Cameron Process Systems Canada

Customer Success Story

Autodesk Manufacturing Solutions
Autodesk® Inventor®
Autodesk® Inventor® Engineer-to-Order (formerly Autodesk® Inventor® Automation Professional)
Autodesk Consulting

With Autodesk Inventor Automation Professional, we've eliminated the time lag in getting drawings to our customers because creating an entire model takes only five minutes.

—Gary Foucault
Design Manager
Cameron Process Systems Canada

Weeks of work reduced to minutes.

Using Autodesk Inventor Automation Professional, Cameron goes from defining customer requirements to cutting metal in minutes.

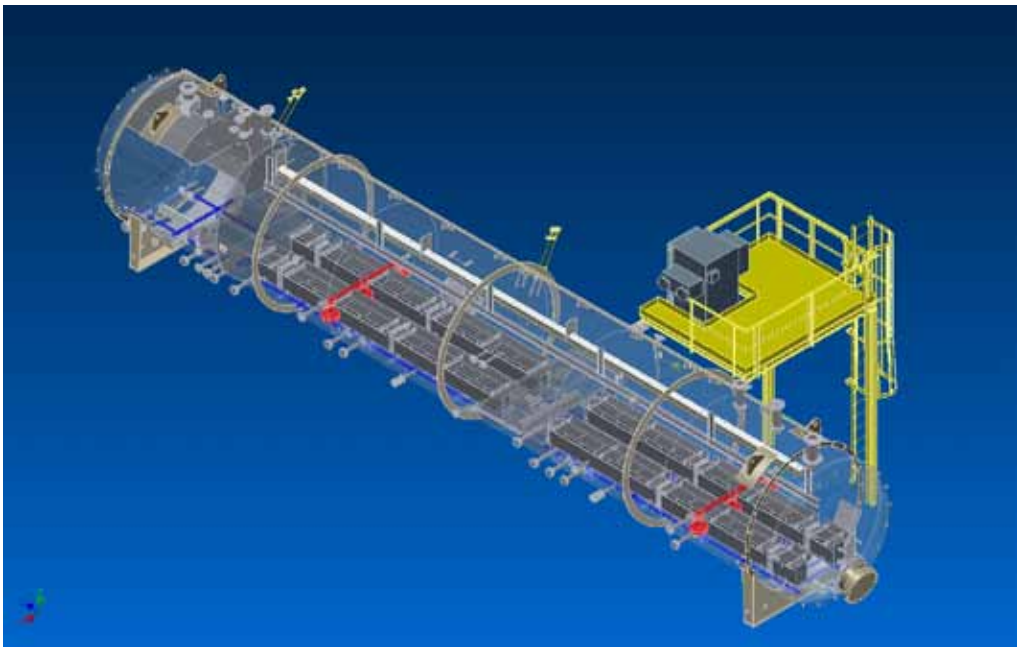

Image courtesy of Cameron Process Systems Canada

Project Summary

For more than 85 years, Cameron Process Systems Canada (Cameron) has provided process equipment, systems, and services for oil and gas production. Cameron's products are used onshore and offshore in most of the world's high-producing regions. Until recently, the company designed oil and water treatment vessels manually with AutoCAD® software—a time-consuming process. But with Autodesk® Inventor® Automation Professional and Autodesk Consulting, Cameron now takes just minutes to generate digital prototypes, drawings, schedules, and parts lists for manufacturing.

Autodesk Inventor Automation Professional helped Cameron:

- Accelerate the design of the pressure envelope for large custom vessels
- Save two to three days per digital prototype by automatically including part numbers and descriptions in their workflows
- Eliminate up to $60,000 per year in potential data entry errors at one location alone
- Capture the product knowledge of key personnel
- Enable designers to make nozzle changes in seconds

The Challenge

As Cameron designs its oil and water treatment vessels, the company creates complex drawings that often contain more than 150 nozzle connections. To speed up the process, Cameron recently made the move to Digital Prototyping with Autodesk® Inventor®. The new software enabled greater reuse of designs and helped reduce errors. Cameron used COMPRESS software to perform American Society of Mechanical Engineers (ASME) calculations for each vessel, and then produced a 3D model and fabrication drawings in Autodesk Inventor.

"With Inventor, we've built libraries of models that we can reuse quickly," says Gary Foucault, design manager at Cameron. "That's a big help when you're building vessels as complicated as ours. The 3D models have also helped us to reduce design errors and communicate our ideas more clearly to our field installers and clients."

