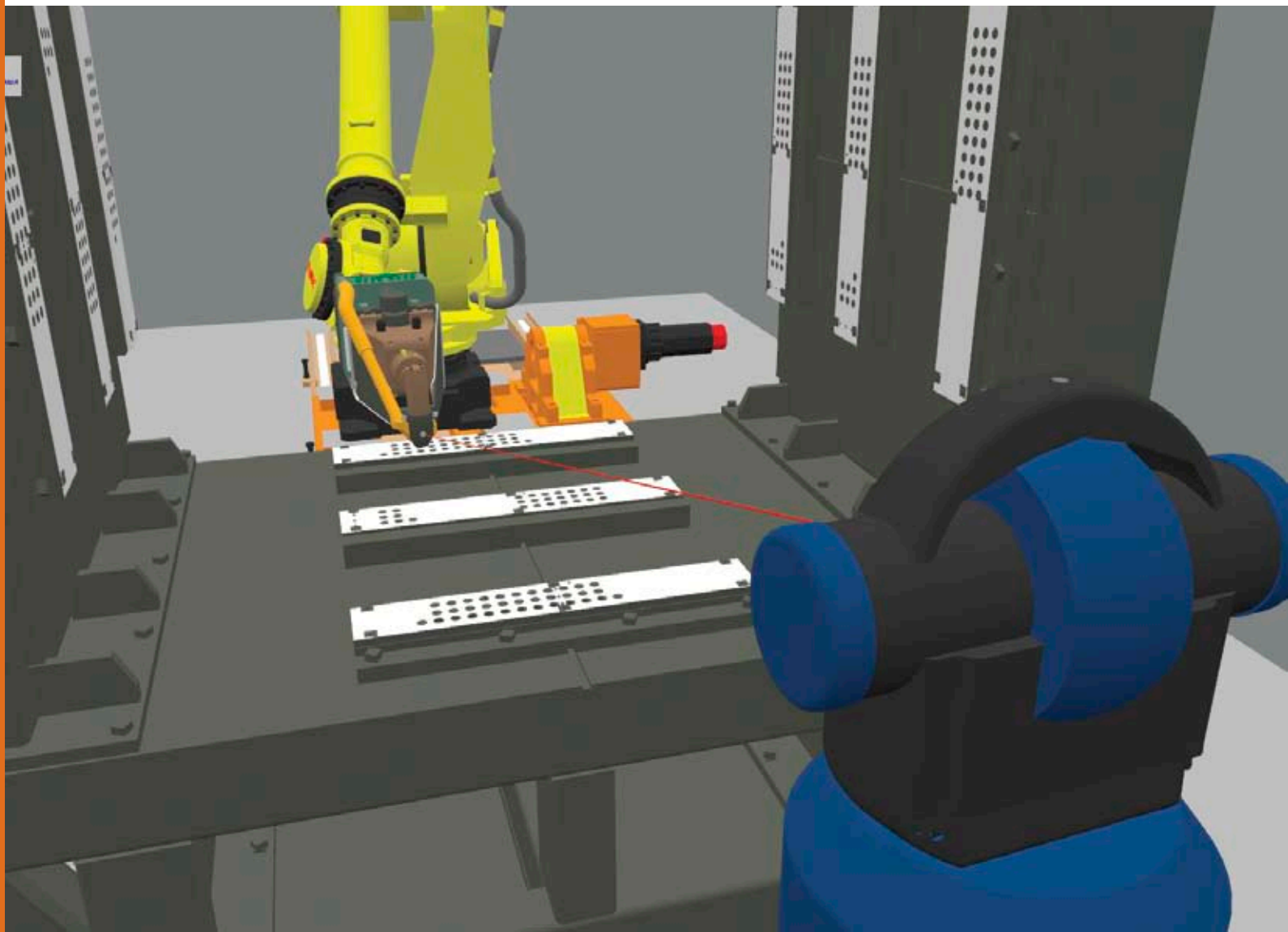


FARO Laser Tracker Aids in Robotic Drilling Project for Military Aircraft



Variation Reduction Solutions, Inc. (VRSI) is using the FARO Laser Tracker to guide drilling robots on key components of military aircraft. This new single, automated cell method is helping to save millions of dollars over the course of the program.



Variation Reduction Solutions, Inc. (VRSI) has been providing customers with state-of-the-art vision solutions for metrology, industrial robot guidance, and contract inspection services since 1998. The VRSI team consists of the most experienced vision, robot guidance, and metrology specialists in the world to provide customers with expert services and unbiased technology evaluations. VRSI has been using FARO Laser Trackers as its metrology inspection standard since 2002. The company currently owns five FARO Laser Trackers and a FARO Laser Scanner that it uses to provide contract inspection services to automotive and aerospace customers.

VRSI is the prime contractor on two ongoing SBIR programs administered by the Air Force Research Laboratory (AFRL) and recently completed a third, known as Inlet Duct Robotic Drilling (IDRD). IDR is now moving to the production stage and involves metrology-guided robotic drilling on key components of military aircraft.

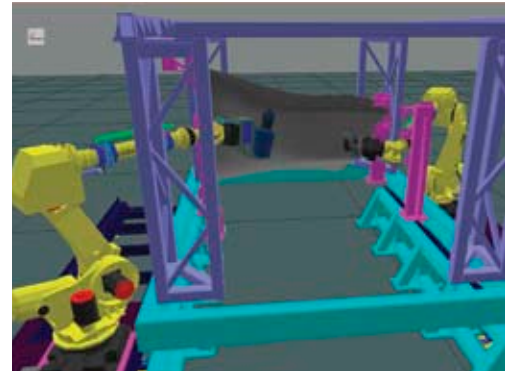
Problem



IDRD required VRSI and its partners to guide a robotic drilling system that drills and countersinks holes into a military aero structure. The traditional method of drilling these structures required operators to manually crawl into the duct with hand drills and templates. This process was slow, ergonomically challenging, and lacked in-process verification of hole accuracy. VRSI and its partners knew they could perform this job more quickly and efficiently using off-the-shelf robots with external guidance, and so they evaluated several technologies and decided on a laser tracker.

Solution

The FARO Laser Tracker is the ultimate solution for VRSI since it is small enough to fit in the duct, yet achieves extremely high accuracy. The Laser Tracker is used to correct the drilling robot's position to a radial tolerance of less than two thousandths of an inch. After the drilling sequence is completed, the Laser Tracker is again used to guide a robot mounted inspection device to the proper location to inspect the drilled and countersunk holes. The FARO Laser Tracker's attributes – size, portability, stability, repeatability, traceability, and accuracy – are benefits that VRSI has seen over traditional methods. Leveraging the efficiency of the latest off-line robot programming methods, the FARO Laser Tracker is used to guide the drilling of over 5,000 holes in the operation.



"Using the FARO Laser Tracker in this application has helped us because it was a known commodity in an otherwise unproven application," said Don Manfredi, Chief Operating Officer at VRSI. "This allowed VRSI and our integrator partners to start this development project with a higher manufacturing readiness level which helped bolster the confidence of the project team and the technology."



Return on Investment

Don summarized the return on investment experienced from using the FARO Laser Tracker on this project: "A single automated cell replaces several individual, manual cells, and reduces the time to build from weeks to days. Although we are unable to share real cost savings numbers due to the nature of this job and the customers involved, we can safely speculate that we are saving millions of dollars over the course of the program with IDR."

The success on this project has led to the purchase of this cell by the end customer and FARO Laser Trackers will be used in the production cell.