

Quality of Waterjet Cutting Machines Improves by Using the FARO Laser Tracker



Using previous methods, laser calibration of WARDJet's waterjet machines would take up to three hours. With the FARO Laser Tracker, they can now do the same work in close to one hour. The FARO Laser Tracker has also allowed them to verify and analyze parts of their machines that they previously couldn't, taking their calibration, quality, and R&D to a whole new level.

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The science behind waterjet cutting has been around since the 1950s. However, it wasn't until the 1980s that waterjet cutting systems became commonly used for cutting high-strength materials. The process is actually quite simple – water flows from a pump, through plumbing, and out through a cutting head. It is commonly used to fabricate and manufacture parts for machinery and other devices. As one of the fastest growing machine tool industries, waterjet cutting has proven to save time and money in countless applications.



WARDJet, Inc., located in Tallmadge, Ohio, is a manufacturer of waterjet cutting machines. WARDJet provides their customers with leading edge equipment and support for anything related to waterjet cutting.

Problem

WARDJet had always ensured the linear accuracy of its waterjet cutting machines with laser interferometer readings and circularity with ball bar reports. However, they determined that they wanted to measure 3-D volumes with their new 5-axis machine and in their future product designs.

They realized that their current ability to innovate, measure, quantify, and advance using their existing tools had reached a ceiling. With their desire for constant improvement, they decided to look for an alternative.

Solution

"If you can measure it, you can improve it" is a philosophy WARDJet turned to in its decision to invest in the FARO Laser Tracker. This extremely accurate, portable coordinate measuring machine is opening doors that were simply not there without it.



The FARO Laser Tracker takes verification and quantification of all the static and dynamic variables of building a waterjet to the next level – volumetric mapping. Volumetric mapping measures the location of the cutting head in three dimensional space, which is different from the actual mapping of the X, Y, and Z axes, which requires interpolation to determine the position of the cutting head and is done in only two dimensions. Volumetric mapping is especially important when it comes to the 5-axis cutting head. WARDJet is now able to quantify accuracy in all five axes (X, Y, Z, A, and B) while the system is in motion and is actually cutting.

The FARO Tracker also allows them to see a complete representation of a machine. Previously, they had to piece together data shots that didn't always explain what was being seen. Now they not only take static measurements, but they can also take dynamic readings and compare them.

"With the use of the FARO Laser Tracker, we have been able to verify and analyze parts of our machine that we previously couldn't," said Dave Papania, Engineer at WARDJet. "It has taken our calibration, quality, and R&D to a whole new level."

Return on Investment

Using their previous methods, laser calibration of their waterjet machines would take up to three hours. With the FARO Laser Tracker, they can now do the same work in close to one hour.

The investment in tools like the FARO Laser Tracker has made WARDJet more efficient in production by gathering infinitely more data in a shorter period of time. The ultimate result has been a higher accuracy waterjet cutting machine with improved reliability.



"Everyone is amazed at the power and capability of the FARO Laser Tracker," said Papania. "It is extremely versatile, allowing you to measure in many different scenarios that were previously unobtainable."

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