Frommelt®
SAFETY PRODUCTS

CASE Study

Guardian™ Barriers Help Improve Safety and Productivity at F&P America

F&P recognizes the advantages of automated machine guarding devices to help improve safety and productivity.

As a major supplier to automakers such as Honda, Mitsubishi, and General Motors, F&P America understands the importance of productivity. Even during this economic slowdown, F&P's plant is working at maximum capacity to ensure that customers receive parts in time - just in time.

F&P America Manufacturing, Inc. opened in Troy, Ohio in 1994 as a 100,000 sq. ft. welding shop with only 80 employees. Now, after five plant expansions, F&P does stamping, welding, assembly and painting of components with 500 employees in a 300,000 sq. ft. facility.

F&P's largest customer is Honda, with whom F&P works closely to ensure that parts are received when needed. Honda and F&P both utilize Just in Time manufacturing, where parts are shipped to Honda just four hours before they are needed for production. Since F&P also follows Just in Time, they carry only three days of inventory, with one-day inventory of finished goods. Parts must be staged at F&P to Honda's production line, which leaves little room for error. Within tight schedules, F&P produces 1800 to 2000 assemblies per day, six days a week. This amounts to more than 584,000 assemblies per year. Even with F&P's large employee base, their operation would not be able to meet manufacturing requirements without the use of robotic welders. F&P currently utilizes 208 robots, with 114 additional robots scheduled to arrive in early-2002 to meet upcoming production demand.

13' wide Guardian helps provide safety from arc flash and prevents entry into the robotic welding cell.

While robotic welders help automate manufacturing processes, they also introduce a variety of safety concerns to an operation. When utilizing robots, safety surrounding the work cell must be carefully planned. F&P not only requires a physical barrier between the employees and the robot, but they also utilize light curtains for the area surrounding the robots. These "electric barriers", provide redundancy to their safety system, to ensure that no one is injured during the robotic welding process. As Dave Parmenter, Assistant Manager of the Technical Group made clear, "You don't take any chances on safety."

When F&P designed their facility, they recognized the advantages of automated machine guarding devices, when used in conjunction with their robots. These de-vices are programmed with the robot, to completely automate the process. The automated curtains allow one robot to be used continuously, without waiting. The process would follow this sequence: the operator loads a part on one side of the cell, while on the other side the robot is welding. A barrier is closed in front of the robot, but a second barrier on the other side of the cell is open to allow for the loading and unloading of parts. When the new parts have been loaded and the welding is completed, the second barrier closes and the robot rotates to begin welding on the other side of the cell. Simultaneously,

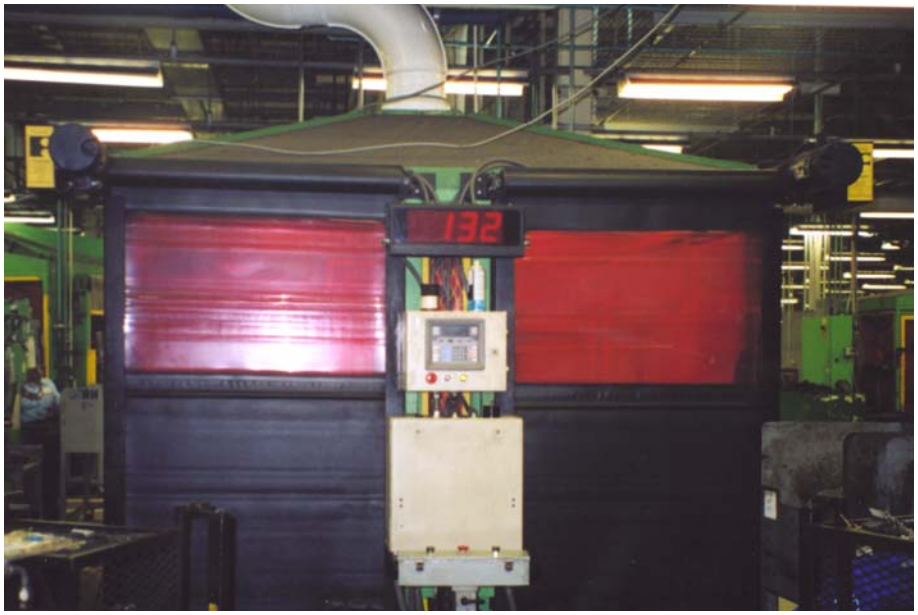
the other barrier opens to allow for unloading and reloading of parts on the opposite side. This cycle is repeated thousands of times per year, to ensure that F&P's production requirements are met.

The robotic welding must be completed while keeping the employees protected from weld flash. According to Parmenter, this system is ideal for F&P, because “you don't want the associate waiting on the robot, and you don't want the robot waiting on the associate."

Safety is the highest concern for F&P, as demonstrated by their achievement of 1,000,000 hours without a lost time accident. As a result, they chose to install Guardian™ barriers from Frommelt® Safety on several robotic weld cells. F&P was most concerned with protecting employees from the arc flash and splatter that occur during robotic welding. The employees must be protected, and F&P determined that automated barriers would provide the safety from flash and prevent entry into the robotic welding cell, without reducing the productivity of the cell.

F&P first tried an automated curtain that utilized a cotton-like fabric. These curtains could not withstand the harsh welding environment, lasting only one or two years. Recognizing the durability of the Guardian's curtain fabric, F&P chose to replace 30 existing curtains with the Guardian barrier curtain. The Guardian's curtain is comprised of a heavy-duty, fire resistant 50 oz. black vinyl, which is ideal for F&P's demanding applications. The new curtains have withstood thousands of cycles, while protecting F&P's employees and maintaining the high level of productivity required.

F&P has also installed 12 complete Guardian units throughout their plant. There are several dual-Guardians on work cells, and two large, 13' wide Guardians.



Dual-Guardians (shown here), allow F&P to utilize their robotic welders continuously. The dual-barrier system has helped improve the productivity and safety of the robotic welding cells.

Each 13' barrier is on a cell with two employees and two robots. The Guardian remains in the down position until the robot has completed welding, and then opens so the 9' table can be rotated. The employees then unload the finished parts, and load new parts. F&P then utilizes a pokeyoke system, which performs an electronic sensor check to ensure that all parts are in place prior to welding. This process ensures that all parts ad-here to F&P's quality standard. It is this attention to detail that has earned F&P Honda's Quality Award for the last three years. As F&P's business has grown, floor space has become more critical. Because of the Guardian's barrier curtain protection when the robots are welding, F&P has been able to save valuable space by uprighting the light curtains around the cell, thus reducing the "fall zone" required around the robotic welder. This can only be done when the fixtures are small, but has helped maximize floor space, while main-taining a high level of safety. When physical barriers are not in place, light curtains are often placed horizontally to detect people in the fall zone.

F&P has recognized the value of not only automating production through the use of robotic welders, but has also automated the safety devices on their lines to maximize the safety of their operation. According to Parmenter, "Safety is the biggest benefit of the Guardians. We're stopping arc flash, we're stopping entry into a dangerous area, we're stopping expulsion - they're just 100% safety."

Dual-Guardians allow robotic welding to occur on one side of the cell, while an employee safely loads parts on the opposite side of the cell.

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