

## PICTURE PERFECT INSPECTING

**ABOUT ELECTRONIC SYSTEMS INCORPORATED.** South Dakota Manufacturing and Technology Solutions (MTS), a NIST MEP affiliate and member of the MEP National Network, offers companies automation help as a new era of manufacturing begins. What technology was once only feasible for large companies is now becoming more available to small and medium-sized manufacturers.

Electronic Systems Inc. (ESI), a lean electronics manufacturing service provider with 250 employees in Sioux Falls, South Dakota, benefited from collaborating with MTS on their new technology service.

**THE CHALLENGE.** Leadership at ESI reached out to MTS for help with identifying and integrating technology that would assist with their inspection process. ESI felt confident collaborating with MTS because of the center's automation expertise, programming abilities, and a strong past working relationship. Together they decided on building an automated inspection system using a collaborative robot and a robotic-guided camera. A collaborative robot, or cobot, was appealing for many reasons. The lightweight, transportable size made it easy to integrate on the production floor and more cost effective than a traditional robot. The intelligent safety features of the cobot allows operators to feel comfortable working alongside the piece of technology too. If anything bumps into the cobot, it will simply stop until prompted to start again.

**MEP CENTER'S ROLE.** MTS aided in the design and development of the cobot attachments, including a customized 3D printed gripper and placeholders. One placeholder signals to the cobot that the assembly is ready for inspection, prompting the robotic guided camera to take pictures of the assembly from a variety of different angles. After analyzing the photos, the robotic arm places the assembly into a pass or fail placeholder to let operators know whether the assembly is ready to be packaged. Any problems perceived when examining the assembly are on the monitor's display next to the cobot. Operators can quickly pinpoint where the problem is located and make changes before proceeding.

The automation piece is a strong asset to the team, clocking in an average of 18 hours a day. "The operators have been very receptive to it," according to Hans Haase, ESI manufacturing engineer. Its user-friendliness and intuitive features have increased productivity and allowed operators to focus on other important aspects of the assembly process. While more changes in technology adoption are likely to occur, their dedication to advancing their employees' well-being and productivity while providing legendary service to others will not.

"Employees often think robots will replace jobs, but that's not even close to what we're looking to do. We want to utilize the robot to help our people become efficient and enjoy their work more -- shifting the tasks they don't enjoy as much to the robot and giving them more opportunities to do what they like doing."

-Hans Haase, ESI Manufacturing Engineer

## RESULTS



Improved quality control



Real-time defect detection



Reduced rework



Increased employee and customer satisfaction

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