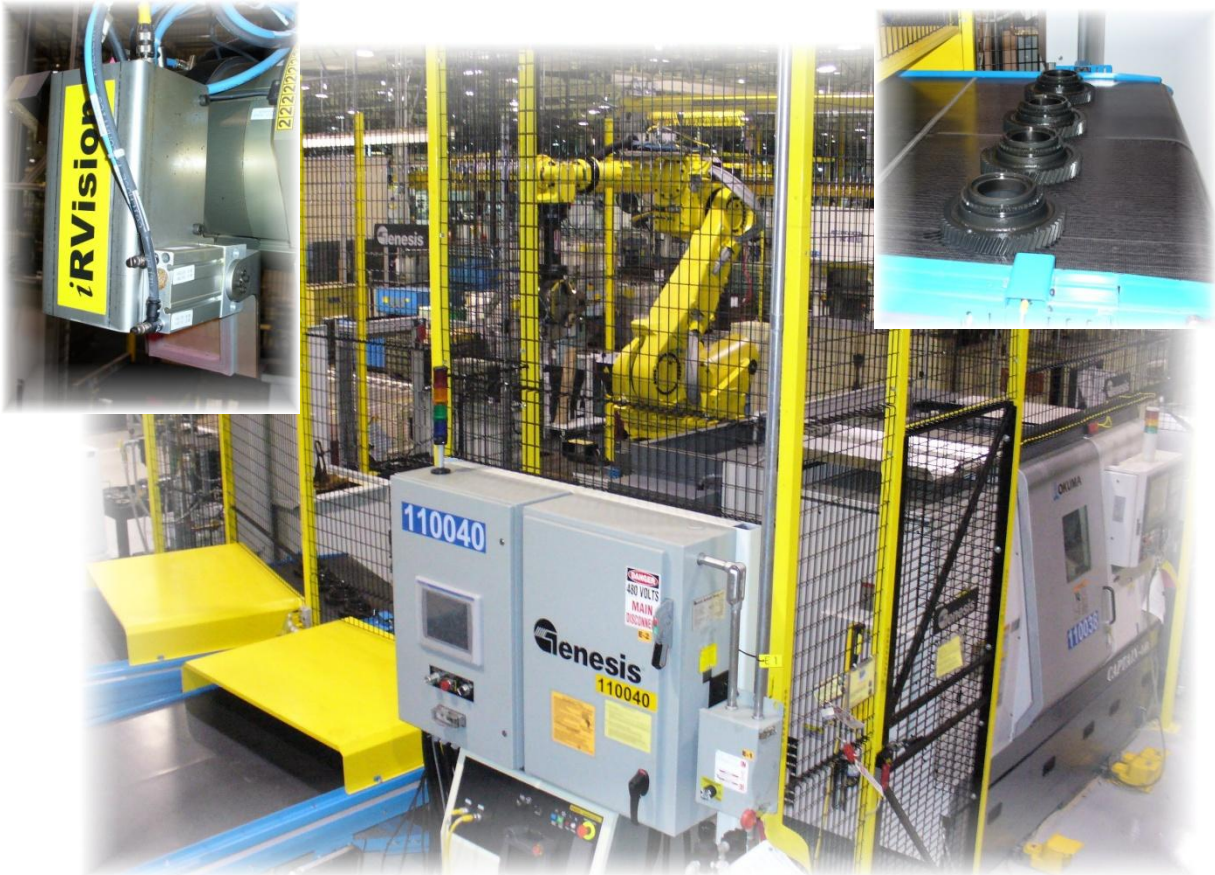


Genesis Case Study #: J6148-001  
Application: Robotic Lathe Tending  
Market Segment: Automation / Agricultural  
Product: Taper Cone Range Gear  
Cyclotime: < 60 seconds



### Summary

Parts are loaded onto a single inbound belt conveyor by an operator, which then travel into the robot zone. Once the parts are detected, a Fanuc R2000iB scans the inbound conveyor using a gripper mounted Fanuc iRVision/2D vision package to detect correct part number, presence, location, and orientation. The robot picks up the part utilizing vision offsets with a dual gripper and rotates over the Okuma Capatin L-470 Lathe, which has been equipped with a custom moonroof for robot access. Once the lathe cycle is complete, the robot unloads completed part and loads a new part and starts the lathe cycle. Next, the robot moves to a airknife and slowly moves the part through the air knife in order to remove any unwanted chips. The robot then moves to a customer supplied gauge, and exchanges a gauged part with an ungauged part. The robot then rotates to the part washer and repeats the load/unload procedure and starts the washer cycle. Finally, the robot places the finished part onto an outbound, powered belt conveyor.

### Project Challenges

- Allow access to lathes for tool change and process adjustment without interrupting the robot cycle.
- Robot able to quickly load and unload parts with the same end of arm tool
- Okuma Thinc control panel needed to be fully accessible during production without interrupting the robot cycle.
- System to be able to find randomly placed parts on the inbound conveyor without hard tooling.
- Integrate with several different machines
- Uptime of 95%.

### Genesis Solution

- Single-robot workcell with a Fanuc R2000iB robot mounted on a five foot riser
- Dual gripper with identical jaws for quick load/unload process
- Fanuc iRVision/2D package with red LED lighting system
- Gripper mounted vision system
- Rear lathe access for the robot so that entire lathe front is accessible to operator

- 10" AB Panelview Plus Operator Interface (HMI)
- Integration with customer-supplied Okuma Captain L-470 lathe via Ethernet/IP
- Integrated 12' safety enclosure
- Integration with part gauge
- Integration with part washer via Ethernet