

## Case Study –Press Load/Unload

This manufacturer of BMW components had a labor-intensive process where seven bushings were fed into press area that consisted of two presses; the bushings were manually lubricated and placed and the main steel body (a carrier for automotive axles) was also handled manually from press to press.

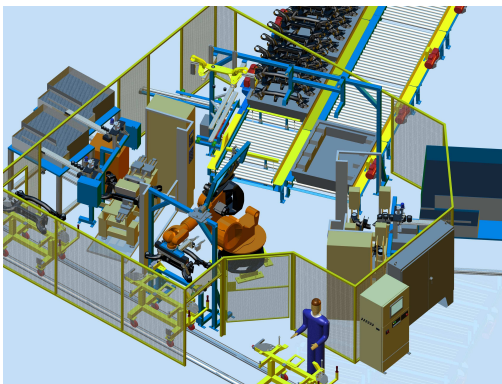
While the operators were able to keep up with the takt time requirements of one part complete every 120 seconds, there were often breakdowns in the flow of materials and at times back injuries.

The robotic solution proposed by TEC included TEC accumulating infeed conveyor and dunnage exit conveyor, a KUKA KR150L150 6-axis robot with TEC end-of-arm tool, bushing bulk feeders and automatic orientation devices and lubrication stations, carrier infeed automation and empty dunnage return conveyor, assembly cart floor details with clamps and cell controls.

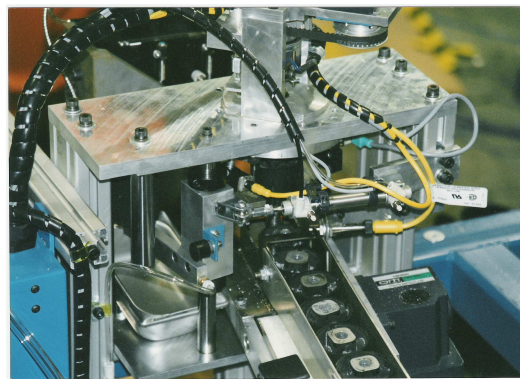
The challenges included picking carriers from plastic dunnage as they arrived from the supplier, handling the dunnage once emptied so that new parts could arrive, proper lubrication and orientation of the bushings before pick by the robot, a turnover operation of the finished carrier before it is placed into the assembly cart and managing datum control in the marriage of the parts to the press fixtures when the carrier is a welded steel assembly.

### System Requirements

- 99% uptime
- Tie into the assembly conveyor and its PLC
- Meet or exceed the manual operation's takt time
- Provide labor reduction
- Provide consistent throughput



Isometric view of the cell

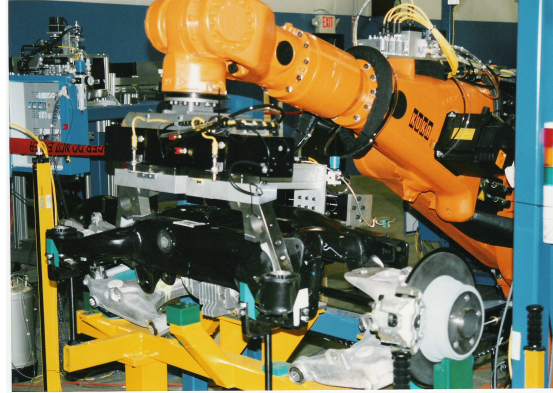


Bushing feeder

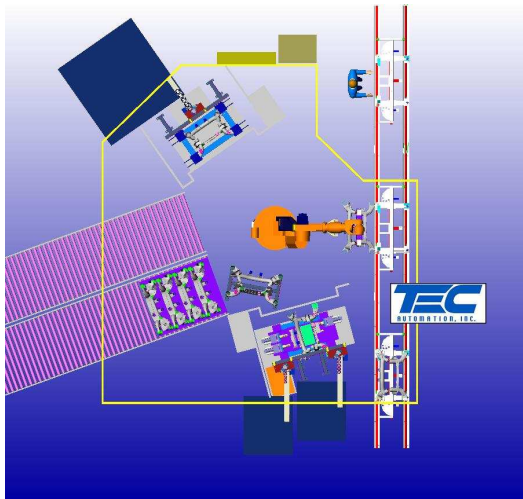
You can see the dunnage with parts arriving on conveyor, the two presses each with bushing feeders, perimeter guarding, assembly cart arrival station and robot. The bushing feeder and lubrication was combined with the bushing orientation system in the TEC device on the right.



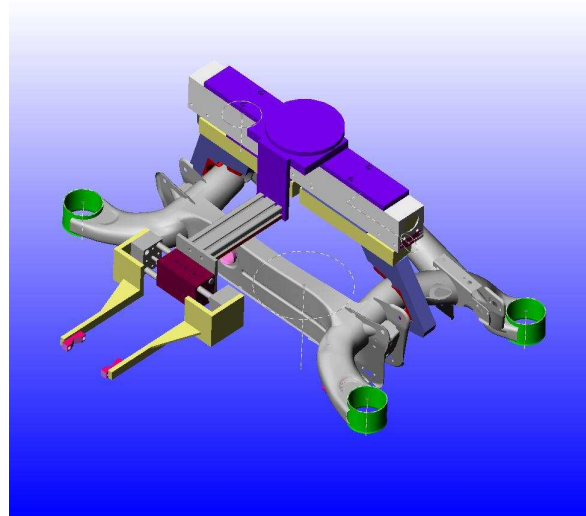
The turnover stand



The part unit into the assembly cart



Plan view of the cell



The end-of-arm tool with the carrier in place

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