

## Solid Edge

# Modern Mechanical Fab

Maintaining profits as customers tighten their belts

### Industry

Machinery and industrial products

### Business challenges

Customers' pressure for "better, faster, cheaper"

Highly varied projects

Professional engineering (PE) certification needed on some jobs

### Keys to success

In-house training

Easily modified assembly models

Simulation within the CAD environment

### Results

PE bills reduced by 50 percent

Engineering collaboration faster by 25 percent

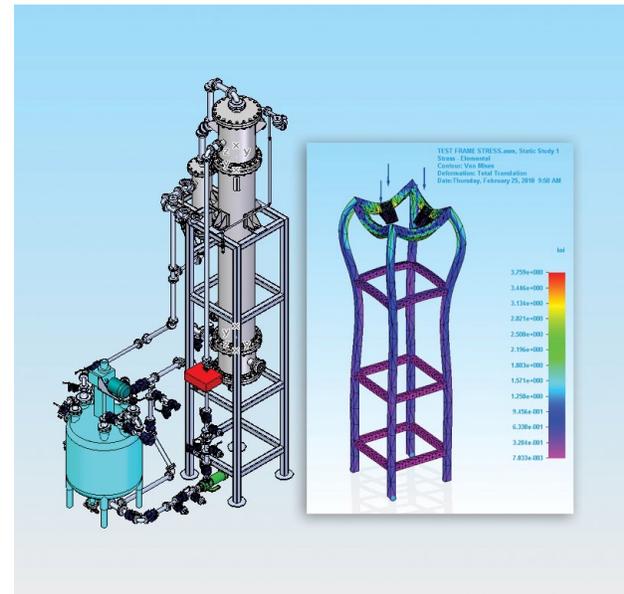
Material costs reductions of 10 percent

## Solid Edge simulation technology reduces engineering fees and optimizes material use, lowering overall product costs

### Customized, complicated and varied

Modern Mechanical Fab, Inc (MMFI), a certified women-owned business, has been doing custom metal design and fabrication for more than 15 years. The company's specialty is the work "no one else wants," projects that for one reason or another seem unlikely to be profitable. MMFI's niche – creating customized and complex solutions to specific problems – allows companies to purchase exactly what they need instead of trying to make off-the-shelf items work. The concept appeals to a wide range of industries, and MMFI's customers include pharmaceutical, food and beverage, dairy and chemical processing companies.

Engineering work at MMFI is nearly always one-off and the projects are highly varied, ranging from something as simple as a stainless steel feed trough to a huge piping assembly. Over the years, the company has experienced the usual pressure from its customers to deliver solutions "better, faster and cheaper," says John Fillion, a mechanical engineer with the company. "Cheaper" is a particular concern with this sort of work. Companies may be willing to spend a certain amount of money for a customized solution, but that figure has been dropping in recent years. This has



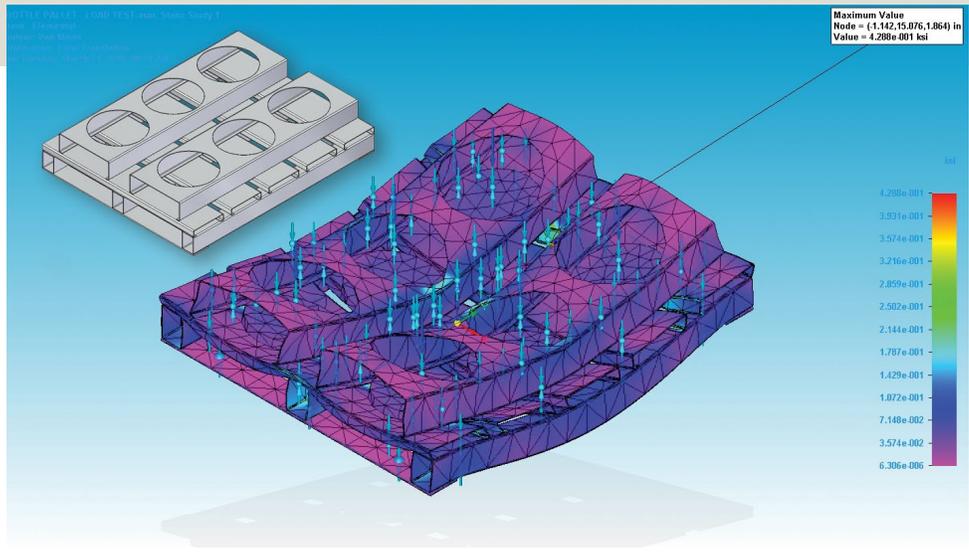
put pressure on the engineering department to hold down costs of both the development process itself as well as that of the final product. Solid Edge® software and the Solid Edge Simulation capability are excellent tools for accomplishing this.

### Upgrading for efficiency

MMFI has been using Solid Edge CAD for about two years, having upgraded from Autodesk® Mechanical Desktop® software and AutoCAD® 2D software. During the selection process for a new CAD system, the company considered SolidWorks® software and Pro/Engineer® software in addition to Solid Edge. Autodesk products

"I view the purchase of Solid Edge just like any other profit-generating piece of equipment. I have seen a great return on my initial investment in engineering time saved as well as an increased level of confidence that we can provide to our customers."

