

PrecisionForm Inc.

ActiNav Boosts Competitiveness,
Empowers Workers and Extends Lifespan
of Legacy Equipment At PrecisionForm



CHALLENGE

What task in automation poses the most challenge? How to give the robot the part. PrecisionForm soon came to this conclusion when automating their debut project, which involved using a robot to select piston rings and set them on a micrometer for inspection. The rings were batch manufactured and shipped in large bins with other parts at the contract manufacturer in Pennsylvania. An operator had to first arrange them on a tray in a grid pattern so that the cobot could pick them up.

"50-75% of our time spent getting that application up and running was figuring out how the robot would pick the parts," says Alex Corckran, President and CEO of PrecisionForm. "Having an operator lay out parts for the cobot was still faster than doing the whole inspection process manually – but wouldn't it be nice if the cobot could just pick directly from the bin and bypass this whole step?"

For their upcoming project, taking components out of bins for CNC milling, PrecisionForm started looking into bin picking options. To find out if the parts could be taken out of bins, the business contacted several vendors and sent them sample parts. *"The answers were always, 'Yes: but...' and the 'buts' were never acceptable to us,"* says Corckran, recalling how some systems had trouble with parts that were certain colors, others had issues with flat parts, while

some systems required the vendor's engineer to come out and handle the change-over from one part to the next.

"We have 50 to 100 parts that we touch on a weekly basis for inspection or secondary processes," says the PrecisionForm CEO. "The vast majority of those parts are not high enough quantities to justify having a fully automated solution that we can't easily switch between parts."

Using a bowl feeder for part presentation wasn't a viable option, explains Corckran. *"Bowl feeders are effective when you have very high volumes and you have the right part for the job. For other parts, when you have lower volumes, the changeover between one part to the next on a bowl feeder is either impossible, or just takes too long to make it effective. In many cases, it's just easier to have a person do that work rather than switch over the automation process."*

SOLUTION

Corckran was skeptic when Universal Robots (UR) and UR distributor Applied Controls suggested a test of the ActiNav solution to PrecisionForm. *"We figured it was going to be the same as all the other bin-picking solutions, where we send them a part and weeks later they send us a 'But,'"* Corckran said. Nevertheless, PrecisionForm submitted sample parts, CAD drawings, and 3D models to the ActiNav team. Corckran admits. *"We were truly astonished. We supplied them two pieces, one of which has a very little flat surface that is never seated properly in the bin, and within 24 hours they had sent us three demo movies of ActiNav really pulling the parts out of a bin,"* the author said.



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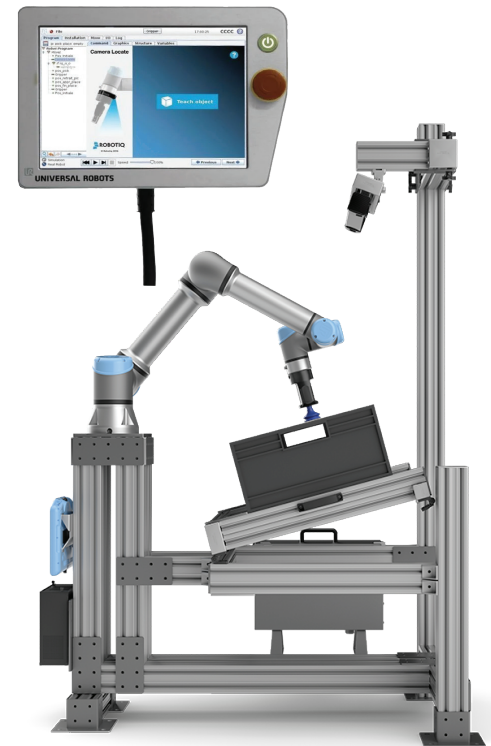
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SIMPLE AUTOMATION CHOICE

The UR3 cobot from Universal Robots conducts the initial piston ring inspection process, and the UR5 loads and unloads components in a brake press. PrecisionForm already had both of these cobots. PrecisionForm chose to purchase a second UR5 equipped with the ActiNav solution and deploy it for a very straightforward, low-hanging fruit task: picking firearm parts out of a bin and into a CNC machine. This decision was made based on PrecisionForm's positive experiences with Universal Robots' cobots and the impressive results of the initial bin picking samples. The task is ideal for automation because it has a cycle time of 90 seconds and only needs one full-time operator to tend to it.

The ActiNav system took maybe a day to set up and deploy, says Dan Vazquez, industrial automation engineer at PrecisionForm: *"The first step is to define the environment and calibrate the sensors, which is very straightforward. You drag the robot arm to points where you want to place environment objects and once you define those points, the robot will autonomously plan its paths based on that information."* Next, Vazquez simply fed the cobot a CAD file of the part to be picked. *"ActiNav will be able to identify the part within the bin, as well as its position on the end effector while it also autonomously plans further movements,"* he explains, adding that PrecisionForm implemented two re-grip stations in the cycle where parts are placed to optimize cycle time and give the cobot the correct angle to pick the part for final placement.



ACTINAV EMPOWERS WORKERS, SOLVES LABOR CHALLENGES

PrecisionForm can't be competitive at an international level from Lititz, Pennsylvania with one operator running one machine at a time, says Corckran: *"We have a whole lot of very skilled workers. A lot of these very repetitive tasks are intermittent, so we often find ourselves having to take a highly-skilled person and put them on a very repetitive task, and that's not great for morale, and it's not cost-effective either."*

Following the ActiNav deployment, operators can run three or four machines at a time, enabling the company to stay competitive and helping it to overcome challenges around intermittent requirements for temporary labor. In Corckran's experience, when temporary labor is required to take on intermittent tasks, finding *"good, qualified folks to show up on a regular basis when you need them"* is a challenge. ActiNav solves that problem.

