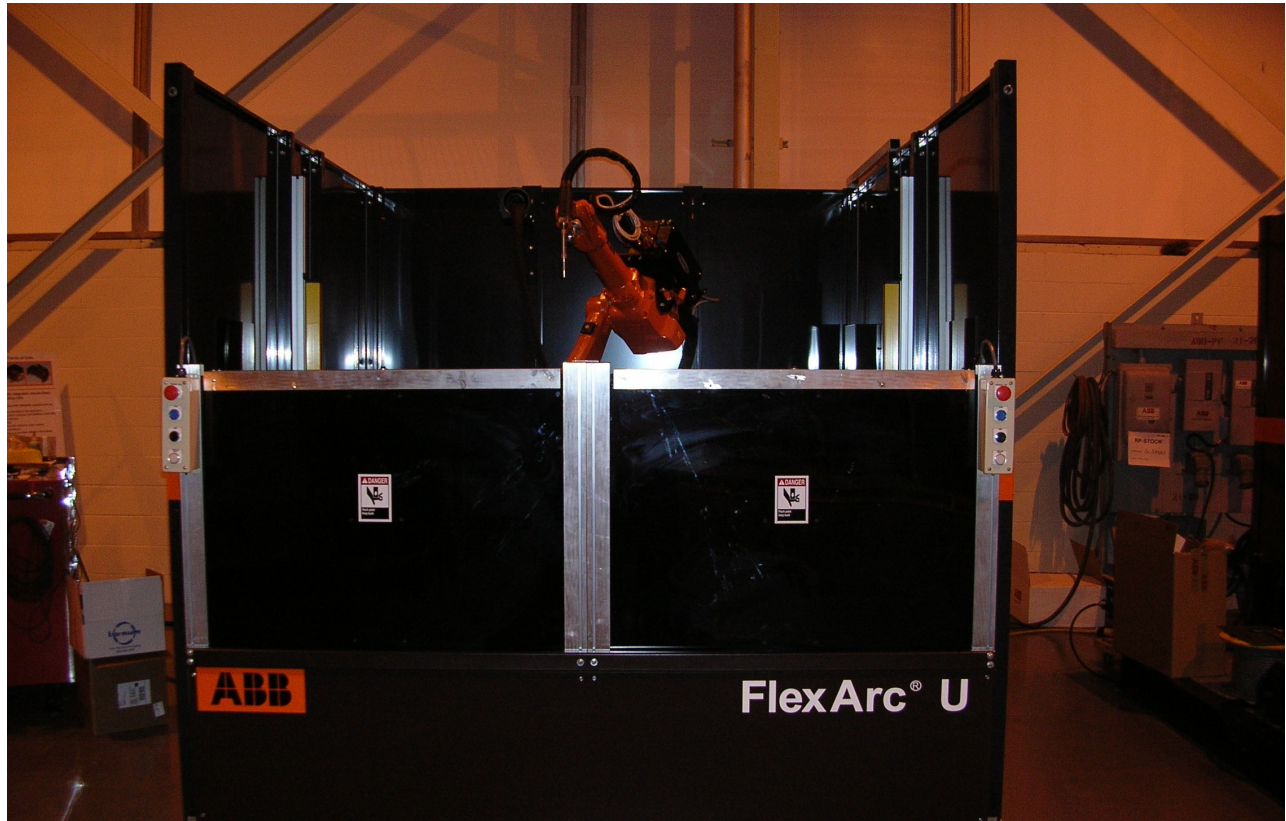
# Welding Robot Sparks Production Increase, Improves Quality

## Applications

- Tooling
- Welding

## Products

- Arc Welding Cells



With the need to increase production and lower costs in the automotive component and power sports industries, Dayton, Ohio-based AFC Stamping and Production, Inc., needed to find a solution to help the company stay competitive.

AFC, a subsidiary of FC Industries, is a source of finished manufacturing for power sports frame components, automotive tubular components and automotive stampings with weld components. Established in 1989, the company has approximately 100 people at its 115,000-square-foot facility, which consists of nine lines, including a CNC bender, end finish equipment, resistance welding, and fully equipped press and manual welding departments.

