

SITUATION

Ametek Rotron's Technical Motor Division – Industrial Products is the U.S.'s leading manufacturer of regenerative blowers used to supply air for industrial manufacturing processing of air and water, pollution control, and industrial markets, as well as biofiltration systems for odor removal. The company has successfully grown its business by identifying new markets and applications in advance of the competition and moving quickly to secure these markets with custom-engineered blower products. To continue and improve on this successful growth strategy, the company revamped its product development process. Key to this new approach is the use of solid modeling to increase product design quality and shrink cycle time. In choosing a solid modeling system, company management wanted the new software to run on the PC platform and provide access to advanced modeling functionality and computer simulation tools such as finite-element analysis (FEA).

OBJECTIVES

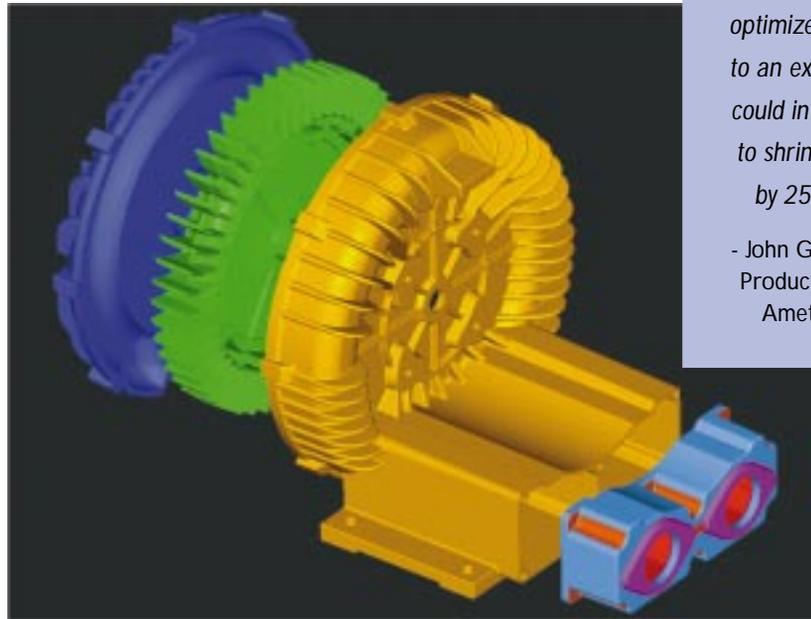
Expand sales into new markets by designing regenerative blowers for new applications.

PROCESS VISION

- ✓ Migrate from 2D CAD (Generic CADD) to solid modeling to facilitate design optimization and cycle-time reduction. This included using solid models in applications such as rapid prototyping, FEA, and tooling.
- ✓ Adopt Windows NT-based PCs as the platform for the new system.

ACTIONS

- ✓ Ametek Rotron chose I-DEAS Artisan™ over SolidWorks and Pro/Modeler because it was affordable, yet provided high-end modeling functionality on Windows NT computers. Also, I-DEAS Artisan provided a direct link to I-DEAS Master Series™ finite-element analysis applications as well as to the advanced surfacing capabilities of I-DEAS Master Modeler™. Plus, the software runs on NetPower PCs.
- ✓ The intuitive user interface of I-DEAS™ eased the transition from 2D, allowing most people to adapt to solid modeling quickly. The company held eight days of in-house training for its users, who were modeling actual products in the new system within three months.



Ametek Rotron Expands Into New Markets With I-DEAS Artisan™

"We're in a growth mode right now and I-DEAS Artisan is a big part of that. It is allowing us to optimize our products to an extent we never could in the past, and to shrink cycle times by 25% to 30%."

- John Grant, Manager
Product Engineering
Ametek Rotron



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There
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✓ New products are now designed entirely in solids. The team begins by modeling products in either I-DEAS Artisan or, for very complex surfaces, in I-DEAS Master Modeler. (Since the packages share the same user interface, designers easily switch between the two programs.) They transfer solid model geometry directly to I-DEAS Model Solution software for design analysis and optimization.

RESULTS

- ✓ The ability to visualize a design as a solid model has been a great improvement over working with drawings. Designers now model parts with complex shapes faster than they could in 2D.
- ✓ The ability to use I-DEAS Artisan solid models in the I-DEAS Master Series finite-element analysis program has reduced analysis time by several days for every part that is analyzed. In the past, finite-element models were reconstructed over the course of several days from Generic CADD drawings and processed in Algor. Now, solid models are imported directly into the analysis software – without recreation or data translation. That, and the ability to move information easily between analysis and modeling, allows Ametek Rotron to use analysis as a design optimization tool. A recent part, a cast iron transition ring, was optimized with FEA to reduce cost by 30%.
- ✓ By finding tooling vendors who can work with solid models, Ametek Rotron has reduced lead times for tooling by three-to-five weeks. In the past, tooling lead times were 8 weeks for sand castings and up to 26 weeks for die castings.
- ✓ Overall, the product development process based on I-DEAS has reduced cycle time by 25% to 30%.
- ✓ Since installing the software less than one year ago, Ametek Rotron has developed several new products entirely in I-DEAS. These include a redesign of a sandcast blower to die cast for cost reduction and a new digital flowmeter product line.

PLANS

The company plans to expand the use of solid models with suppliers, both by cultivating new vendors who can work with solid geometry and by encouraging existing suppliers to use this technology.

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