Collaboration Automated: A Vlier Success Story



In producing the vital equipment that helps make the world work, manufacturers across critical industries have long relied on Vlier Products' precisely engineered parts. And though the storied company's reach easily circles the globe, some of its greatest impacts hit close to home—under-the-same-roof close, to be (aptly) precise. Vlier's parent organization, Hutchinson Aerospace & Industry, wanted to build greater efficiencies while engaging employees with more meaningful, valueadded work. Leadership determined that the solution lay in automation, something both Hutchinson and Vlier know more than a little about.

Innovation Born of Necessity

Hutchinson was facing the formidable challenges affecting most manufacturers. Material costs were rising, and labor was in short supply. Enter the Automation Team, tasked with the formal mission to "seek and address opportunities where waste can be eliminated by reducing process variation and increasing quality consistency through automated processes and/or the implementation of innovative assist devices."

The team's first project was to address inefficiencies in the manufacturing of a part made for one of Hutchinson's largest defense sector customers. This process required a team of operators to spend significant time manually cleaning off the flash and debris inherent to the molding process. Soon, the project became the topic of shop talk between Automation Team members and Vlier's own experts.

"The automation engineers help with some projects we're working on, and we help with some work they're doing," said Zach Hill, senior mechanical engineer at Vlier. "Whenever they need something for detent, leveling, etc., they come to us, and we ask the right questions to ensure we recommend the most effective solution. I've got a pretty good working relationship with those guys."

The team customized a "cobot" (a robot designed to share space safely with a human operator) for the task and built a cell in which it could work efficiently and uniformly. The machine was named Cobot 1.0, and it worked beautifully. However, not long after it was deployed, the team realized that employees were still spending precious time repetitively cleaning the same part, removing excess adhesive with one brush, then cleaning out the threads with another.





As the team brainstormed a revised version, Bill Coffey, Hutchinson engineer and one of four Automation Team members, consulted Zach.

"Bill had done his due diligence in researching, and he came to us knowing roughly what he needed," Zach said. "He thought it was a good application for ball plungers, since they would compress, and then once it was done, they would lift it back up and provide that kind of equal horizontal path every time. The robot can't really tell if something's a couple degrees off when it's just supposed to be moving up and down. Our parts make sure that it's freed from sticking or binding, and now we can move on to the next step."

With Vlier's input, the Automation Team went to work developing what they dubbed "Cobot 2.0," adding parts and functionality that could handle those tasks as well. From that point forward, the team made sure to focus on three major pillars in any project they took on: flexibility, scalability and portability.

"In our business, we build one part for a week and then switch over and build another part for two days," said Automation Team leader, Dave Brushaber. "We build 10 of these, 100 of those. The biggest challenge is finding the justification for a \$20,000 piece of automation to solve a problem for a part that brings in revenue of only \$10,000 a year."

The answer, Dave says, lies in the three pillars. "We need a solution flexible enough to adapt to multiple applications, scalable to larger and smaller runs, and portable, so it doesn't take up floor space when it's not needed," he said.



Building on Success

The cobot projects set the bar for the Automation Team's ongoing success. They were able to identify specific goals that should be reached when considering automation to address inefficiencies and source variations that create scrap or engage employees in non-value-added work. These goals are: improved consistency for lower production cost, greater production throughput per direct labor hour, reduction in human variation and improved ergonomics to reduce repetitive motion incidents. When these goals are achieved, the Automation Team creates a greater capacity for the organization to take on additional high-ROI projects.

The other key intention was to free employees for more meaningful, value-added work.

"Sitting there with a pair of scissors, trimming rubber off a part, isn't what most employees would consider a 'great thing,'" said Dave. "Automation frees people from those repetitive minor tasks and allows them to focus on work that is more valued by our customers."

To date, the Hutchinson Automation Team's efforts have resulted in a \$1.5 million improvement in productivity, consistent higher quality of output, improved and predictable on-time delivery, improved ergonomics and decreased injuries due to repetitive motion. Employees produce more throughput while increasing the time they spend doing value-added work, creating consistent high value to the benefit of our customers. With less time spent on repetitive tasks and increased pay for quality consistency, jobs are more fulling and rewarding.

And as these outcomes illustrate, collaboration breeds efficiency—and success.

"It's always nice to have some people you can turn to for a different take on things," Zach said. "We're not necessarily fully engaged in each other's projects, but when you need someone with that kind of outside viewpoint, there's someone there."