

COMPANY

Aluminum Curtain Wall Systems Inc.

LOCATION

Kamloops, British Columbia, Canada

SOFTWARE

Autodesk® Simulation
 Autodesk® Inventor®
 Autodesk® Revit® Architecture
 Autodesk® Showcase®
 Autodesk® Vault

Visionary glass walls

Aluminum Curtain Wall Systems Inc. develops innovative glass and aluminum curtain walls using Digital Prototyping software from Autodesk

Autodesk listens to us and responds to us as if we're a company with 2,000 seats of Inventor, not 14.

—**Tim Bourdois**
 Systems Engineer
 Aluminum Curtain Wall Systems Inc.



Image courtesy of Aluminum Curtain Wall Systems Inc.

Project summary

There's nothing ordinary about Aluminum Curtain Wall Systems Inc. (ACS). Founded in 2000, the Canadian company has earned a reputation for thinking outside of the box. "Our chief executive officer is an absolute visionary," says Tim Bourdois, a systems engineer at ACS. "People like him are the reason we've gone to the moon."

A curtain wall designer and manufacturer, ACS develops customized glazing systems for some of the most demanding architectural projects. Made of glass and aluminum, the building skins ACS makes keep the weather out and allow natural light in. As architects increasingly use 3D design tools and Building Information Modeling (BIM) to push the boundaries of architectural design, they seek the same level of innovation from their curtain wall providers. To deliver, ACS relies on Digital Prototyping software from Autodesk to support many aspects of its business, from sales and marketing to design and engineering to fabrication and installation. With help from Autodesk® software, ACS is:

- Making design changes in a fraction of the time it once took
- Meeting tight project schedules
- Delivering innovative curtain walls to meet client needs

The challenge

Becoming a successful curtain wall system provider is no easy feat. ACS, based in Kamloops, British Columbia, must contend with complex project designs and demands from architects, owners, and construction managers for cost-effective products that deliver exceptional performance and innovative aesthetics—and that's not all.

"Speed and accuracy in manufacturing are everything," explains Bourdois. "If you're off schedule or your product has problems, you jeopardize the highly coordinated schedules that reign construction job sites. The long lead times on materials mean that we can't fix issues in one day. There's simply no room or time for error."

The solution

With a comprehensive Digital Prototyping solution from Autodesk, ACS is overcoming these extensive challenges—and creating a name for itself in the process. The company relies on Digital Prototyping software from Autodesk to conceptualize designs and then virtually test digital prototypes; manage all data related to the digital prototypes; and visualize digital prototypes for design reviews, sales, and marketing. "We're an Autodesk house and that's what we want to be," says Bourdois. "We're totally committed to Digital Prototyping products from Autodesk."

With Autodesk Inventor, ACS makes changes in a fraction of the time it once took

Creating groundbreaking designs

When ACS wins a bid, it starts product development with submissions it receives from the architect or owner—anything from a fully developed 3D model to a concept sketched on a napkin. The ACS team then provides clients with the digital prototypes it creates in Autodesk® Inventor® software to get feedback and discuss areas of concern. “With Inventor, we can iterate our designs very quickly based on a back-and-forth with clients,” says Bourdois. “We cut to the chase much faster.”

This iterative design approach pays off even more as projects increase in complexity. For instance, when ACS was tasked with developing a curtain wall for the Vancouver Convention Center in British Columbia, the company had to rethink its usual methods for attaching its curtain walls. “We couldn’t use vertical aluminum mullions because they would have obstructed the view,” says Bourdois. “So, we developed a horizontal truss system and crafted a substructure that spanned the vertical columns on the building. Then we used steel stringer rods to connect the truss system to the substructure. Without Autodesk Digital Prototyping software, developing that curtain wall would have been nearly impossible.”

Managing design changes

One of the biggest challenges ACS faces in its line of work is accommodating late changes made by clients—without jeopardizing project schedules. “If an architect changes the design, or there are variances in a concrete slab because of a mispour, we then have to change our model and update the affected fabrication and production drawings,” says Bourdois. “When we used a 2D design tool, we did this manually, which often took weeks.”



Image courtesy of Aluminum Curtain Wall Systems Inc.

With Autodesk Inventor software, ACS can handle changes on the fly and then quickly get approval from clients. “We update one component in the model and it propagates throughout. That’s a huge deal,” adds Bourdois. “With Inventor, we’re making changes in a fraction of the time it once took us.”

Simulating with confidence

Every curtain wall ACS develops must withstand the elements, which in Canada can include high winds and drastic temperature changes. To test designs, the company brings the digital prototypes it creates in Inventor into Autodesk® Simulation. “With Autodesk Simulation, we can conduct iterative, nonlinear testing in a dynamic environment to simulate the performance of our designs over decades,” says Bourdois. “Before we create a physical prototype, we can test things such as wind loading between buildings, the amount of deflection caused by wind load, thermal efficiency, and convection transmission. Autodesk Simulation software buys us time and confidence.”

Manufacturing on time

With the design hurdle overcome, ACS must then fabricate products and meet tight production schedules. Using Autodesk® Vault data management software, the company can effectively manage its enormous volume of design data, giving it confidence that the drawings the shop floor receives are without error. “We use Vault for revision control, engineering change orders, data management—all those types of things,” says Bourdois.

Autodesk Vault is also connected to ACS’s enterprise resource planning system. “This allows us to control the inventory and workflow on our shop floor with more precision,” notes Bourdois.

Winning more work

Even the sales and marketing efforts at ACS get a boost from the Autodesk Digital Prototyping solution. The company uses Autodesk® Showcase® software to create realistic renderings of products in their eventual building environments—and Bourdois says it’s helping to win new clients. Recently, ACS even made an animated movie from digital prototypes and an Autodesk® Revit® Architecture model to show off its expertise to a potential client. “We animated our assembly, delivery, uncrating, and hoisting procedures,” says Bourdois. “The client was very impressed—and was convinced that we’re not just talking about 3D, but

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actually using 3D tools in every aspect of our business.”

The result

With Digital Prototyping software from Autodesk, ACS has grown from a startup company to a well-respected contender in the curtain wall industry in only a few short years. The company won the 2008 British Columbia Export Award in the category of manufacturing products. It also has built curtain walls for several award-winning projects, including the Vancouver Convention Center Expansion Project and the Surrey City Center project. Most importantly, every part of the business is focused on excellence—and that includes choosing partners. “Autodesk has been a tremendous partner,” says Bourdois. “Are we a big company? No. But we’re very good at what we do. Autodesk listens to us and responds to us as if we’re a company with 2,000 seats of Inventor, not 14.”

For more information

To find out how Autodesk and Digital Prototyping can help boost innovation, speed design time, and streamline the fabrication process, visit www.autodesk.com/building-products.