

CANE CREEK CYCLING COMPONENTS

Pedaling a Path to Faster Cycling Component Development with SolidWorks



Cane Creek Cycling Components leverages SolidWorks design and simulation tools to achieve its R&D goals—expanding its product line and reducing time-to-market at the same time.

If you're riding a bike from one of the major bicycle manufacturers, chances are Cane Creek Cycling Components made one or more of its parts. Cane Creek developed the patented headset technology that couples a bike's frame to its front fork on virtually all commercially produced bicycles. Building on its successful original equipment manufacturer (OEM) headset business, Cane Creek has expanded its product offering to include seat posts, grips, bar ends, brake levers, and rear shocks for full-suspension mountain bikes, for both OEM and after-market customers.

To prepare for the intensified research and development of its product expansion, the component manufacturer conducted a review of its previous Pro/ENGINEER® 3D CAD tools in 2004. Following that evaluation, Cane Creek management decided to switch to a new design environment to support its efforts to shorten development and time-to-market—necessary steps to continue supporting existing offerings, while taking on the additional challenges of introducing new products.

Cane Creek chose the SolidWorks® design platform because it's easier to use, is the solution of choice for key Cane Creek vendors and customers, includes integrated simulation tools, and is more cost-effective. Cane Creek acquired licenses of SolidWorks Professional and SolidWorks Premium design software, and added SolidWorks Simulation Professional software in 2010 to utilize its large-scale deformation analysis capabilities for seal design.

R&D Director Joshua Coaplen, who joined Cane Creek two years after the move to the SolidWorks platform, determined that SolidWorks was still the best solution to support the company's pursuit of its ambitious product expansion initiatives. "SolidWorks has met all of our R&D needs and has provided the modeling tools we need to achieve our goals," Coaplen stresses. "The purpose of our CAD system is to help us design, analyze, and manufacture parts in a way that reduces costs and time-to-market. SolidWorks enables us to accomplish everything that Cane Creek needs to achieve in terms of automating product development."

Challenge:

Shorten development and time-to-market for existing cycling components, while expanding product offering into new cycling areas.

Solution:

Implement SolidWorks Professional and SolidWorks Premium 3D design software, as well as SolidWorks Simulation Professional analysis software, to reduce prototype iterations and accelerate development.

Results:

- Reduced time-to-market by 15 percent
- Cut mold development time by 50 percent
- Increased headset offerings by 30 percent
- Expanded shock product line by 100 percent

Shorter mold development, faster time-to-market

Cane Creek's use of SolidWorks solutions has led to both time and cost savings, particularly in the development of prototype molds. Using the software's development and analysis tools, such as checking that a design has sufficient draft, the company's engineers make sure that the design is suitable for molding. These capabilities result in fewer prototype mold iterations and shorter time-to-market.

"With SolidWorks, we have significantly reduced our mold iterations while increasing the functionality of the molded parts," Coaplen notes. "By conducting more design iterations in SolidWorks, we have cut the number of prototype molds required for each part in half, which saves us the cost of making prototype molds and up to 10 weeks of development time. The overall impact of these productivity gains is a 15 percent decrease in time-to-market."

Simulating and configuring designs

Cane Creek utilizes SolidWorks simulation and configuration tools to contribute to these productivity improvements. The need to understand the large-scale deformations that rubber seals undergo in many of the company's products prompted Cane Creek to add SolidWorks Simulation Professional software. "Part of the reason we have cut mold iterations involves producing more moldable parts, as we have learned from our mistakes. The other part is that we can now predict how our seals will deform and can optimize their shape during design to account for this behavior," Coaplen says.

With design table-driven SolidWorks configurations, Cane Creek designers can create a complete product family from a single-base design, saving time and money. "Many of our products come in different sizes, so we frequently use SolidWorks design configuration capabilities to automate the production of other configurations once we have settled on the base design," Coaplen stresses. "These kinds of capabilities free up our engineers from repetitive tasks so they can work on other designs."

Efficiency gains fuel product expansion

By helping Cane Creek address issues related to time-to-market, SolidWorks solutions provide the manufacturer's engineers with the time and energy they need to develop new products. Since implementing SolidWorks solutions, Cane Creek has increased its headset offerings by 30 percent and expanded its shock product line by 100 percent.

"We have been able to achieve our product growth objectives because SolidWorks allows us to focus on design," Coaplen points out. "We're not interested in exerting more effort to learn about software. We want our thinking to concentrate on the products that we are trying to design, not the tools used to design them. SolidWorks helps us achieve that focus."

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Joshua Coaplen
R&D Director



Using SolidWorks Simulation Professional software, Cane Creek obtains a better understanding of how its rubber seals will deform, enabling engineers to optimize seal shape and improve performance.



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