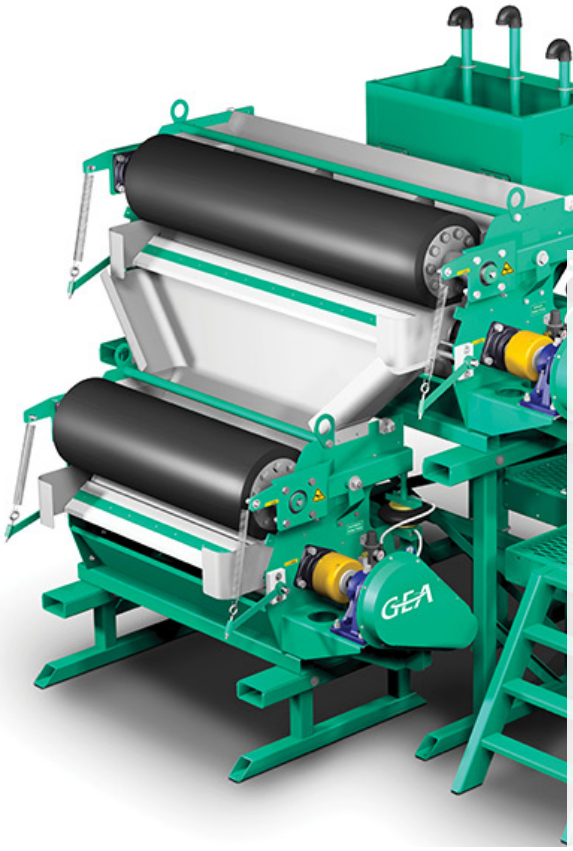
GEA FARMS TECHNOLOGIES
CASE STUDY



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Alexander Laprise, Engineer
GEA Farm Technologies

Elevating the brand

The GEA Farm Technologies Competence Center for Manure Management at Drummondville moved from 2D to 3D computer-aided design (CAD) in 2005. Like thousands of companies moving from 2D, GEA Farm Technologies (GEA) prospered with its new 3D CAD system, Solid Edge® software, from product lifecycle management (PLM) specialist Siemens Digital Industries Software.

The benefits were widespread, including better visualization of fit and tolerance, easier and fewer change orders, the ability to quickly communicate design intent to manufacturing as well as customers, a reduction in physical prototypes, more efficient drawing production, and measurable results.

The productivity didn't stop there. By moving to 3D design, GEA now accesses a powerful downstream application, Solid Edge Simulation, a finite element analysis (FEA) tool embedded inside the CAD system. The simulation tool raised confidence among an engineering staff eager to further elevate the reputation of its agricultural machinery. GEA's choice of the embedded simulation tool enabled the company to keep its FEA work within its design department. Streamlined design/ analysis allowed GEA to quickly reap the benefits.

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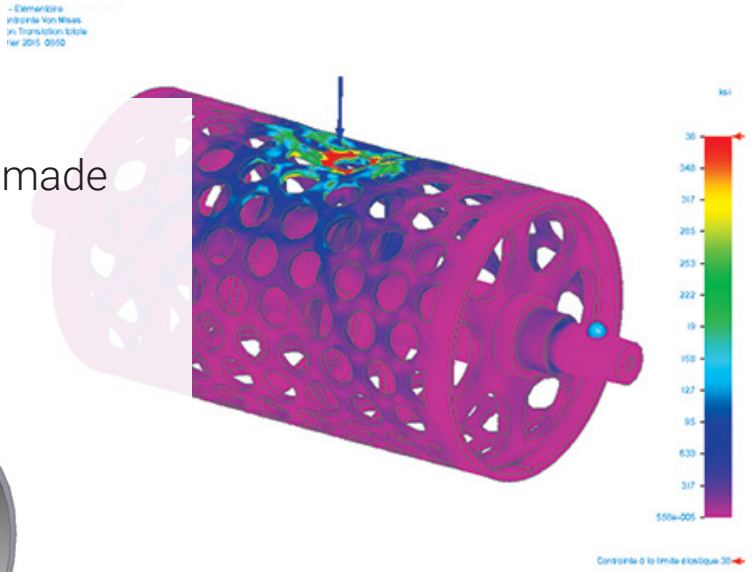
The Drummondville, Quebec-based business unit is part of the large GEA Group in Germany. The Drummondville facility manufactures livestock manure management machinery for the global agricultural market. Its products include machines to pump, agitate, spread and separate liquid from manure for composting on livestock farms of all sizes. This segment of the Group has its largest markets in Canada, the United States, Russia and Japan.



