

Bucyrus International, Inc.

MOVING THE SURFACE MINING EXCAVATION MARKET WITH SOLIDWORKS



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- Reduced analysis time by 20 percent
- Improved product confidence by 25 percent
- Reduced field assembly from 90 to 60 days

A global leader in the manufacture of shovels, drills, and draglines for the surface mining industry, Bucyrus International, Inc. grew in 1997 through the acquisition of the Marion Power Shovel Company. As part of that acquisition, Bucyrus began an assessment of how the merged companies developed products. The obvious starting point was the company's design and engineering tools, according to Designer Frank Szepek.

"With 2D drafting, final assembly detail drawings for such things as hydraulic plumbing runs were occasionally completed after the actual factory fit-up was done," Szepek explains. "We knew 3D solids were the way to go to achieve improved efficiencies, so we acquired several seats of SolidWorks® software and began experimenting, using it in a limited role on small projects."

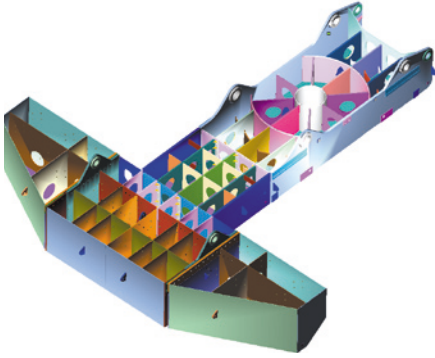
Delivering products faster, setting a new standard

Bucyrus's early experience with SolidWorks software led the company to select the package as its standard design tool. According to Rick Correll, computer graphics administrator, Bucyrus chose SolidWorks 3D CAD software because of its ease of use, large-assembly capabilities, 3D visualization and animation features, and tight integration with product data management (PDM) and analysis tools. By using SolidWorks, Bucyrus has shortened its product design cycle by 25 percent, reduced its analysis time by 20 percent, and raised product confidence by 25 percent.

Because Bucyrus uses SolidWorks software to design machines in subassemblies or "zones" such as the operator cab assembly, the utility room assembly, the lube room assembly, the ballast box assembly, and the electric room assembly, the company now delivers machines by shipping subassemblies in stages, providing improved organization and instructions to field assembly personnel. Under the new system, Bucyrus has virtually eliminated assembly changes in the field and reduced field assembly time on its latest electric shovel product line from 90 to 60 days, setting a new standard for product delivery in the surface mining equipment market.

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Rick Correll, Computer Graphics Administrator



The SolidWorks integrated CAD system supports a collaborative approach to assembly and subassembly design at Bucyrus International, Inc.

Dynamic assemblies

Bucyrus leverages the physical dynamic assembly capabilities in SolidWorks to perform clearance checks on large assemblies and moving pieces in its machines. The company also uses SolidWorks assembly capabilities to make sure there are no interference problems.

“All of our machines are big and involve thousands of components. SolidWorks helps us to easily resolve problems that in the past were not discovered until we began assembling the machines,” notes Rick Correll, computer graphics administrator.

Bucyrus can also simulate cab visibility in SolidWorks to ensure nothing obstructs the operator’s view, according to Designer Derrick Juul. “With SolidWorks, we have a better handle on where everything is located because it’s all modeled in 3D,” Juul says.

Integrated applications save time

By using applications integrated with SolidWorks software, Bucyrus has taken a concurrent approach to engineering and realized additional productivity gains. Through consulting services provided by IMPACT Engineering Solutions, Inc., a SolidWorks Certified Gold Services provider, Bucyrus performed an audit of its engineering information flow and developed and implemented a plan to address a full range of integration and process issues, including infrastructure, training, and maintenance.

Using the Matrix® product data management (PDM) system to manage SolidWorks design data, separate teams work in parallel on different subassembly zones during conceptual design. “By bringing information out of Matrix into SolidWorks, we kept current with the other design teams,” Szpek says.

Using SolidWorks Simulation software, which is fully integrated with SolidWorks Standard, Bucyrus has cut its analysis time on the project by 20 percent, Correll said. The number of Bucyrus engineers who can perform analysis has doubled as a result. Bucyrus also uses SolidWorks design communication tools to create photo-realistic animations for customer presentations. “Instead of doing shadow casts and trying to make 2D drawings come to life, the graphics we produce now take the conversation to an entirely new level,” says Marketing Manager Kent Henschen.



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