

Genesis Case Study #: J5045-001
Application: Robotic Fastening Machine
Market Segment: Automation / Assembly - Fastening
Product: Automotive Transmission
Cycletime: 15 seconds fastening, 15 seconds pallet index



Summary

Transmissions have test ports that require fasteners to seal them when testing is done. Previously it took two operators full time just tightening these fasteners and a drain plug, while the transmission was moving down the conveyor. The customer justified automation for both labor reduction and increased quality assurance that every bolt was properly secured. The transmission gets conveyed slowly into the station and is precisely located. Robots with nutrunners fasten the sealing bolts quickly, recording fastening data for quality assurance purposes. The completed transmission then is conveyed out of this station.

Project Challenges

- The transmission's fasteners are located on many different planes
- Conveyor speed is slow, so stop-station tact time is short – 15 seconds.
- Floor space for equipment is very small, around 3' x 8'

Genesis Solution

- Two Fanuc M-16 robots are invert mounted onto an overhead structure to conserve floor space
- Coretec 2302S-UL servo nutrunners, equipped with high-precision spring spindles, tighten the bolts
- Each robot tightens 4 bolts in 9 seconds including robot motion time
- Dedicated high-torque nutrunner on slide for drain plug
- All torque, angle, and OK/NG data stored on RFID tag on the pallet
- Repair loop programming includes tightening for a single, repaired fastener