But the infinite variations of nozzle connections in Cameron's vessels meant that the modeling process still required three to four weeks. Hoping to further expedite the design and drafting phase, Foucault closely examined the XML data generated by COMPRESS. "I realized that all the information we

Autodesk®

Cameron now captures designers' ideas centrally in the form of rules—minimizing knowledge loss as senior workers retire.

needed to generate models was already in the application," he recalls. "We just needed an intelligent, automated way to pull out the relevant data and use it to generate 3D models, drawings, schedules, and parts lists."

The Solution

Foucault researched ways to quickly turn XML data into 3D models and found a clear answer: Autodesk Inventor Automation Professional. With this solution, Cameron discovered how to automatically create drawings that offered multiple views of a vessel, nozzle schedules based on data extracted from COMPRESS, and complete parts lists pulled from Cameron's parts database.

Finishing Drawings Ahead of Schedule

With Inventor Automation Professional, Cameron has significantly streamlined the process of creating vessel models. What used to take as long as four weeks can now be done in as little as five minutes. Making a minor edit—for example, changing the location of a nozzle—requires just seconds for a small vessel and up to two minutes for a large one.

This greater efficiency now lets Cameron's design department send drawings to the structural and piping departments ahead of schedule. Previously, these teams had to begin work using makeshift vessel models that could only estimate where nozzles and connections would go. When the actual model arrived a few weeks later, the teams would have to make time-consuming changes. Today, piping and structural tasks can begin as soon as the design team generates a model.

Another advantage: Cameron's clients now receive a complete drawing from the start—rather than receiving vessel drawings first and then having to wait one or two weeks for piping drawings. "With Autodesk Inventor Automation Professional, we've eliminated the time lag in getting drawings to our customers because creating an entire model takes only five minutes," says Foucault. "And if a customer asks us to move a nozzle or change a connection size, we can make the change without missing a beat."

Reducing Errors

The rules built into Autodesk Inventor Automation Professional ensure that Cameron creates models in a standardized fashion, making them easier to revise. Each model indicates the correct material, thickness, and description for parts such as shells, heads, nozzle necks, saddles, rings, and flanges.

"We need our models to be more than just pretty pictures," says Foucault. "The 3D models we create with Inventor Automation Professional eliminate the need for a designer to copy and paste part descriptions from the database—which reduces errors and saves us two to three days per drawing."

Manually copying and pasting parts information used to lead to errors that were time-consuming and costly to fix. By automating these tasks, Autodesk Inventor Automation Professional eliminates such errors. "With Autodesk Inventor Automation Professional, our office is saving about $60,000 per year by avoiding errors in our nozzle schedules and parts lists," Foucault explains. "Multiply that by four other offices, and we're looking at savings of up to $300,000 per year."

Retaining Knowledge

Cameron is also achieving non-financial benefits from its new solution. As many of its senior designers prepare for retirement, Cameron is capturing their knowledge in Autodesk Inventor Automation Professional. "The beauty of this software is that it captures people's ideas centrally in the form of rules," says Foucault. "That's a huge advantage as we prepare for turnover."

Meanwhile, Cameron continues to write time-saving applications based on Autodesk Inventor Automation Professional. The company's latest application quickly develops fire tubes for vessel heads, eliminating another time-consuming task for Cameron's designers. "I found Autodesk's training very helpful in learning how to write rules for Autodesk Inventor Automation Professional," says Foucault. "Our fire tube application can easily save a day or more of design work per model."

Better Results, Faster

The increase in efficiency from using Autodesk Inventor Automation Professional has enhanced Cameron's ability to meet the needs of a growing customer base. "By eliminating the lag time on the piping and structural side and producing vessel drawings more quickly, we can handle more projects with the same number of people," says Foucault.

Achieving Benefits Sooner

Cameron enlisted Autodesk Consulting to help them enhance and accelerate the benefits of using Autodesk Inventor Automation Professional along with the other Autodesk products already in use at the company. Autodesk Consulting provided a broad range of services, including technology selection, training, proof-of-concept, implementation specifications, and implementation. Just two weeks after Autodesk Consulting finished its work, Cameron began using Autodesk Inventor Automation Professional in production.

"I was surprised at how quickly Autodesk Consulting understood our business and what we were trying to accomplish," says Foucault. "Autodesk Consulting did a great job of turning all of our variations of nozzles and vessels into assemblies that we can reuse in different configurations. The additional features they suggested have turned out to be really beneficial to us."

Image courtesy of Cameron Process Systems Canada

With Autodesk Inventor Automation Professional, our office is saving about $60,000 per year by avoiding errors in our nozzle schedules and parts lists. Multiply that by four other offices, and we're looking at savings of up to $300,000 per year.

—Gary Foucault
Design Manager
Cameron Process Systems Canada

Autodesk®