

AUTOMATION LEADS TO DIVERSIFICATION, INCREASED BUSINESS & REWARDS

- JTEKT Automotive

The JTEKT Automotive story is a perfect example of how automation can greatly benefit manufacturers. In early 2016, JTEKT Automotive, a Tennessee-based automotive supplier, had a simple goal: Upgrade certain machining capabilities for a new project with a global automotive company. In the end, JTEKT discovered how a simple project request could blossom into the next level of productivity through new advances in automation.

JTEKT Automotive is part of the JTEKT North America group of companies. JTEKT North America, the North American division of JTEKT Corporation, is a global supplier of automotive steering systems and driveline components, bearings, and machine tools. JTEKT is a powerhouse in the automotive steering systems industry equipping one in nearly four cars in the U.S. with a steering system. JTEKT also supplies the automotive, industrial and aerospace markets under the brands of JTEKT® automotive, Koyo® bearings, Torsen® high-performance differentials, and Toyoda® precision machine tools. Headquartered in Greenville, South Carolina, JTEKT North America employs more than 6000 associates in 24 facilities, including 15 manufacturing sites, across North America.

JTEKT's engineering team provided a concept and process plan, and asked FANUC America take these plans and provide automation to meet JTEKT's requirements.

When the FANUC automation team asked JTEKT to allow them to provide a few automation solution concepts, JTEKT's management team was hesitant. The team's fear was that investing in additional automation equipment might be too expensive to implement. In addition, JTEKT had an aggressive timeline to quote the new business along with several other challenges that they needed to solve in order to be competitive.



But the JTEKT team changed its mind when they realized that the solution FANUC recommended provided them with greater flexibility than their previous systems with less maintenance and upkeep.

CHALLENGES

From the onset, the team needed to address several issues. To begin with, JTEKT's parent company worked with local integrators in Japan to develop the manufacturing process. They would build, test and then ship machining cells to the US facilities. This provided the company with first-rate production lines, but at times limited this Tennessee-based facility in its ability to customize its manufacturing needs. Locally, JTEKT also purchased equipment from numerous machine builders, which meant that the varied manufacturers' equipment did not communicate with each other seamlessly.

"Communicating the required signal streams for each machine to communicate with the automation was a challenge with so many overseas machine builders,"

explained Dennis Schang, JTEKT's engineering supervisor of diversified products.

SOLUTIONS

Working together, the team began with a comprehensive review of the part process flow, production requirements and a full audit of the required equipment – not limited to just machining.

FANUC developed a totally integrated system concept that included 3D automation simulation of the process flow, robotic machine loading and unloading capabilities and, most importantly, a better than expected production cycle time. All of the equipment within the system would be monitored by FANUC's custom HMI, allowing for one central location for an operator to access and monitor the system. Each system has over 30 pieces of equipment from many different builders, makes and models.

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This very specialized system consisted of two identical machine lines where each line contained five cells serviced with an overhead rail mounted M-710iC/T robot and an accumulation conveyor which fed a third line.

All of the local and international machine tools were integrated to FANUC's new automation system at JTEKT's plant.

“Machines produced from across the street to around the world, all speak the same language!” said Schang. The single centered machines were each interlocked and monitored, from the start of the line to the end with the process data stored in one location. Therefore, if something is missed, it will be flagged as an error.

“FANUC brought together a very knowledgeable and dedicated support team,” explains Schang. “Approximately ten applications experts traveled to Tennessee to work with our people to implement the shared turn-key system.” FANUC was able to provide a fully-integrated robust system that reduced downtime, without potential for skipped processes.

TRAINING THE TRAINERS

To make certain that the new system works smoothly and to make JTEKT's employees more comfortable using it, FANUC provided extensive training for JTEKT's trainers. FANUC set up an automation training class at JTEKT as well as online training so that employees are able to understand how to operate the new equipment.

To make machining easier, FANUC's iHMI provided users with an easy method to set up standard operations, validate the performance of their programs and cycles to make sure they are performing as expected. Since iHMI supports both animated and tool track renderings, it can easily identify the cause of alarms and then recommends a solution. Recovery notes were included so that JTEKT's operators can easily understand the problem and take the necessary steps for recovery.

“The classes and training really helped our employees to understand how this new equipment and technology could enhance traceability,” explained Wayne Young, JTEKT's production manager. “You don't miss operations. From a control standpoint, this was a significant improvement to our processes, efficiency and delivery of our commitment to quality.”

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RESULTS

Since launching the new system, JTEKT is now 45% more efficient on labor as compared to its counterparts throughout the world. Where previously an operator could only handle 4-6 machines, that same operator can now run close to 15 machines simultaneously. Employees loved the new system!

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Building on the success of its automation solution, JTEKT now sees new opportunities for its business. The previous system took up a significant amount of factory floor space, but since many of the robots used are on the top loader rail, the new system opened up valuable new floor space. The company diversified its business and recently won two additional significant new business.

“In today’s competitive manufacturing environment, opportunities to diversify while increasing efficiencies are keys to continued success,” explains Drew Rowe, JTEKT’s plant manager. “Working with FANUC has allowed us to expand our business and for our associates to learn advanced manufacturing skills.”

No doubt the quality standards and ongoing checkpoints within the new system, as well as the reduction of scrap and waste helped JTEKT to earn a Superior Launch Award from Toyota – only one of two companies in the US to get such an award.

According to Schang, “Without FANUC, JTEKT could not have achieved this level of integration given its in-house plant resources.”



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