

BURNS MACHINERY, INC.

EXPANDING MACHINE DESIGN AND TOOLING BUSINESS WITH SOLIDWORKS AND SOLIDCAM SOLUTIONS



By standardizing on SOLIDWORKS Premium software for design and SolidCAM software for machining, Burns Machinery has realized substantial productivity gains that have helped the rolled ring machinery company launch new businesses, including an off-road motorcycle components business called Dirt Tricks, Inc.

Challenge:

Shorten development cycles, improve design accuracy, reduce machining time, and extend tooling life to support increased throughput and new business initiatives.

Solution:

Implement SOLIDWORKS Premium design software and SolidCAM machining software solutions.

Benefits:

- Reduced design cycles by 66 percent
- Cut machining time by 60 percent
- Extended tool life five fold
- Supported business expansion, increased throughput and revenue growth

Aerospace engineer Greg Burns founded Burns Machinery, Inc. in 1981 to develop improved machinery for manufacturing seamless rolled rings, which are critical components in jet engines. The company's vertical style ring mills and associated ring-sizing machinery are used by suppliers to jet engine manufacturers, including Pratt & Whitney, Rolls Royce, and General Electric. To support the development of its custom ring-milling systems, Burns Machinery operates a state-of-the-art machine shop, which pulls double duty by also providing contract-manufacturing services.

Until 2007, Burns Machinery used AutoCAD® 2D design tools and BobCAM® CAM software to support design and manufacturing. However, increasing competition and plans for product and service expansion prompted the company to move to a 3D development platform to improve efficiency, reduce costs, and increase throughput. "We held out on moving from 2D to 3D design not so much because of the cost but due to concerns regarding anticipated time requirements," Burns recalls. "My primary concern was the learning curve and minimizing downtime during the transition."

Burns Machinery evaluated the Autodesk® Inventor®, Pro/ENGINEER®, and SOLIDWORKS® 3D design systems. After speaking with colleagues and learning that 80 percent of the students that he encountered as a guest lecturer at the University of Reno chose SOLIDWORKS to complete senior design projects, Burns standardized on SOLIDWORKS Premium software. "I was determined to learn SOLIDWORKS quickly," Burns recounts. "It didn't take long, and now I live and breathe SOLIDWORKS and make great use of its large assembly and sheet metal design tools."

The company's positive SOLIDWORKS experience led to a reassessment of its machining operation. "We wanted an integrated CAM system so that we can take 3D geometry right into the CAM package to generate G code without having to mess around with models in the CAM system," Burns notes. "We learned that several CAM systems utilized SOLIDWORKS as the geometry front-end—including MasterCAM®, CAMWorks®, and SolidCAM—which would enable us to capture and retain required shop changes in our design models."

Burns chose SolidCAM software because it is integrated with SOLIDWORKS and includes intelligent machining (iMachining) technology. "SolidCAM's iMachining capabilities provide us with our biggest competitive advantage," Burns says. "It enables us to cut a part in a fraction of the time without destroying the tool."

FASTER DESIGN, INCREASED ACCURACY, GREATER THROUGHPUT

Since implementing SOLIDWORKS Premium design software, Burns Machinery has shortened design cycles and accelerated proposal drawings development. The company has also enjoyed much greater design accuracy, resulting in a dramatic drop in design errors.

"The two big impacts of moving to SOLIDWORKS software are time savings and greater accuracy," Burns stresses. "It used to take a week to produce drawings for a machine proposal. With SOLIDWORKS, developing proposal drawings for our largest machines takes 12 hours, and our design cycles are about one-third of what they used to be."



"The transition to 3D design and iMachining via the integrated SOLIDWORKS/SolidCAM CAD/CAM solution has enabled us to increase throughput, improve our bottom line, and grow revenue."

— Greg Burns, Owner

IMACHINING SAVES TIME AND MONEY

By adding the iMachining capabilities of integrated SolidCAM machining software to its SOLIDWORKS implementation, Burns Machinery is also achieving time and cost savings in production. The company has reduced machining time while extending tool life using the integrated CAD/CAM solution.

"SolidCAM's iMachining is a revolutionary concept that saves time and money by optimizing how the tool cuts the metal, shortening machining time by at least 60 percent and making tools last five times as long," Burns notes. "The system's high feed rates combined with a low angle of engagement remove material faster than anything that I've seen without premature tool wear. Because a \$100 cutter lasts five times longer than it used to, we realized a return on our investment just in tool life in a matter of weeks, without even considering the productivity gains in machining."

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By accelerating and improving design and machining using the integrated SOLIDWORKS/SolidCAM solution, Burns Machinery has increased throughput, launched new business enterprises, and supported revenue growth. In addition to its rolled ring machinery operation, the company now offers laser-cutting services through its Fiber Laser Division, has developed its own brand of nitrogen generators through its Nitrogen Division, and supports an off-road motorcycle components business called Dirt Tricks, Inc.

"The transition to 3D design and iMachining via the integrated SOLIDWORKS/SolidCAM CAD/CAM solution has enabled us to increase throughput, improve our bottom line, and grow revenue," Burns explains. "It allows us to do more with the same amount of people to boost profits, which not only benefits me but also affects what I can contribute to my employees."



In addition to supporting the company's rolled ring machinery and off-road motorcycle components businesses, the benefits of the SOLIDWORKS and SolidCAM implementations have allowed Burns Machinery to offer laser-cutting services through its Fiber Laser Division and its own brand of nitrogen generators through its Nitrogen Division.

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