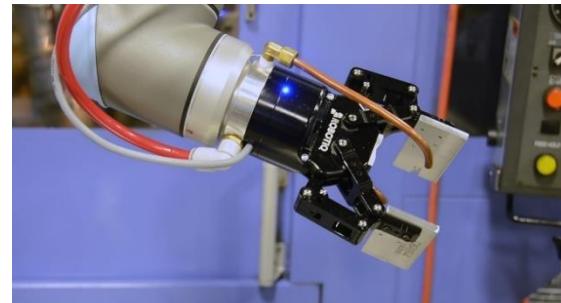


Whippany: Increased productivity without capital expenditure

Decision Time

When Whippany Actuation Systems experienced increased demand for specialized parts, they needed to increase productivity. Quickly.

The company – a manufacturer of rotary and linear electro-mechanical actuation systems for the aerospace and defense industries— and its 170 employees faced some important choices: buy a new CNC machine, outsource the work, or introduce automation.



"We were faced with an overloaded condition at certain work centers," explains Phil DeMauro, manager of manufacturing engineering at Whippany. "One option would be to outsource some of those products to subcontract manufacturing rather than doing it where we would rather do it, which is in-house."

With CNC machines costing several hundred thousand dollars DeMauro and Russell Harter, manufacturing engineer at Whippany, took a trip to the March 2015 Automate trade show in Chicago to explore automation possibilities.

That's when they first encountered Universal Robot.

Eye-catching automation

"We saw a host of manufacturers and the Universal Robot caught our eye as an effective solution that can be implemented very easily and programmed very easily. A collaborative system that doesn't require a lot of the traditional guarding and safety that other robots require," says DeMauro.

DeMauro and Harter, engineers with more than 40 years of combined experience at Whippany, contacted Eric Cortese, a sales engineer and robotics product specialist at Axis New Jersey, the local area distributor for Universal Robots and Robotiq, to find out more.

Few Whippany employees understand the tasks that were to be automated better than Patrick Cain, gear machinist at Whippany: "My job is to take blanks that come here from other machines and machine gears on them. When I'm done with those blanks I also deburr them and sometimes use another machine to do the other side of the gears."

Step-by-step: Whippany needed a robot that is able to slide open the door of their CNC machine, reach in, take a part out, relocate it safely, pick up another part, put it in the machine, slide the door closed, and instruct the CNC machine to begin its work.

If everything went to plan, Whippany hoped to increase production capacity by having the robot work unattended overnight –and all without the major capital expense of a new CNC machine.

Additionally, Cain and other employees would be freed up to spend time on other, less tedious tasks.

So, in May 2015 after a series of meetings with Cortese during which potential challenges were analyzed and the potential cost-effectiveness and capabilities of the collaborative robot system became clear, Whippany made their decision: to purchase a Universal Robot fitted with a Robotiq gripper.

Customized, integrated solution

And so the integration phase began.

Whippany wanted to integrate a set of customized adaptive grippers to the Universal Robot so that it could handle parts of different sizes. Robot and gripper also needed to be able to communicate with the company's CNC machine.



Choosing an adaptive Robotiq gripper for these tasks was a natural choice, says DeMauro. “The Robotiq gripper is a fully-developed application. Having something like this readily available, off-the-shelf, that can be mounted to a robot and you can easily adapt with custom gripper plates makes it a much quicker implementation.”

Integrating a Robotiq gripper with a Universal Robot is as easy as plugging in a USB and loading the drivers. The gripper itself is “very, very easy to use,” says gear machinist Cain. “I thought it would be more complicated than it is.”

To enable the robot to handle different parts, Cain swaps out custom gripper fingertips –a simple process that takes just a few minutes. “It’s a very short procedure,” he says. “Two screws on each finger. Pop them in and out. I don’t have to modify the robot programming at all.”

The ability to move the robot from one cell to another quickly and easily was also “a huge consideration,” says DeMauro. “We just pop a couple of locating pins in the floor and get up and running.”

The integration of the robot to the CNC was “straightforward,” says Axis New Jersey’s Cortese. “We had an outside integrator come in and help us to wire the discrete I/O to the controller of the gear-

shaper and the Universal Robot. Once we had everything plugged in, we were able to label all the I/O points and map everything out."

The system's control program allows users to monitor specific I/O tied to events happening on the machine from doors opening and closing to the unit being loaded. When everything is first turned on, the operator can see an I/O tree lighting up. This indicates that robot, CNC machine, and gripper are communicating with each other.

By September 2015, Whippany's brand-new, customized, collaborative robot system was ready for its first day at work.

Benefits

With Whippany's CNC machines running two additional, unattended shifts, the company's goal of increased production capacity has been achieved, says DeMauro, who expects to achieve ROI on the robot in a little under one year.

Collaborative robotics has not just made Whippany more competitive, the company is now considering the possibility of in-sourcing more work because of its enhanced production capacity.

"Overall it helps the business, from a cost standpoint, from a productivity standpoint, and from a capacity standpoint," explains DeMauro, who expects company margins to improve as a result of automation.

For gear machinist Cain, automation frees him up to do more interesting work. "The robot helps me out by taking over the tedious stuff so I can go ahead and do setups. I can also deburr and get the other machine running. It frees up a lot of my time."

Future plans

Whippany now plans to introduce more collaborative robots to their machine shop.

"We've already targeted two other cells that we're going to implement robotics in. It's going to give us the ability to aid capacity with a workforce that is tasked with more value-added activities," says DeMauro.

Increased production capacity, improved employee experience, better margins, increased throughput, an expected <12 month ROI --it's amazing what a highly-mobile, cost-effective, easily-installed, robot and gripper team can achieve.

Learn More

To learn more about machine tending applications, visit [Robotiq's Solutions page](#).

To learn more about setting up your first collaborative robot cell, download the [learning kit titled: Getting Started with Collaborative Robots](#).

About Whippany Actuation Systems

Founded in 1947, Whippany has proudly served the aerospace and defense industries by designing and manufacturing specialized actuation solutions for commercial and military applications.

Whippany's mission is to design, manufacture and support unrivaled, highly engineered electric actuation solutions; delivering product quality and performance that provides maximum value to our aerospace partners. Its vision is to be the preferred innovation partner for the advancement of the most efficient, more-electric aircraft.

About Robotiq

Robotiq's mission is to free human hands from tedious tasks so companies and workers can focus where they truly create value.

Our grippers and sensors enhance robot application flexibility and integration simplicity.

Our products are sold and supported in more than 30 countries, through a network of highly capable channel partners.