



AUTODESK **CONSTRUCTION CLOUD™**



Helm

Helm Mechanical's Lean Construction and Cloud-based Collaboration Improves Outcomes on Highly Complex Industrial Projects

Building highly technical projects such as hospitals, labs, and automotive facilities calls for highly effective construction management. Lean construction and cloud-based collaboration provide the tools necessary to deliver projects on time and on budget, even under challenging conditions.

Helm Mechanical, formerly known as Mechanical Incorporated, is an innovative specialty contractor focusing on highly technical projects in the pharmaceutical, bio-engineering, food manufacturing, automotive, and healthcare industries.

As a turn-key contractor, they exceed client expectations by bringing a value-based approach to transform project delivery. The company combines leading-edge technology with lean construction principles to implement new design, engineering, and construction methodologies. By prefabricating multi-trade skids in an off-site fabrication shop, Helm Mechanical increases collaboration and drives efficiencies to deliver highly complex projects while achieving certainty in cost, schedule, and quality.



Customer Snapshot

FIRM SIZE: <500
FIRM TYPE: SPECIALTY CONTRACTOR
REVENUE: \$62 MILLION
FOCUS AREA: MECHANICAL
HQ: FREEPORT, IL, US

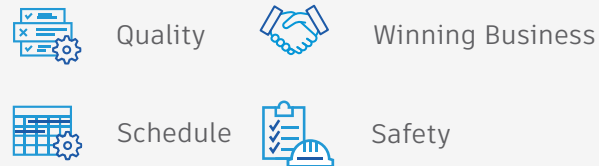
PHASE:



PRODUCTS:



VALUE DRIVERS:



“Bleeding Edge” Can Mean “Application Fatigue” Without an Stable Construction Management Platform

Known for their commitment to innovation, Helm Mechanical has gained this reputation not by being on the cutting edge, but by remaining on the “bleeding edge.” This means they’re always trying out the latest construction technologies and approaches, looking for the most effective way to get the job done. Unfortunately, being on the “bleeding edge” has side effects.

“You try all the new things, and you can get fatigued by it,” says Travis Voss, Leader of Innovation Technology at Helm Mechanical. “It’s application fatigue.”

“We wanted to pull back from all the heavy focus on trying each latest and greatest thing, and look more holistically at what we were doing,” says Voss.

As a result of this effort, Helm Mechanical adopted BIM 360 within Autodesk Construction Cloud™ to serve as the backbone of their construction management platform. Helm Mechanical uses BIM 360 as a common data environment to unify and simplify connected data across the project lifecycle and improve communication and collaboration across teams.

Connected Data Puts Information into the Hands of Everyone Who Needs It

BIM 360 is a connected data platform where teams can go and get the latest project information. With connected data across the project lifecycle, teams spend less time looking for information and can collaborate and communicate more effectively, to reduce project risk and improve quality.





“We struggled with making sure our field personnel had the most up to date information in the palm of their hands,” says Jeff Knoup, VP of Operations at Helm Mechanical. “Before BIM 360, if you needed information, you would have to go to greater lengths. If you were on the third floor of a building, or the 20th floor, for instance, you might have to go all the way down to the job trailer, open up your laptop, get on the network, and look up the information you need. Now, we can access that information from anywhere on the jobsite.”

“BIM 360 is also a powerful cloud-based collaboration tool for our VDC department to use when we’re doing design work for other companies,” says Voss. “We can easily share models and documents between our team and partners within a platform that we are already comfortable using within our workflows, allowing our design work to fit into their processes seamlessly.”

Lean Construction Appeals to Sophisticated Customers Improves Quality

Knoup says that Helm Mechanical likes to go after highly technical, industrial projects that many firms can’t handle. The buyers at these companies are sophisticated, and they expect similar sophistication from their partners.

“Owners want full visibility into the project to see what’s getting done in a given day, how many linear feet of pipe you put up each day, how many pounds of ductwork, etc. Unless you have a technology solution to help you track and produce that information, the owners will pass you by,” says Knoup.

BIM 360’s 3D modeling capability within a connected data environment makes the bid process more effective and makes owners happy.