John Trombly  
General Manager  
Modern Mechanical  
Fab, Inc.



were not considered. "It seemed to me that CAD should be able to do more than what I had experienced with Autodesk products," Filion explains. "I was looking for a program that was easily adaptable to many different needs." Pro/Engineer was eliminated early because it seemed "way, way too complicated for what we wanted to accomplish," he adds.

Solid Edge won out over SolidWorks in part because Solid Edge is built on Parasolid® software – leading production-proven 3D geometric modeling component technology. Another factor was the availability of in-house training from a local Solid Edge channel partner. "I didn't have to spend two or three days away from the office for training and that was huge," says Filion. "We work with companies that use SolidWorks, but we still feel Solid Edge was the better choice."

Solid Edge lets Filion intuitively model the complex assemblies that are typical of much of MMFI's work. He particularly appreciates how easy it is to revise a design. "I was always starting over from scratch with Mechanical Desktop," he says. "It is very easy in Solid Edge to make changes to an existing model." That's an important productivity boost right there, which helps with the company's profitability. But now, with the recent addition of Solid Edge Simulation, the company is finding additional ways to reduce costs.

#### Lower fees and material costs

Solid Edge Simulation is a new, built-in finite element analysis (FEA) tool that allows design engineers to digitally validate part and assembly designs within the Solid Edge environment. It is based on proven finite element modeling technology of Femap™ software and the solver technology of NX™ Nastran® software. "We wanted FEA, but high-end products were too costly. We were able to work this mid-range product (Solid Edge Simulation) into our budget," Filion explains.

Solid Edge Simulation helps MMFI cut development costs by reducing its need for outside engineering support. "Once we added Solid Edge Simulation, the bill from our outsourced professional engineer (PE) went down," Filion says. As an example, he points to a project where the company was asked to make an access platform over moving machinery. "There were safety issues and I wanted a PE to look over my drawings," he explains. In previous situations such as this, Filion and the engineer went back and forth with the drawings multiple times. "With Solid Edge Simulation I was able to do more complex calculations on my own, and that gave the PE confidence that he didn't have to do as much of his own analysis," Filion notes. "Previously he and I would have gone back and forth about five times on a design like this. In this case, we needed only one iteration. That reduced the time I spent

## Solutions/Services

Solid Edge  
[www.siemens.com/solidedge](http://www.siemens.com/solidedge)

## Customer's primary business

Modern Mechanical Fab, Inc is a full-service custom design and fabrication company.  
[www.modmechfab.com](http://www.modmechfab.com)

## Customer location

Champlain, New York  
United States

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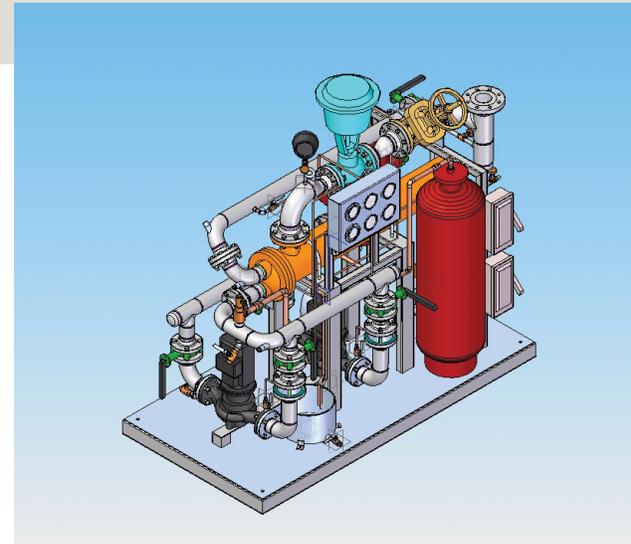
John Filion  
Mechanical Engineer  
Modern Mechanical Fab, Inc.

working with him by about 25 percent. It also reduced what we paid him on that project by 50 percent, a savings of \$2,000."

Like other engineers, Filion has noticed that some customers seem to balk at the idea of spending extra on a third-party review when it is not required. "I always suggest it when there are significant safety issues involved," he says. "Reducing the cost of this review makes them a little more willing to take advantage of this service."

In situations where a PE stamp isn't needed, the use of Solid Edge Simulation gives MMFI more confidence in what it delivers to its customers while at the same time optimizing material use. "In the past, due to the simple lack of time for doing hand calculations, we would simply make the fabrication bigger and stronger than necessary, to be safe," Filion says. "It's not that we were not capable of doing the necessary calculations. We just couldn't seem to get the time into the budget for all the engineering we wanted to do, while still being competitive. Now we can reduce material sizes, and consequently costs, and still be certain that we have a safe product."

A recent example was a project where Filion had originally specified three-inch-square tubing for the legs of a platform. After running a Solid Edge simulation on the design, he saw that he could drop down to two-inch-square tubing, shaving 10 percent off the tubing cost. In that situation, where there was little leeway in the bid, the 10-percent cost saving helped bring the project in at a profit.



MMFI's implementation of Solid Edge, including its simulation functionality, while still relatively new, has convinced the company that this is important technology for remaining competitive in tough economic times. Its next move will be to implement the history-free approach of Solid Edge with synchronous technology later this year, to gain even more engineering efficiency.

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