



A CAMWorks Case Study **Designing, Machining, and Installing Parts in a Single Day**

**Ringbrothers Advances High-End Muscle Car Restoration/Parts Business
with SOLIDWORKS and CAMWorks VoluMill Software**

Brothers Mike and Jim Ring have transformed their passion for restoring iconic muscle cars and building innovative street machines into an internationally recognized car building/restoration and automotive parts company known as Ringbrothers. The Wisconsin company's fame in car circles includes fans ranging from actor Tim Allen to NBA star Tim Duncan to the bearded members of the rock group ZZ Top. In fact, one of the world's most notable automobile aficionados, former Tonight Show host Jay Leno, recently Tweeted, "These boys up in Wisconsin build good cars," to the 65,000 followers of his Jay Leno's Garage account.

Ringbrothers has been restoring and building high-powered Mustangs, Camaros, and other legendary street cars – like the 1966 Chevrolet Chevelle – for more than 20 years. The company's work has also resulted in the design and manufacture of a complete line of industry-leading automotive parts. Ringbrothers develops its components, which are sold online, through a meticulous 3D design and engineering process using SOLIDWORKS[®] design software. The firm's brand characteristics of high quality and top performance stem from its commitment to innovation and detail throughout the design and machining of its proprietary parts, which include unique and reliable billet aluminum parts and exterior styling components.

Until recently, Ringbrothers has worked with manufacturing partners to develop parts for its custom builds, which range in price from \$300,000 to \$600,000, as well as to support its part offering for the do-it-yourself car restoration market. As demand for Ringbrothers parts and services continued to grow, the brothers decided to enhance the company's research and development effort by leveraging the SOLIDWORKS design environment and investing in tools that support an efficient design through manufacturing process, according to Product Development Specialist Matt Moseman. By combining the SOLIDWORKS platform with an internal high-speed machining capability, Ringbrothers can better support design prototyping, one-off part development, and low-volume component production.

"We're in a niche market, and our internal design and manufacturing capability needs to support a low-volume, high-SKU-count operation," Moseman explains. "While we continue to work with machine shop partners on parts that are produced at higher volumes, we needed a high-speed



The Client

Company: Ringbrothers
Headquarters: Spring Green, WI, USA
Industry: Automotive Restorations

The Objective

Accelerate research and development into the machining of innovative, unique automotive components and assemblies to support custom muscle-car restorations and associated catalog parts business.

The Solution

Implement CAMWorks VoluMill hi-speed machining software to establish a fast and cost-effective internal machining and prototyping capability to support intensified research and development effort.

The Benefits

- Increased parts offering 15 to 20 percent.
- Maxed out feed rate at 600 inches/minute.
- Accelerated research and development.



machining facility to drive R&D and prototyping, such as one-off stuff and unique, creative ideas. Because we use SOLIDWORKS as our design environment, we wanted a CAM and manufacturing system that adds to the benefits of the SOLIDWORKS fully associative, feature-based approach.

Ringbrothers chose to combine a Haas VF3 3-Axis CNC Vertical Machining Center – featuring a 15,000-rpm spindle and 21+1 tool changer – and CAMWorks® 3D CNC machining software, and the CAMWorks VoluMill™ high-speed machining module for roughing operations, with SOLIDWORKS design software. Moseman says Ringbrothers chose CAMWorks software because its integration inside SOLIDWORKS

and robust CAM capabilities stand out from other CAM applications, and because the VoluMill module better supports the company's high-speed machining requirements.

Faster R&D Grows Product Offering

Since implementing CAMWorks software to automate machining, Ringbrothers has accelerated its R&D operation, resulting in a 15-to-20-percent increase in the number of parts that it produces. "Although our product line expansion is fueled in large part by the number and type of builds that we do, having our CAMWorks VoluMill high-speed machining capability allow us to really think outside the box and develop innovative approaches that further grow the number and kinds of parts that we produce and sell," Moseman notes.

"I use CAMWorks VoluMill software all the time when I'm roughing, with 80 percent of the chips created using that module," Moseman adds. "CAMWorks allows us to max out our feed rate at 600 inches per minute, which really helps us drive R&D forward. We're doing unique things with a different purpose than a conventional machine shop, and the combination of SOLIDWORKS and CAMWorks software, and the VoluMill module, has improved our time flow in R&D and given us an edge in terms of tooling and productivity."

Creative Texturing Drives Design Aesthetics

In addition to supporting Ringbrothers' high-speed machining and prototyping needs, CAMWorks software enables the classic car builder to boost creativity and innovation in new part development. For example, Ringbrothers parts have a specific rugged look that requires unique tooling approaches and machining. "We're not after the smooth, mirrored, perfectly machined look in the parts that we produce," Moseman explains.

"CAMWorks allows us to max out our feed rate at 600 inches per minute, which really helps us drive R&D forward."

"The texturing of our parts is a big thing, and is probably just as, if not more, important than achieving high speeds and feeds. CAMWorks software lets us cut larger scallops to produce an almost fish-scale look.

Leveraging Technical Database of Tools, Features, and Strategies

With CAMWorks software, Ringbrothers leverages the application's robust feature-recognition technology to build a reusable technical database of tools and strategies for more efficiently machining the many different types of features that are utilized in its parts. "I've found the CAMWorks technical database to be just incredible," Moseman stresses. "Creating your custom technical database helps you program as you go through it because it familiarizes you with how the tools are laid out. And since it's all based on SOLIDWORKS® modeling technology, you can make changes – or use utilities – quickly and easily.

"It's certainly worth the 30 seconds to a minute of time needed to recognize features and build the technical database as you go, because it will definitely save time down the line," Moseman adds. "Using CAMWorks machining software and its technical database, we can design and cut parts in a single day, which ultimately drives our R&D effort."



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