Earned value tracking can be a time-consuming and error-filled process. With Assemble within Autodesk Construction Cloud™ for tracking earned value, McKinstry’s team experienced 50% in time savings while increasing data quality and eliminating redundancies.

“We used to say that the earned value tracking number was generally within 10%,” says Spenser Hobson, Senior Project Engineer. “Now it’s within 3%.”
Customer Snapshot

FIRM SIZE: 1000—5000
FIRM TYPE: SPECIALTY CONTRACTOR
REVENUE: $433.8 MILLION
FOCUS AREA: INDUSTRIAL
HQ: SEATTLE, WA, US

PHASE:

PRODUCTS:

ASSEMBLE

VALUE DRIVERS:

Quality Schedule

Why Old Project Tracking Methods Aren’t Good Enough Anymore

Founded in 1960, McKinstry is a national leader in designing, constructing, operating, and maintaining high-performing buildings. The company has over 2,100+ employees, including 165+ licensed project engineers.

Earned value tracking has become the standard method in the construction industry to measure a project’s progress at any given point in time, forecast its completion date and final cost, and analyze the schedule and budget variances as the project advances.

On the Seattle Life Science Building – a 13-story project comprising 345,000+ sq. ft of office and lab space – McKinstry tracked earned value through a 2D drawing-based solution, which was time-consuming and inaccurate. One lab floor had 47 tons of ductwork and 5.5 miles of piping, so tracking the installed progress was an enormous task.

The team wanted to use pounds to track sheet metal and linear feet to track plumbing and piping for the project. The team would manually highlight and mark up a drawing in the field and then manually take-off the drawing in the office. The results were inaccurate for multiple reasons. For vertical distance, the team was pretty much guessing when using the 2D drawings. They had to plug in a number whenever there was a drop,
which was not a precise way to measure installation since not all drops were the same depth. There was also a lot of up and down movement throughout the floor, with layers and layers of overlapping ductwork.

With the complexity of the project, there were 12 drawings per floor. Trying to figure out and trace which piece was installed was difficult because of the overlapping systems in the drawing. Another major problem was the team’s inability to compare the numbers to budget since the budget numbers from the estimating team came in pounds, and the 2D take-off only provided linear feet. There was no way for the project team to determine if the budget was in line with the actual numbers.

**Earned Value Tracking in the Cloud Improves Performance Management**

Assemble was implemented halfway through the project, allowing the team to compare the original method to the new and more efficient way of tracking progress with Assemble.

With the improved method of tracking earned value, the McKinstry team could publish the CAD model to Assemble. After quickly grouping and sorting model objects, including the associated metadata by systems, the team could get a clearer picture of the project. Assemble allowed McKinstry to create unique views based on each stakeholder’s specific needs and then further enrich the model by adding highly customizable Assemble properties tying it to model objects.

“I can sort and filter the data from Assemble by installation status and activity IDs in seconds to see quantities installed,” says Hobson. “With the manual take-off methods, it would take hours, and when we would go back and double-check, the numbers would come out different every time. With Assemble, we have extreme confidence in the number we are reporting.”

By using weight in the Assemble model, the team could compare the ductwork sizes more accurately. In the old linear feet method, a 6-inch round piece of the duct would carry the same value as a piece of 120-by-60 rectangular ductwork, even though it should be measured differently. Once going by weight, each piece of duct shows up as an exact percentage of the floor, resulting in a more accurate progress snapshot.

**Project Tracking with Cloud-based Construction Management Saves Time and Improves Quality**

Earned value tracking became more manageable and more accurate thanks to Assemble. For the first time, the McKinstry project team could track the installation in pounds and get an instant comparison to the estimate. Assemble allowed the team to pull directly from CAD, giving every single piece of ductwork an associated weight. Finally, the team had insight into whether the budget was spot on, heavy, or had some breathing room.

“Assemble is a multi-faceted tool that can be used in so many different ways,” says CJ Best, Director of Manufacturing at McKinstry. “If you are familiar with pivot tables in Excel, try to visualize Assemble as a pivot table in the 3D environment. It allows you to slice and dice the information however you want, and there is so much flexibility and countless use cases.”

With the improved method of tracking earned value tracking with Assemble, McKinstry has increased visibility into project status and has deployed it on at least 50% of large-scale projects, with plans to expand the use of cloud-based construction management into the future.

“I can sort and filter the data from Assemble by installation status and activity IDs in seconds to see quantities installed,”

—Spenser Hobson
Senior Project Engineer, McKinstry