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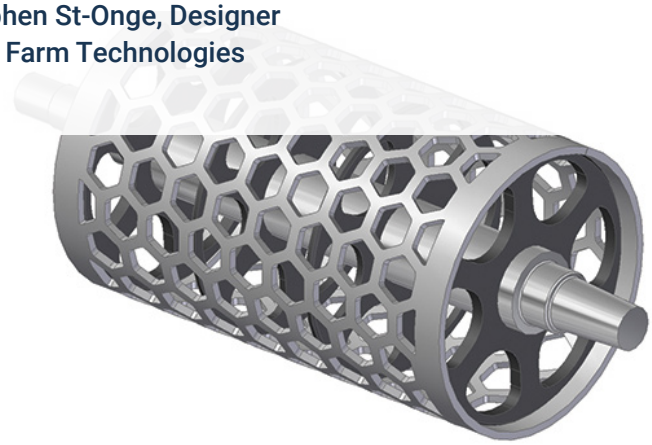
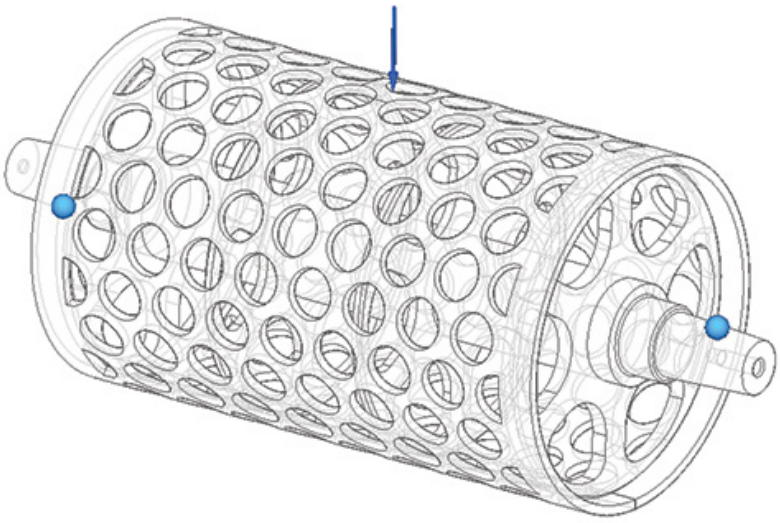
Stephen St-Onge, Designer
GEA Farm Technologies



2D to 3D CAD

The 2D to 3D change greatly enhanced the company's design capabilities in many ways. "On average, the move from 2D to 3D made our design process five times faster," notes Stephan St-Onge, a designer at GEA. "3D made it easier to visualize and modify the designs."

According to St-Onge, for the company's important sheet metal design needs, the old 2D software offered little value: "Sheet metal design in 2D is a manual process and is very tricky. For sheet metal design, 3D with Solid Edge is two times faster than 2D." "By using an exploded view in 3D, it's easier to see the interaction between the parts," adds Alexander Laprise, an engineer at GEA. The 2D to 3D migration proved very productive and, after about eight years, the company decided to seek out more ways to utilize its 3D designs.



