Summary
Parts are loaded onto two inbound accumulating conveyors by an operator. The parts travel down the conveyor and into a v-shaped hardstop. Once the parts are detected, a Fanuc R2000iB travels down the track and picks up the part with a two-fingered pneumatic gripper and drops the part into a carriage mounted regrip. The robot then travels down to the first Okuma MacTurn 550 and loads the raw part into chuck #1 with a three-fingered gripper and unloads a finished part from chuck #2. The robot takes the part down to the second Okuma MacTurn 550 and repeats the load/unload procedure. One of the part numbers is required to cycle through the Gun Drill before any of the MacTurn processes.

The part is then taken to a debur conveyor for manual debur. Parts are picked up from the incoming debur conveyor and taken to the part washer to repeat the load/unload procedure. From there, the part orientation is determined using a Fanuc iRVision/2D vision package. Once the part orientation is found, the parts are taken to the balancer where the load/unload procedure is repeated. Parts are then taken through a Telesis part marker and dropped onto the outbound conveyor, which indexes out to the operator. At various places throughout the complete robot cycle, a carriage mounted regrip is utilized to move the part from one gripper to the other.

Project Challenges
- The system was to be capable of handling 4 part numbers with minimal changeover.
- The system was to have three zones: two lathe zones and one robot zone.
- Integrate the system into numerous machines (2 lathes, gun drill, part washer, balancer, part marker).

Case Study J5598-002.docx
Create vision system with a stationary camera capable of detecting part location while holding the part in the robot gripper.

Uptime of 95%.

Genesis Solution

- Single-robot workcell with a Fanuc R2000iB robot mounted on a 12 meter track
- Fanuc iRVision/2D package with Red LED lighting system
- One blue plastic inbound conveyor system with two 12" lanes and "v-shaped" hard stops
- Dual gripper containing one 2-jaw gripper and one 3-jaw gripper, both with quick change jaws
- 10" AB Panelview Plus Operator Interface (HMI)
- Integrated 12' safety enclosure with two vertical light curtains capable of securing three zones via Safety PLC logic
- Two carriage mounted re-grip stations
- Integration with two customer-supplied Okuma MacTurn 550 lathes
- Integration with Part Washer via Ethernet
- Integration with Balancer via Ethernet/IP
- Integration with Gun Drill via Ethernet/IP
- Integration with Telesis Part Marker