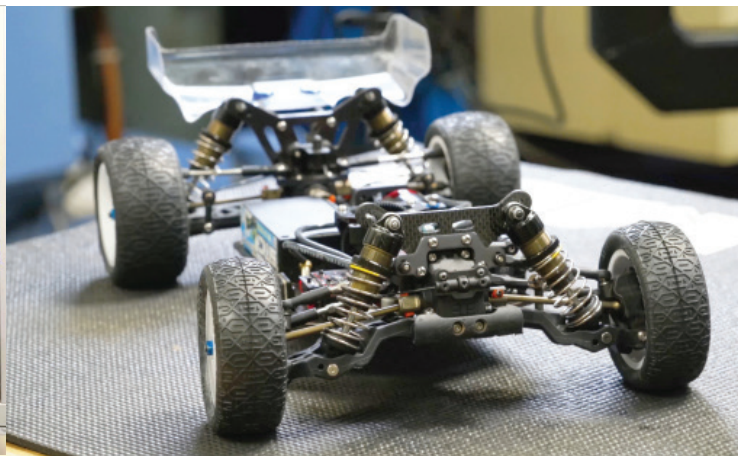
FANUC

Automating To Meet Increasing Demand

Moore's Ideal Products & Excalibur Tool



Sometimes success comes with a new set of challenges. Such is the case with Moore's Ideal Products, LLC (MIP) in Covina, California. Since 1978, MIP has designed and manufactured parts and tools for high-performance radio controlled race cars. In recent years, MIP experienced a sharp increase in demand for their products, especially their world-renowned hex wrenches. MIP needed to increase production of their hex wrenches, without sacrificing the production or development of other products.

The Original Process

To make the shafts for their hex wrenches requires both sides of a steel bar to be put through a grinder, each end with a different profile. Parts were loaded into the grinding center, and one end of the tool was machined to the required specifications. Once a batch was complete, the parts would be reversed, the machine set to run a different program, and the parts were run through the grinding center again.

Developing the Solution

Eustace Moore, the company's founder and CEO, along with MIPs engineering and manufacturing team, started to look for ways to improve the process. He met with Dan Wayman from Excalibur Tool, a designer and manufacturer of custom grinding machines. The team was looking for a way to increase the shop's production, while maintaining the highest standards for precision and quality. Dan used his experience and ingenuity to design a six-axis grinding machine powered by a FANUC Series 30*i* – Model B CNC and integrated with a FANUC LR Mate 200*i*D robot for load/unload operations. However, this was not any normal load/unload operation, there was a twist. The robot loads a part blank into the grinding chamber and one end of the part is machined. The robot then reaches back into the grinding

compartment, picks the part out of the collet and places it into a part 'flipper'. This flipper rotates the part 180 degrees and the robot loads it back into the machine so the machine can grind the other end. Once this is complete, the robot unloads it and places in the complete bin, and loads the next part. With the new process, the parts only need to be processed one time and that, according to Eustace Moore, has increased production by approximately 300%.

How it Works

Communications between the robot and CNC are handled using FANUC I/O Link *i*. Using this system, when a different part program is entered into the CNC, the robot will automatically adjust to the new length or machining time required. This eliminates the need to set program numbers for the grinding center and the robot separately as well as the chance of miscommunication about which part is running.

Excalibur Tool also designed a custom interface for MIP using FANUC Picture. Dan consulted with Eustace and his engineering and manufacturing team to determine which information was required on the operations screens. The goal was to provide access and visibility to information that was needed and useful, while moving unnecessary data to other screens. Dan used FANUC Picture to design custom layouts that were easy for MIP's operators to use, while providing the information they needed and the flexibility to make changes. Eustace and his team were very impressed with the level of customization that was available and how quickly Dan could implement their requests into the system. The result is a user interface that is easy for the operators to use and understand, while providing the operational data they need to ensure everything is running smooth.

MIP can now run lights-out manufacturing, increasing their production and freeing up their employees to take on new products and more challenging tasks.

Support Makes a Difference

Excalibur Tool has a long history of using FANUC robots in their machines; however they recently started incorporating more FANUC CNCs as part of the solution. Dan finds the FANUC CNCs are extremely capable and can handle even the most complex grinding systems he designs. The greatest benefit for him however is the support he gets from FANUC. Previously, he would design a machine and the control system from the ground up which involved sourcing motors, power supplies and control units from multiple suppliers. This posed a challenge when it came to support. If a customer experienced an issue with their machine, Excalibur needed to help troubleshoot the problem, and then determine if the part was still available or if the manufacturer was still in business. With a growing number of aging machines in the field, Dan and his team were spending more time chasing down compatible replacement parts or engineering a new solution if parts were no longer available. FANUC's lifetime support for their products means he no longer has to worry about tracking down alternatives for obsolete parts or engineering new solutions. With this support from FANUC he finds he can solve his customers' problems faster, getting them back up and running quicker and giving him and his team more time to focus on building more, smarter machines.

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