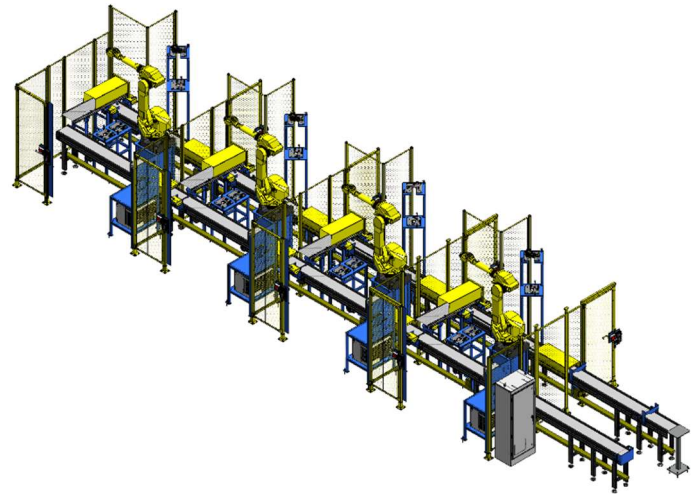


HIGH VOLUME MACHINING LINE

CHALLENGE

Even Automation was tasked with designing and building an automated line for machining pairs of cast iron steering knuckles in a very tight area. Despite the space constraints, the customer required a high-volume production system that could handle 700,000 parts per year with each part requiring three different cutting operations. One of the primary challenges was developing a solution that could fit within the space constraints while also being flexible and scalable to allow for future growth and expansion.



QUICK FACTS

Industry: Automotive, Machining

Technology: Conveyance, Material Handling, Robotics

Volume Requirement: 700,000 per year

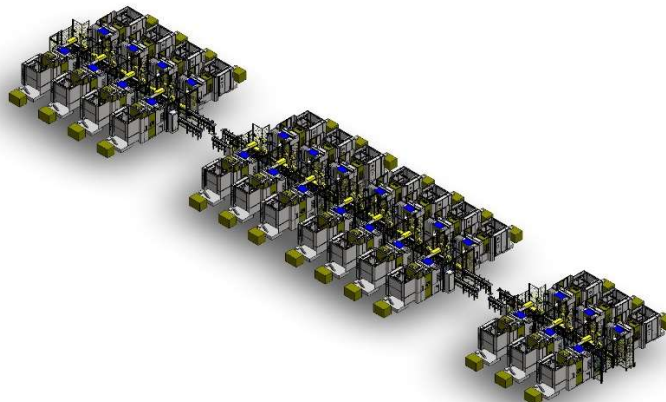
CNC Cycle Time: 50 sec/part

SOLUTION

To meet the customer's unique needs, Even Automation designed a modular solution that could easily be scaled up or down by adding or removing cells. This made it possible to fit the entire production line within the tight space requirements while also allowing for future growth. The system includes 28 CNC machines, 14 Fanuc robots, over 128 meters of conveyor, and several custom mechanical fixtures.

The design was also able to be duplicated across all cells, making it easy from a maintenance perspective, spare parts, and more. This duplication of design and use of standardized components made it less expensive to manufacture and maintain the system. Additionally, the software was all the same for each cell, which allowed for easy programming and updates across the entire production line.

The distributed control architecture was another key feature of the solution. Each cell had its own Ethernet enabled I/O devices and field VFD's which when paired with connector-based cables eliminated the need for extensive wiring. The system also could be started all at once from the central HMI or operated from gates located at each cell, even for faults and recovery of the robots.



OUTCOME

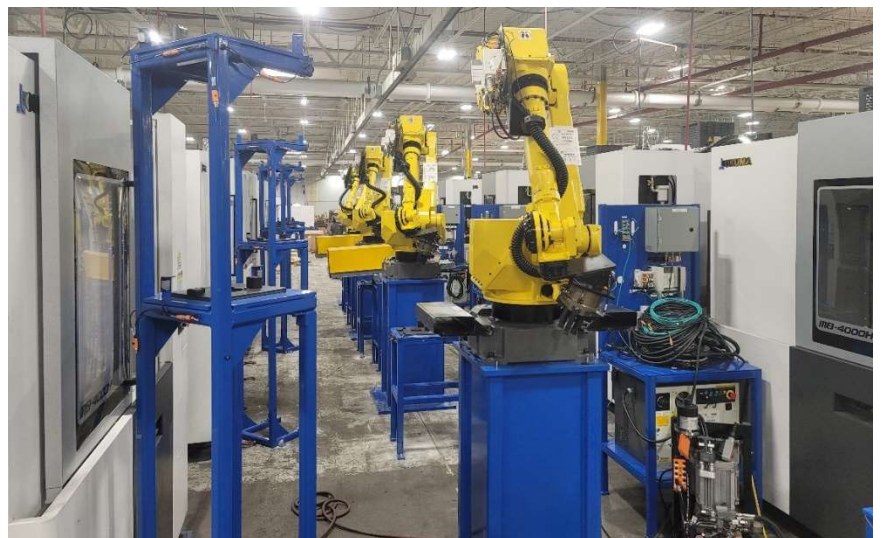
Thanks to the modular design and distributed control architecture, the automated line was able to meet the customer's high-volume production needs while operating within the tight space constraints. The entire system only requires four employees to operate, which significantly reduces labor costs and increases efficiency. The scalability of the system made it possible for the customer to adjust production as needed, while the duplication of design and use of standardized components made it easy to maintain and repair the system.

The distributed control architecture also improved system reliability and reduced downtime. If one cell went down, all the remaining cells could continue to run, minimizing the impact on production. The use of Ethernet networks and connector-based cables also reduced the risk of wiring-related faults and improved system uptime.

Overall, Even Automation's solution was a success, delivering a customized and scalable solution that met the customer's unique needs. The modularity and distributed control architecture of the system improved reliability, reduced downtime, and made it easy to maintain and repair the system.



6-axis robot loading a part into CNC machine



Placing robots onto pedestals during installation