“We get into some of these bid meetings, and we show off,” he says. “We not only traditionally showcase our work, but we share our designs via Augmented Reality/Virtual Reality (AR/VR) headsets while we’re talking about data sharing. It appeals to those sophisticated owners.”

Connected Data Makes Materials Tracking Easy

In highly technical work such as in the biopharmaceutical industry, materials tracking is critical.

“Every weld has to be documented,” says Knoup. “All of the owner supplied equipment has to be checked in against specs and fabricated into spools and assemblies before being brought to the jobsite.”

Tracking the quantity and level of detail necessary on a highly technical project would be a very labor intensive, manual process, without BIM 360's connected data platform.

BIM 360 makes the tracking of materials as they enter and leave the fabrication facility, and while they're inspected and installed, not only possible, but easy.

Connected Data Makes Lean Construction Possible

“We use BIM 360 to integrate with other partners in our fabrication tracking,” says Voss. “Part of lean construction is eliminating waste, including wasted time. Integration eliminates trips back and forth to the trailer. It eliminates phone calls back to the office to ask questions. It eliminates confusion over versions.”

He says that Helm Mechanical shares its connected data hub and its VDC process in a third-party fabrication add-on, which helps push fabrication to the shop.

“It provides the shop foreman and the shop manager, as well as the field foreman and the field manager what they're going to be receiving, so they can prepare for it. It gives them good insight so they can remotely comment and share their thoughts on what we're building in the shop, so they don't have to do any rework in the field.”

Connected Data Makes Augmented Reality Walk-throughs Real – And Effective

Owners understandably like to walk through a space as it develops, see where their equipment will go, where their systems will be installed, and how the structure will support it. Some walk-throughs can be conducted via virtual reality, but Knoup says the best use of the connected data technology is using AR during a physical walk-through.

“We had one customer building a food processing plant, for which we did a bunch of the sheet metal and piping work and some platforms,” says Voss, as an example. “We put AR glasses on and walked them around the space. They had previously spec'd out the work, but while

walking through it with AR showing them how the space would be used, they discovered that their carts wouldn't fit under a certain platform, and that other platforms weren't high enough for someone to be able to reach what they needed to work on. It seems like a small detail, but it saved them thousands of dollars because we could change the design based on what the customer really wanted before anything was installed.”

He says they've had countless similar examples, in which they've discovered that other contractors have installed things incorrectly, or designs have failed to account for a real-world application. Discovering these things during walk-throughs substantially reduces rework and provides owners with peace of mind.

Digital Construction Management Improves Accountability

In addition to reducing rework, the AR technology integrated into BIM 360's construction management platform creates a trail of accountability that saves money and ensures everyone is held responsible for their commitments.

“We had a situation where a space had been modeled, coordinated, and signed off on, but a plumber came in and ignored the model, putting in plumbing where the ductwork was supposed to go, and then refused to take it down.”

Re-designing and re-coordinating fabrication around the contractor's use of the space would have cost thousands of dollars. Helm Mechanical's team used AR

“

We can easily share models and documents between our team and partners within a platform that we are already comfortable using within our workflows, allowing our design work to fit into their processes seamlessly.”

- Travis Voss

Leader of Innovation Technology,
Helm Mechanical

glasses to walk the construction manager and owner through the site and show them what the plumber had done and what a big deal it was.

This resulted in the contractor and owner holding the plumber accountable, and demanding that he rip out his plumbing and piping, and put it back in its proper locations per the model.

“They would not have had a feel for how big a deal this was if they couldn’t put the glasses on,” says Voss.

Connected Data Makes Critical Workflows Better

Autodesk and others’ technology is critically valuable in helping Helm Mechanical stay at the forefront of their industry. However, it can also be a stumbling block if it’s not implemented thoughtfully.

“BIM 360 is a very versatile software,” says Voss.

“We knew it would give us all the communication with the field that we need, and that one dominant platform where everything would reside. But we can’t just roll it out and expect folks to pick it up and learn it on their own. We have to develop a workflow and a training module to train people to the workflow.”

Some software vendors, says Voss, treat the sale of the software like the last interaction necessary. But what they need is a partner who will help them implement the software to work the way they need it to work.

