

Benefits of in-house metrology for construction

How Knight Const. & Supply, Inc. drove newfound efficiency



Like many other companies in the construction space, KCS, a heavy industrial construction company, did not have in-house access to metrology solutions. In the construction industry, where engineers are constantly keeping up with last-minute changes, ensuring the accuracy of measurements for precise alignments before and during the project is crucial to safety and project success.

With projects often requiring on-the-fly changes due to issues like unexpected as-found conditions, atmospheric variations or equipment adjustments, not having access to in-house metrology equipment caused KCS to face challenges in ensuring accuracy and efficiency on its projects. The company's reliance on subcontractors for metrology services often led to delays, increased costs and data quality issues.

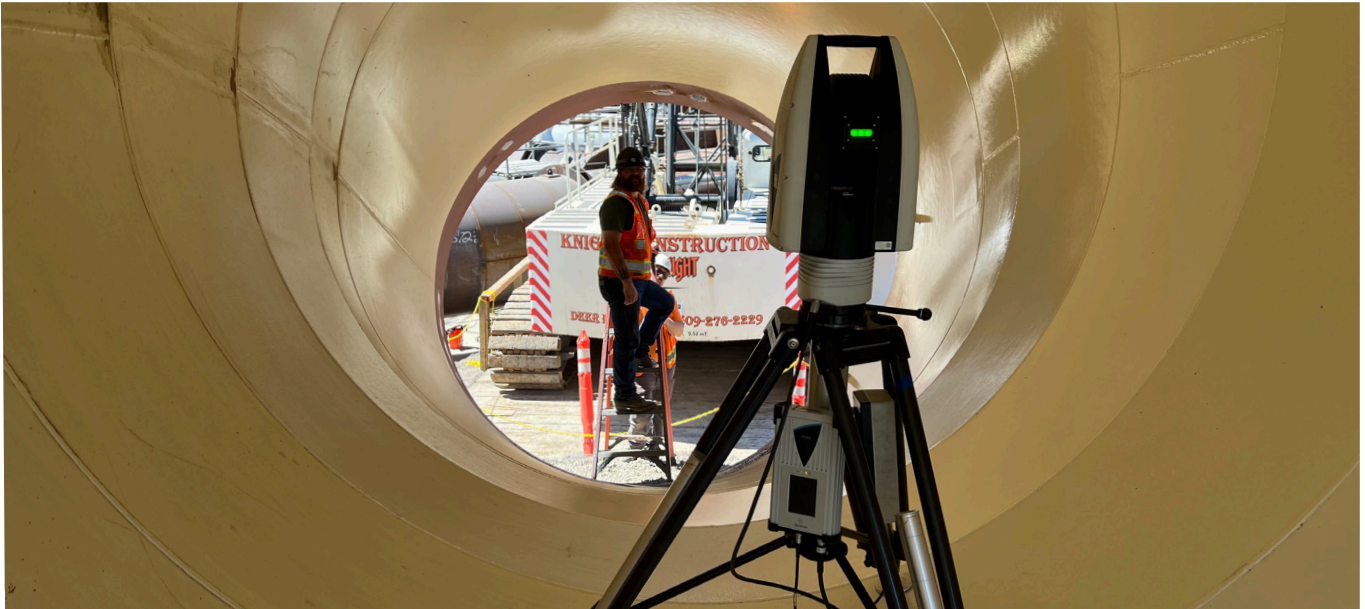
To address these challenges, KCS invested in the Leica Absolute Tracker ATS600 laser tracker and SpatialAnalyzer metrology software from Hexagon's

Manufacturing Intelligence division. These advanced technologies provided the company with the tools needed to conduct precise measurements, analyze data and make informed decisions throughout the project lifecycle.

UNLIMITED ACCESS TO METROLOGY DATA

“The Army Corps of Engineers is one of our largest customers, and they're requiring more specs for the use of precision measurement equipment”

said Robert Prouty
Project Manager at KCS.



Penstock fabrication field verification.

“To be able to meet their and our other customers’ metrology needs, we wanted to do all the post-processing of our data in-house. Having an in-house direct scanning laser tracker, it’s easier for us to identify critical factors and go back to the office and analyze the data.”

Before using in-house solutions, KCS didn’t have unlimited access to its metrology data – they had to request it from subcontractors, which was expensive, time-consuming and often slowed the project down.

“We’ve had a bunch of projects over the years where field measurements, both post-construction and pre-construction, are a challenge,”

said Jordan Lehto
Project Engineer at KCS.

“Having the ability to take field measurements on-site and have remote access to the measurement or scan data allows us to kind of virtually be on site, checking those measurements again from the office to ensure precision and accuracy.”

Now with the ATS600 laser tracker, “the team can make real-time adjustments on our schedule, which is a big help, because if we’re booking someone from California to go to a project in Montana, the crew needs to be equipped with the right data. A single day of delay prior to the arrival of the subcontractor is a significant cost impact,” said Prouty.

With Hexagon’s technology, the company can now make efficient, informed decisions, all grounded in real-world data, versus working off high-level PDFs.

ON-THE-JOB FLEXIBILITY

With constantly changing worksites often bringing unforeseen issues, having data at their fingertips and being able to re-scan large areas is incredibly helpful. When something isn’t anticipated, KCS is now able to adapt and overcome the challenge using their own metrology equipment to inform on-the-fly adjustments as and when needed.

“We were working for a customer out on the job site and one of their bearings, which is essentially like an Archimedes screw for a water pump, failed and they only had one backup,” explained Prouty. “Typically, you don’t want to put a bearing on something that’s elliptical, so we took a look at it using the metrology equipment and were able to find out where the true center axis of rotation was and retrofit that bearing to work.”

“So instead of the customer having to stall their project for about six months to get a whole new part fabricated, we were able to fix the pump with a two-week turnaround,” added Lehto.

Another notable example of the benefits of Hexagon’s solutions is KCS’s experience with a recent project involving a wastewater treatment plant. By using the laser tracker to scan the plant’s infrastructure, the company was able to identify potential conflicts between new construction and existing piping and rebar. This allowed them to make adjustments to the project plan quickly, avoiding costly rework and delays.

INCREASED COMPETITIVE ADVANTAGE

Being able to make these on-the-fly adjustments and provide highly accurate measurements for projects sets KCS apart from competitors. It’s proving to have positive results when it comes to securing new projects.



Penstock bifurcation installation

“Having this equipment often makes our job proposals more appealing because we’re able to showcase our metrology capabilities and show that we’re going to be better able to support our customers’ projects,” said Lehto.

Rather than outsourcing work and slowing down projects, KCS is now able to bring its own instruments, which is a significant cost saving to add to its proposals. Plus, potential customers can rest assured that the laser tracker and SpatialAnalyzer provide the precision and accuracy required for critical tasks such as alignments, inspections and quality control.

DEVELOPING SKILLS TO IMPROVE EFFICIENCY

In addition to the technical benefits, Hexagon’s solutions also empowered KCS’s workforce to develop new skills and knowledge. By learning how to use the ATS600 laser tracker and SpatialAnalyzer effectively in the field, team members can take on more responsibility, increase administrative knowledge pertaining to specific installations, upskill and contribute to the company’s success.

KCS’s experience demonstrates the power of the solutions provided by Hexagon’s Manufacturing Intelligence division to transform the construction industry. By leveraging these technologies, companies can improve efficiency, reduce costs and deliver high-quality projects.



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