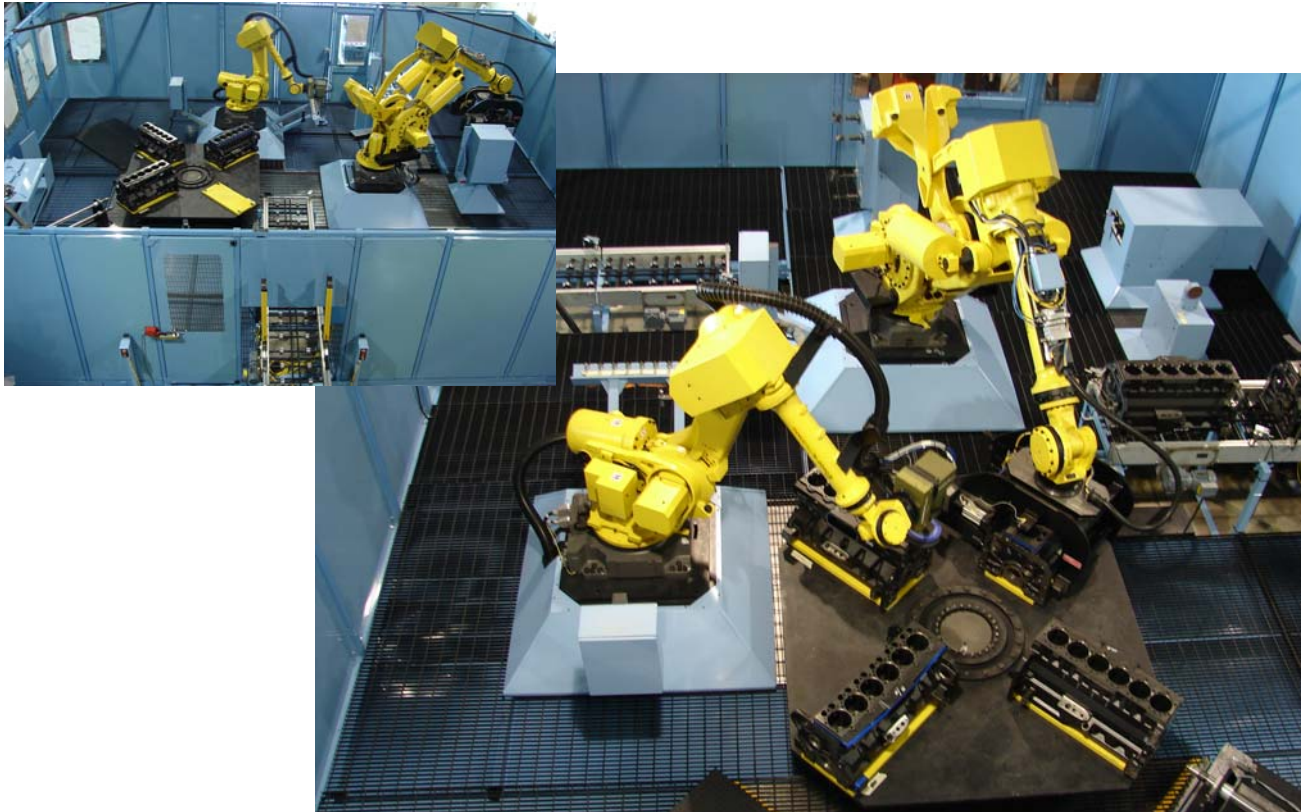


Genesis Case Study #: J4601-001
Application: Robotic Deburring
Market Segment: Automation / Agricultural
Product: Diesel Engine Cylinder Block (8.1 & 9.0 L)
Cycletime: 3 Minutes



Summary

Cylinder Blocks enter the Genesis Robotic Deburring workcell via powered conveyor. The block model (8.1 or 9.0 L) and serial number are identified with a barcode reader, and the part data is transferred to the plant network. A Fanuc M-900/600 material handling robot picks the block from the conveyor and transfers it among a series of deburring stations within the workcell. The part is placed onto a 4-station servo turntable, and the cam and crank bores are deburred with a custom machine supplied by Genesis Dimensional & Tooling Solutions. The turntable indexes the block to the fourth station where an R2000iB/165 robot deburrs the remaining features of the block using a 10 HP servo spindle with integrated tool changer that is mounted to a compliant slide. The finished block is robotically placed onto an outgoing powered conveyor.

Project Challenges

- Robotically handle cylinder blocks weighing in excess of 600 LB
- Deburr machined features on 6 faces of the block and internal features
- System must be capable containing liquids while being washed down
- Integration with the plant network
- Meet cycletime of 3 minutes while performing an acceptable deburring operation
- 90% Uptime

Genesis Solution

- Two-robot system featuring (1) Fanuc M900i/600 robot and (1) R2000iB/165F robot
- Process-specific deburring stations (oil gallery holes, thrust flange, cam/crank, starter, injection pump & timing pin bores)
- Robot-mounted Pushcorp 10HP Servo Tool Changer with Active Force Device
- Custom Genesis enclosure with 9' wall panels with windows, raised, floor and drip pans
- Allen Bradley ControlLogix – based PLC package communicating to cell components and the plant network over Ethernet
- Allen Bradley Panelview Plus 1000 HMI
- Integration to customer production line