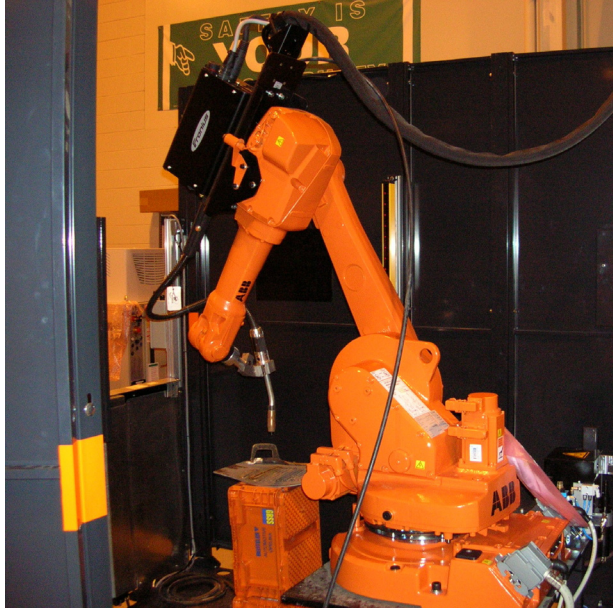
To be more productive, AFC tried manual welding and even procured the services of an outside vendor, which created several disadvantages ranging from high costs and lack of manpower to control quality and product flows. After reviewing the situation, AFC determined it needed to automate its welding process with robots.

## A Robotic Solution

During its investigation process to determine the best robotic solution, AFC selection criteria included: repeatability, flexibility, personnel availability (no need for skilled welders), ability to eliminate load time from the TACT time (time needed to manufacture



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one unit – due to 1 side/2 side configuration), output quality and increased throughput.

After reviewing several potential robotic solutions, AFC selected the U2 cell, a FlexArc robotic welding cell, from ABB Robotics ([www.abb.com](http://www.abb.com)) based on its costs, quick changeover time and the cell's compact design.

A complete robot system ideal for arc welding applications, the U2 cell features one IRB 1600 robot equipped with an IRC5 robot controller, dual door operation, perimeter guarding that complies with ANSI/RIA 15.06/1999, man/machine (HMI) interface, welding power supply, robotic welding torch (air or water cooled), robotic torch cleaner dresser, metal mounting base (transportable with fork lift pockets), cables that are completely integrated into the base of the cell, and a cell door interlock device.

The IRB 1600 is a high-performance robot with a combination of proven technology and well-tested innovations, and features short cycle times, very

good path accuracy, outstanding position repeatability (.05 mm), and payload in 5 or 7 kg options. It is controlled by the IRC5, ABB's fifth generation robot controller, which sets new standards with its modular concept, a new ergonomically designed portable interface unit, the FlexPendant and fully synchronous multiple robot (up to four) control through the MultiMove function. The controller's modular flexibility makes it possible to optimize cell layouts and to update or replace one module with minimal interference to the other robots, giving it the potential to reduce costs, improve quality, increase productivity and expand robot applications.

FlexArc cells are available in several flexible and versatile; standing modular packages, and can be used independently or combined together to form mini-assembly zones, an assembly line or a complete workshop.

“The low cost of the U2 cell was easily justified with the cost savings we were able to achieve,” said Jon Lambert, engineering manager at AFC. Lambert is responsible for capital expenditure, continuous improvement, plant layout and process and tooling concepts, and he also supports the company's lean manufacturing initiatives and internal and external customer requirements.

The parts produced on the ABB U2 cell are either a left and right pair or require two fixtures for completion, making the U2 cell configuration with 1 and 2 sides ideal. In general terms, while the 1 side is welding, the 2 side is loading. The goal is to match the welding and loading times so by the time the 1 side is welding, the 2 side is loading. The goal is to match the welding and loading times so by the time the 1 side is welded and in start position, the 2 side is loaded and ready to weld. If the



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cycles are balanced, AFC has eliminated the cost of loading and unloading the fixtures. Upon completion of side 1, the parts are packed if complete or transferred to side 2 for final welding.

“The U2 cell configuration and compact design allowed us to achieve quick change tooling and handling, so multiple part numbers can be run through the cell in any given shift. In addition, changeover time is less than 10 minutes – from the last good piece to the first good piece,” said Lambert.

## Reaping the benefits

Since the addition of the U2 cell in May 2006, AFC “has eliminated customer rejections for missing, incomplete or non-compliant welds,” said Lambert. “In addition, AFC Stamping and Production’s labor cost reduction in the first year was \$64,000, with the savings expected to be maintained over the next two and a half years.”

### > HIGHLIGHTS

- AFC has eliminated customer rejections for missing, incomplete or non-compliant welds.
- Able to achieve quick change tooling and handling.
- Using a robotic solution, AFC has managed to stay competitive.