

## **Company**

Delphi

## **Situation/Challenge**

- To improve productivity and position Delphi's Vandalia operations to handle future business, it was determined that a fully automated part removal system was needed to help meet production goals and maintain a competitive edge.

## **Solution**

### **• Automation**

- The system incorporates 11, overhead, rail-mounted robots supplied by FANUC Robotics working on 1500 ton injection molding machines and five FANUC pedestal robots working on 3000 ton machines.
- Toploader – articulated gantry robot
  - Uses rotary axes for load/unload and post-processing motions and a linear axis for repositioning to simulate human-line moves. A six-axis arm design allows the robot to perform tasks typically reserved for a human operator.
  - The robot's simplified installation alignment reduces installation costs.
  - The end-of-arm tooling is simplified so the robot arm is flexible to extract parts from either the top or side of the machine.
- Pedestal robot
  - Offers a long reach and heavy payload capacity of up to 175 kilograms, and features a large work envelope and a 360 degree wrist rotation, making it easy to maneuver large parts.

### **• Process**

- Delphi uses FANUC Toploader robots to unload automotive door panels and map pockets. The robot enters the mold cavity, extracts the part and places it on a takeaway conveyor.
- Delphi uses the FANUC pedestal robots to extract large inner door panels, and interior and exterior trim pieces.
- All robots operate using FANUC Robotics' Handling Tool application software to simplify and standardize robot setup and operation.

## **Result**

- Speed – FANUC Robotics solution requires only 5.5 seconds to remove a part from a 1500 ton machine, compared to the 13 seconds required by a gantry solution.
- Accuracy – FANUC Robotics pick parts from molds and successfully hand them over 99 percent of the time, allowing for consistent mold cycles and higher quality parts.