

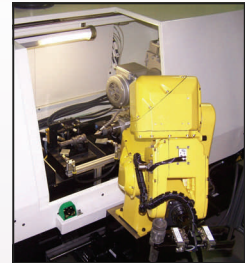


# Pump Shaft Grinding Cell

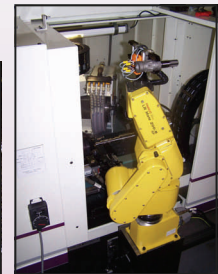
## Case Study, June, 2007



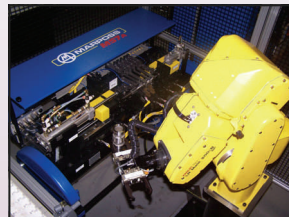
Master Cell Controller with AB PLC



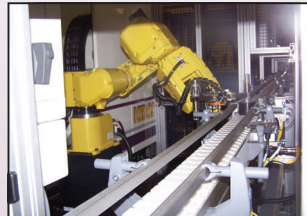
Dual Spindle Center Grinder



Formed Wheel Plunge Grinder



Post-Process Inspection Gage



Powered Conveyor and Puck Return



High-Speed CBN Peel Grinder



PARTS

**Customer:** Hydraulic Component Manufacturer      **Application:** Pump Shaft Grind (8620; Rc 58-62)

- Cell Components:**
- Master cell controller with Ethernet connection to each machine and final gage
  - Flexlink powered conveyor and puck return system
  - Marposs post-process inspection gage with SPC capability
  - Weldon dual spindle center grinding machine
  - Weldon 320A MIDAS high-speed CBN peel grinder
  - Weldon 120A MIDAS formed wheel plunge grinder
  - (4) Fanuc LR Mate 6-Axis machine tending robots

**Process:** Operator loads raw parts on top conveyor. Parts are conveyed (in-line) to station #1 for center grinding; station #2 for “customer end” CBN peel grinding; station #3 for “pump-end” ALOX formed wheel plunge grinding; station #4 for post process gaging. Finished parts are unloaded manually and pucks are automatically returned to the load station on the bottom conveyor. All stations are tended by Fanuc LR Mate 6-axis robots.

**Attributes:**

Diameter tolerance	+/- .0001” to +/- .00015”
Surface finish	16 Ra (max)
SPC	1.67 CPK

**Notable:** Weldon turnkey of machines, tooling, process, machine tending robots, safety guarding, conveyor system and post process gaging. Cell addresses approximately 20 part configuration variations with minimal change-over.