

## Industrial machinery and heavy equipment

# Diamond Systems

Diamond Systems upgrades to 3D to maintain its reputation for leadership

### Product

Solid Edge

### Business challenges

Maintain reputation as technology leader

Create customer presentations that are noticeably leading-edge

Reduce costs and time-to-market

### Keys to success

Upgrade from 2D CAD to Solid Edge software

Model virtual assemblies onscreen

Re-use Solid Edge models in technical documentation, shop floor instructions and customer presentations

### Results

Minimal loss of productivity during transition to Solid Edge

First prototypes are ready for field testing; other preliminary prototypes no longer needed

ECOs down by 40 percent

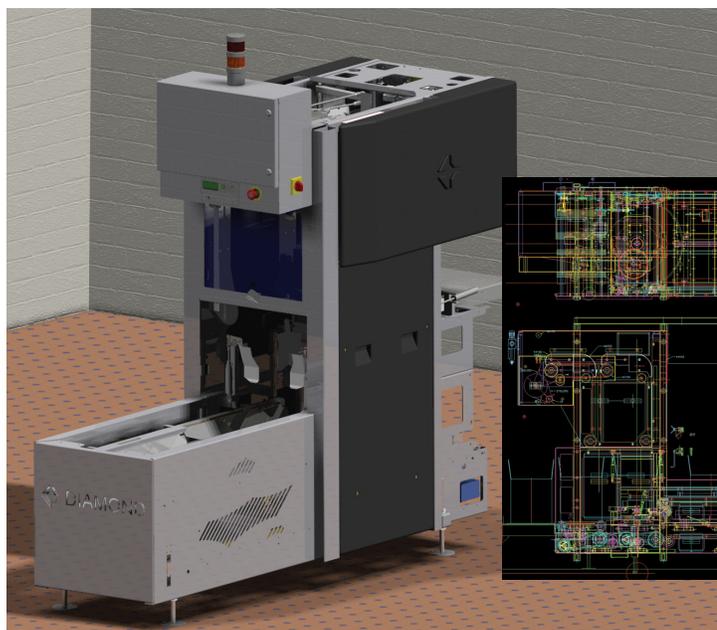
With competition still presenting 2D drawings to customers, Diamond Systems' industry-leading reputation is ensured

### Implementing Solid Edge gives this food processing equipment manufacturer a visible advantage over the competition

To maintain its reputation as the technology leader, Diamond Systems wanted presentations to customers to look leading-edge.

### Fast-moving machines that don't break eggs

After using 2D AutoCAD for many years, designers and engineers at Diamond Systems switched to 3D CAD (Solid Edge® software from Siemens PLM Software.) An important reason for the transition was to maintain the company's leadership position among manufacturers of egg handling systems. "We've always been known as the technology leader in our industry, so one of the main things driving



*Diamond Systems can easily detect interferences with 3D modeling and has reduced ECOs by 40 percent. 3D models are now used for customer design reviews, while the competition still uses 2D. Pictured at top is Diamond's Multicaser machine designed in 3D Solid Edge, a sharp contrast to the old 2D design (right image) done years ago in 2D.*

“It takes me the same or less time to create a model in Solid Edge than it did to draw three views in AutoCAD. And once you have a solid model, there is so much more value to it than a drawing.”

Jason West  
Mechanical Project Engineer  
Diamond Systems

the upgrade was to make sure that presentations to our customers, in areas such as documentation and even sales meetings, were visibly leadingedge,” says Doug Flege, vice president of engineering at Diamond Systems. “With Solid Edge, we now have that. This, in my opinion, is as important as other advantages we have gained from 3D modeling, such as faster time-to-market and lower development costs.”

Diamond Systems, based in Farmington Hills, Michigan, is the world leader in egg packing, grading and breaking machines. The company develops, manufactures, markets and services its products to egg producers and egg processors on six continents. These complex machines have capacities from 22,000 to 72,000 eggs per hour. Grading systems load, wash, inspect, weigh and pack eggs into cartons and trays at rates of 14,000 to 144,000 eggs per hour. Breaker-separators load, wash, inspect, break and separate egg yolks

from egg whites at speeds of 36,000 to 144,000 eggs per hour. Not only are these machines complex, they must operate flawlessly because of the extremely fragile nature of the product they handle.