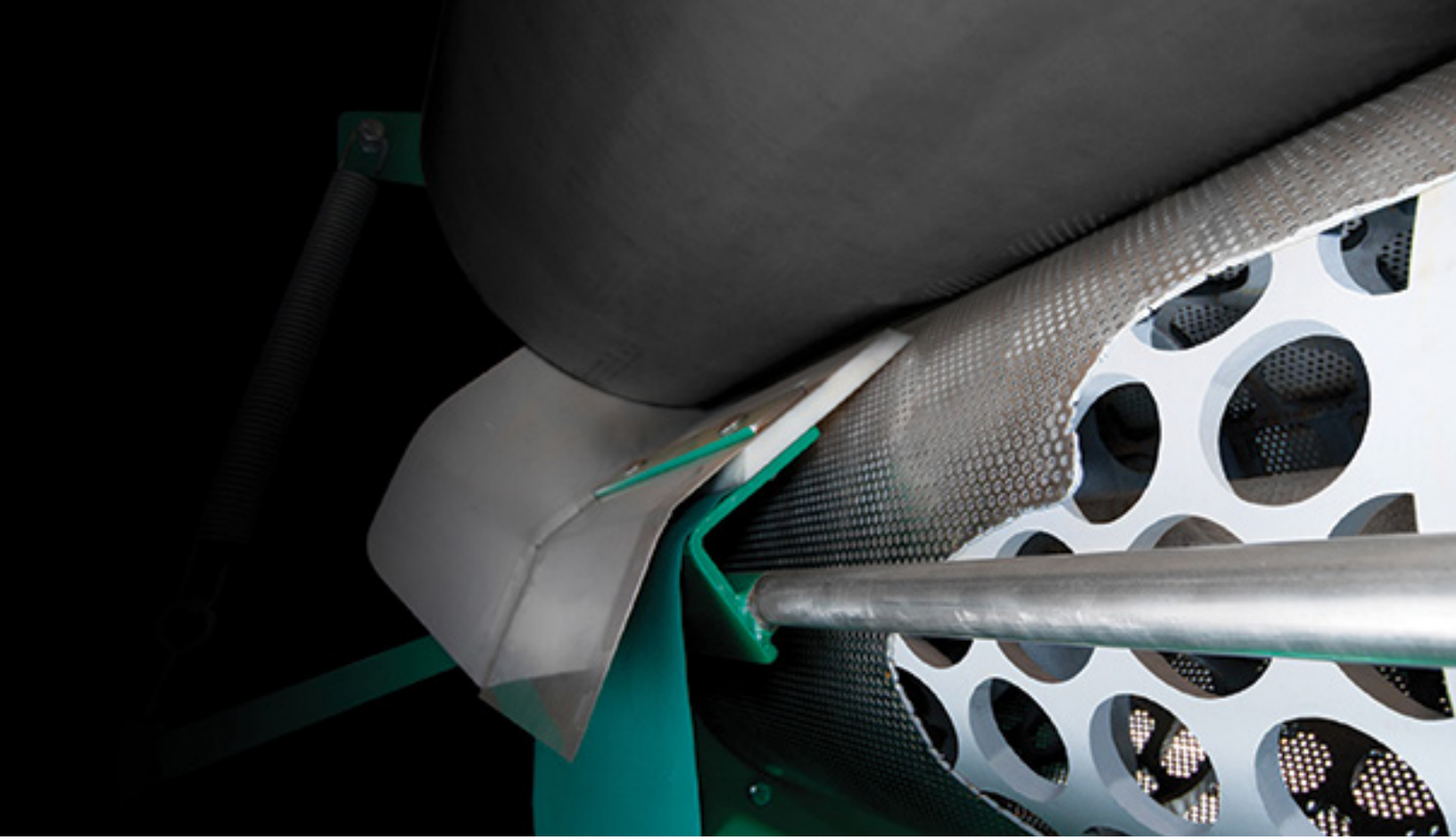
Solid Edge Simulation

In 2013, GEA added the integrated Solid Edge Simulation tool to further boost its design capability. “FEA is still new in our design culture, but we know now the analysis can be trusted because we have been able to compare FEA results to physical bench tests,” says Laprise. “It takes two weeks or longer to do physical bench tests versus one day with simulation. We save time and money. Working faster means we are more competitive in the market.”

Laprise used an example of an air brake system on a manure spreader: “We did the analysis and then did a physical bench test. FEA proved to be 100 percent accurate, showing us we can trust the FEA model.” He notes, “Engineering needs to ensure the results. The Solid Edge Simulation FEA model allows me to validate the design, save time and save money. Prototype after prototype is expensive.”

GEA considered contracting out its analysis work, but the cost was too high and the process was too lengthy. “Since it’s an iteration process, we would just be waiting and waiting for the results,” says Laprise. CAD-embedded FEA allows us to save money during the design process, and save iterations at the prototype step,” he explains. “We can reduce four to five physical prototypes down to just one, shaving the design cycle by months. Physical prototype time varies, but usually takes two to four weeks here at our Farm Technologies unit.”

Using an example of a complex draw-bar assembly that connects a wheeled manure spreader to a tractor that will pull it, Laprise needed to fully understand the load pressure. Instead of a physical prototype, GEA successfully used Solid Edge Simulation during the design phase. “We can save 25 percent of our design time, and we are much more confident that the design meets the stresses that the assembly will go through when the product is shipped to our customer,” says Laprise.



Business impact of simulation within the design process

The integrated design and simulation capabilities of Solid Edge provide GEA with a full set of business benefits for both its existing and future customers. St-Onge and Laprise discussed a list of advantages. “By having a lower cost of manufacturing, we can offer more competitive solutions,” says St-Onge. “We save material and weight by changing from steel to aluminum, making the machinery lighter and easier to manufacture.”

“We don’t over-design for the lifecycle of the product,” says Laprise, who concludes: “We can reduce warranty claims and recall notices, thus raising our reputation with customers. We get better design, but not over-design. In some cases, simulation has allowed us to decrease prices and become more competitive.”