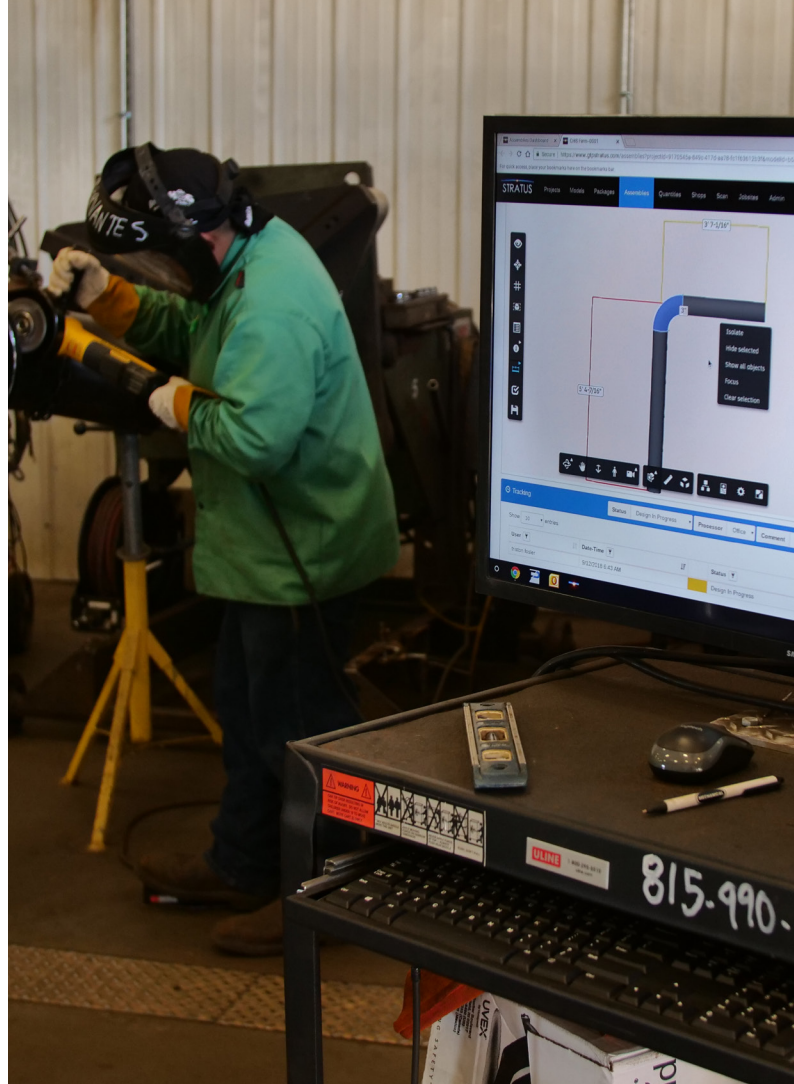
“That’s been one of the benefits over the past two years of working with Autodesk,” says Voss. “They’ve gone from software provider and reseller to a partner.”

Knoup adds: “There’s so much functionality in software that it’s important to figure out your workflow, how you want the software to interact with your workflows, and then have a partner that helps you build a training module to train your people specific to that workflow.”

Lean Construction Makes “Insane” Timelines Possible

“We take a very deliberate and patient approach to creating the tech stack the way we want it,” says Voss. “And then we have to deploy it very rapidly.”

Sometimes, he says, the timelines on technical projects would be physically impossible to meet if all of the labor and materials had to be on the jobsite. They would all have to be present and working simultaneously.



Prefabrication takes enormous amounts of labor off the jobsite and into the fabrication facility’s controlled environment. This enables vast amounts of work to be completed simultaneously and then assembled very quickly on site.

BIM 360 enables the coordination and data sharing that allows the prefabrication to be so accurate that, once it arrives onsite, all that is necessary is to lift it into place and install it.

Lean Manufacturing Makes Helm Mechanical A Leading Provider

Helm Mechanical has developed a reputation for being one of the leading providers of mechanical contracting on highly technical projects. Their reputation is thanks to the forward-thinking of leaders like Voss and Knoup, and the strength of strategic partnerships such as the one with Autodesk, and their commitment to lean construction and connected data.

Their work and partnerships showcase what is possible for industrial construction projects, and maps a blueprint for faster, leaner, more effective outcomes.