



Increase Speed & Profitability with Six Degrees of Freedom Laser Tracker

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Midwest Metrology Solutions Reduced Inspection Time by 50% with the FARO® Vantage^{S6} 6Degrees of Freedom (6DoF) Laser Tracker System

Midwest Metrology Solutions (MMS) of Indiana provides on-site precision measurement services using state-of-the-art metrology equipment and software. With extensive knowledge of Geometric Dimensioning and Tolerancing (GD&T), a primary focus on quality, and proven track record in manufacturing expertise, MMS strives to ensure their customers have a competitive advantage.

MMS employs laser tracker technology for large-part inspection and alignment. Their main customers are companies which cannot justify a full-time tracker and operator setup, but still require high precision measurement on large parts.

The Challenge

Although laser tracker systems are the technology of choice for large-volume measurements, they have an inherent operational challenge: “The Achilles heel of the laser tracker is always line-of-sight,” explains Cody Thacker, owner of Midwest Metrology Solutions. “There’s always some place you just can’t get a tracker into. Whether there’s a deep hole you need to reach down into or a small surface that’s just around a corner from your tracker’s line-of-sight, for instance.”



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Historically, for operators to overcome the line-of-sight issue, they needed to move the tracker to multiple positions to gather data points on all the features required for a particular object. Commonly referred to as “leapfrogging”, this technique is time-consuming and reduces a project’s profitability. Moving and resetting a system also introduces variability, which poses the risk of reduced accuracy.

“Just recently we had to get the data points on a feature that was pretty close to the floor. Getting down there and being able to reach and see it with a traditional tracker set-up would have been really difficult,” says Thacker. “It would have required multiple setups as well as getting the tracker really low to the ground to be able to measure it.”

One Solution – Multiple Benefits

The FARO Vantage^{S6}, paired with the 6Probe accessory, offers 6 Degrees of Freedom (6DoF). After conducting due diligence, MMS selected both the Vantage^{S6} and the 6Probe. This solution solved the issues causing MMS operators so many headaches.

The 6Probe:

The FARO 6Probe is a wireless, hand-held 6DoF probe that seamlessly integrates with the FARO Vantage^{S6} and Vantage^{E6} Laser Trackers. With 6DoF, you can easily measure hidden areas that are not in the direct line-of-sight of the Tracker, plus small, hard-to-reach spaces or tiny features that cannot be accessed with a standard Spherically-Mounted Retroreflector (SMR).

“With the 6DoF system, we can just leave the tracker where it is and use the 6Probe to get the measurements we need. This system really expands what you’re able to do – both capabilities and efficiency on a job.”

Cody Thacker

Owner, Midwest Metrology Solutions



“On a recent project, we were setting three plates prior to them being welded into place,” explains Thacker. “Without the 6DoF, we would have had to use multiple setups to see all three surfaces. But with the 6DoF setup, the probe allowed us to basically ‘look around the corner’, locate where that plate was and then adjust it to get it in tolerance before we released it to the shop to weld. When you’re adjusting a part like that, you can end up jumping your tracker back and forth quite a few times. The 6DoF eliminates all that. With one tracker placement, we were done.”

ActiveSeek™:

Vantage trackers boast an industry-leading 50-degree field of view (FOV). ActiveSeek makes the Vantage Laser Trackers easier to use when your workspace has obstructions. If you need to break the tracker’s line-of-sight, the on-board cameras are able to locate the SMR or 6Probe, and measurement can quickly resume.

“It’s a night and day change in usability,” quips Thacker. “Sometimes you break the beam and do not even realize it. Now you can just turn the SMR towards the tracker and the tracker will find it. With the extra-wide field-of-view on the Vantage, ActiveSeek is a game changer for us.”

Four Good Reasons Why Midwest Metrology Solutions Chose the Vantage^{S6} with 6Probe

- 1** 6DoF allows MMS to efficiently deal with the line-of-sight issues that are often encountered with laser trackers. No need to move the tracker into multiple positions.
- 2** Easy to measure in small, tight, and hard-to-reach areas.
- 3** Great 6DoF accuracy at about 50% of the price of other alternatives.
- 4** ActiveSeek makes tracking in front of, behind, and around obstacles easy and saves time.

The ActiveSeek feature allows MMS operators to focus more on the measurements and less on not breaking the beam. It also mitigates safety issues when an operator is navigating tricky terrain. The operator can put the SMR in his or her pocket, climb a ladder to get to the next measurement point, aim the SMR at the tracker, and the Vantage will locate the SMR.

Portability:

The Vantage trackers feature a built-in Master Control Unit (MCU) so there is one less component to haul around when transporting the system.

“It’s a big benefit when it comes to traveling and flying with it. Everything is contained in one case that you can check in with airlines. As far as portability goes, that’s definitely an improvement,” explains Thacker.

Return on Investment

Time Savings:

“Leap-frogging is a functional workaround, but it always takes more time when you have to move your tracker equipment,” says Thacker. “It’s possible to cut your labor time by 50 percent, maybe even more in some cases, because you’re able to see and reach everything you need from one set up.”

Expanded Business Opportunities:

“We already had a laser tracker when we began working with [a major manufacturer of nuclear systems], but purchasing the FARO Vantage^{S6} with 6DoF definitely put us in a better position to pitch larger [and more lucrative] projects for them,” admits Thacker. “When we’re using the FARO system at their facility, they see the benefits of it, and that increases our value to them.”

Initial Investment:

“I’ve used trackers in industries from automotive to civil engineering to vehicular applications. When I saw that FARO 6DoF trackers had great accuracy specs, and also cost about 50 percent less than the brand I had been using, that price difference really came into play.”

In summary, when Thacker was asked to rate the Vantage^{S6} Tracker on various criteria, this was his assessment:

Criteria	Rating
Accuracy and repeatability	Excellent
Measurement speed	Excellent
Ease of use	Game Changer (ActiveSeek + wide field of view)
Portability	Excellent (no MCU)

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