

Case Study – Deburring Pinions Cell

After the implementation of several machine tending and deburring cells, this customer needed a stand-alone deburring cell that would pick parts from bins, deburr, brush and mask the parts and load the parts into heat treat racks.

System Requirements

- To deburr and chamfer cut gear surfaces to a close tolerance
- Process sixteen part numbers
- Run economically and effectively in small batches
- Create an operator friendly environment – **TEC Path Wizard**
- Unload incoming parts from standard plant dunnage
- Load deburred parts into a company standard heat treat basket
- Meet the financial goals set by the customer for payback
- Keep the operator employed as the operator of this cell and additional cells
- Produce 500 parts per shift
- Do not nick the parts
- Eliminate all human touches





Description of the Solution

- TEC designed and built an infeed system consisting of a hydraulically-powered lift table, overhead mounted camera and lighting system and electric gantry stacker for handling the layers of dunnage.
- The robotic end-of-arm tools include a gripper tool to pick the parts from the dunnage, a collet chuck for gripping the part during the deburring process and a gripper tool to dip the part into the masking compound and load the heat treat rack.
- A non-contact part finding technique was used to locate the exact detail needed to begin the deburring routine. A fixed and non-compliant deburring tool was used; as was a powered brush. The rigidity of the robot arm and the deburring tool resulted in superior machining of the parts.
- Once deburred, the robot regrips the part, dips it in masking material and places it into the heat treat rack assembly.
- TEC used the Staubli RX260 6-axis floor mounted robot with the CS8HP controller, Air Turbine high-speed deburring spindle, Schunk grippers, Microcentrics collet chuck and Cognex vision system.

No PLC was used in the system – the superior Staubli VAL3 programming language provides all of the logic and motion commands for the system operation.

Customer Benefits

- Up to 600 parts per shift realized
- No human touches, down from five in the previous manual operation
- Heightened operator involvement with part quality in lieu of simple repetitive handling routines
- Work in process in the area was reduced by 50%
- The system eliminated of this process step as a possible bottleneck to the plant
- The **TEC Path Wizard** eased part-to-part changeovers and path adjustments while machining – this resides in VAL3
- No PLC in the system simplifies the control scheme and lowers the installed cost for the customer



TEC is a Staubli Robotics Strategic Partner

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