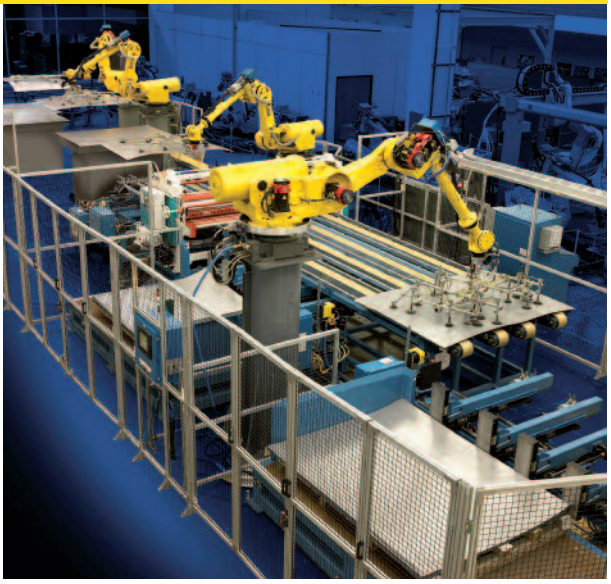
Intelligent Robot Solutions

FANUC Robotics

Application: Tandem Line Automation

Industry: Metal Products

Products Used: Complete System Solution, including
2, R-2000*i*A/100P Robots
Line Supervisor Control Panel with PRESSworks
Robot Dress-out Package
End-of-arm Tooling (EOAT)



A leading full service Tier 1 supplier of highly-engineered, metal-formed components, complex modules and mechanical assemblies for car manufacturers installed a robotic press tending and destacking system to improve productivity.

Challenges:

A tandem line that produced automotive panels was not running efficiently. Manual handling methods were being used to handle the parts. Often, the employees handling the various parts into and out of the dies dictated the uptime of the line. Pressure to increase the overall yield output for every part produced was the primary objective. A few years earlier a similar condition existed whereby a great deal of improvement was made in productivity once the robotic-based transfer system was installed and running. Now it was time for another line.

Solution:

A cross-functional team was identified at the automotive supplier. This empowered group of individuals selected the suppliers to provide the system automation equipment and system controls, and established the support needed for the installation and launch. FANUC Robotics America, Inc. was selected to provide project management, engineering, equipment installation, programming, initial production support and training.

FANUC R-2000*i*A/100P robots were used for destacking, the loading and unloading of press 1, and the loading of press 2. The FANUC R-2000*i*A/100P robot was used between each of the remaining presses and for unloading the last press. This reduced the manpower required to handle the part by about two-thirds. Prior to the integration of robots, an employee unloaded each press and placed the part onto a shuttle, and another employee was used to load the next press.

Destacking and Press-to-Press Transfer:

Two, R-2000*i*A/100P robots were used to handle the parts off the pallets containing stacks of blanks and loading the first press. Two positions were provided on either side of the first robot to allow continuous feed of blanks to the rollcoater and to allow change out of the empty pallet with a full one. Magnets were used to fan the blanks. Two, additional floor-mounted R-2000*i*A robots were used to handle the parts between presses 1 and 2. These two robots also allowed the hand off to occur robot to robot so that the part could be turned over. Single, R-2000*i*A/100P robots performed the transfer of the blank through the remaining four presses. The last robot on the end of the line placed the part on an exit conveyor. All robots were outfitted with manual change mechanisms by one company for the purpose of using components from the same supplier for the various tools needed for the parts being manufactured.

Operator interface for press automation allows users to observe and monitor cell control, status and faults.

Benefits:

Five presses were integrated with nine robots to produce parts of various types primarily for underbody components. Rates of 450 parts/hour were consistently documented on average.

Production levels increased by 30%. This was due to the continuous, uninterrupted flow of the line.

The production costs decreased by 10%. Because of the fewer number of handling operations on the line to move the part die to die, there were less quality issues.

Spare parts required to maintain the line have been minimized due to the use of a commonly-used FANUC robot.

Customer Satisfaction:

After the success of the first system, the automotive supplier knew that they had a winning combination of employees and equipment to provide another line with increased productivity. Using the experience gained from the first system installed in the plant, the second line went in with those improvements. The line is running as expected.