#### **Considering, implementing 3D**

Every designer and engineer at Diamond Systems participated in the evaluation process for the new CAD software. They ruled out Autodesk Inventor early on. They briefly considered AutoCAD Mechanical Desktop but ruled it out as well because it looked too difficult to learn. The selection process came down to a thorough, side-by-side comparison of Solid Edge and SolidWorks. Solid Edge easily outperformed SolidWorks in sheet metal modeling, which was a critical need of the machine designers. Solid Edge also excelled in ease of use, which was another important requirement. “Most of our staff went from the drawing board to AutoCAD without training years ago, and their only experience has been in 2D,” explains Jason West, mechanical project engineer, Diamond Systems. “One thing that was really noticeable about Solid Edge was

that, compared to SolidWorks, it is much easier to use. You need fewer commands and keystrokes to create parts and assemblies." Drafting was another area in which Solid Edge excelled. "A test assembly took an entire day to produce in SolidWorks," says West. "The same draft took two hours in Solid Edge." Overall, the reviewers found Solid Edge to be more stable, and that it worked as promised. "Some of SolidWorks claims did not prove true. Everything Solid Edge promised, worked," West adds.

Flege expected a certain amount of disruption as his staff learned the new software. To his pleasant surprise, the disruption was minimal. "Switching to 3D wasn't a lot of trouble, and the big part of that is because we went with Solid Edge," Flege says. "The main disruption was that we lost a week when we sent everyone to training. (Training was conducted by the reseller, CAM Logic.) But that actually paid off because by the end of that week most people were back to their previous level of productivity. And not long after, they surpassed that level." Flege notes that the company's chief engineer is 80 years old and the senior mechanical designer is in his 60s. Both made the transition to 3D easily. "They were up and running as fast as anyone else," he says.

One key to the smooth transition to 3D, Flege believes, is that people were aware and excited about it before it happened. "Rather than coming in saying, 'You guys are all going to training next week to learn to draw in 3D,' we got everyone involved from the start," he explains. "Participating in the selection process got them excited about going to 3D. So when it came time for training, everyone was excited and ready to go."

#### Looking good and working well

Diamond Systems now designs its machines as virtual assemblies in Solid Edge. Individual components are modeled as solids and then put together into subassemblies and assemblies onscreen. Component modeling in Solid Edge takes no longer than drawing a part in AutoCAD, according to West. "It takes me the same or less time to create a model in Solid Edge than it did to draw three views in AutoCAD," says West. "And once you have a solid model, there is so much more value

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Diamond Systems

## Solutions/Services

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

## Customer's primary business

Diamond Systems is the world leader in egg packing, grading and breaking machines.  
[www.diamondsystem.com](http://www.diamondsystem.com)

## Customer location

Farmington Hills, Michigan  
United States

**"It takes very little time to create a 3D isometric view in Solid Edge."**

Jason West  
Mechanical Project Engineer  
Diamond Systems

to it than a drawing." For example, Solid Edge component and assembly models are used in Diamond Systems' technical documentation and in assembly drawings for the shop floor. "It takes very little time to create a 3D isometric view in Solid Edge, and the software even lets you shade it," West adds. "When we include shaded iso (isometric) views on our drawings, it really helps the people on the shop floor see how things go together."

Building machines virtually in Solid Edge makes it possible to detect interferences between parts in a way that was not possible previously with 2D. "We estimate that we've reduced engineering change orders (ECOs) by 40 percent or more since we moved from AutoCAD to Solid Edge," says West. Fewer revisions mean lower costs and faster time-to-market. In addition, the company no longer builds physical prototypes to make sure things fit. That is

done onscreen in Solid Edge. Now, the first prototype that is made is the one that goes in the field for testing at production speeds.

Solid Edge has helped meet Diamond Systems' goal of maintaining its reputation as a technology leader. "Now when our customers look at our documentation to order parts or to repair a machine, they see shaded solid models. The competition is still presenting flat 2D drawings so this reinforces our reputation," says Flege. "Also, we rarely sell to individual farms any longer. When we go into sales meetings, we're going into corporate headquarters where our 3D presentations are really appreciated." Speaking about the move from 2D to 3D in general, Flege concludes, "I don't understand why everyone isn't using 3D. You couldn't take it away from us."

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Doug Flege  
Vice President, Engineering  
Diamond Systems

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