Marin Bikes

Customer Success Story

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Speed past the competition.

Embracing 3D design and Digital Prototyping helps Marin Bikes maximize its resources and boost creativity

Nestled between the Pacific Ocean and the San Francisco Bay, a small bike company whose focus on superb engineering has garnered it a worldwide reputation over the past 20 years is recognized for creating the ultimate mountain biking experience. With relentless focus on frame technology, the designers at Marin Bikes are constantly striving to build bikes that are unique, strong, and able to differentiate themselves both in the riding experience and on the sales floor.

Jason Faircloth, product manager at Marin Bikes, explains how a company as small as Marin Bikes is able to take on and surpass its large competitors and stay ahead of the curve. Unite a team of talented designers with the industry's best digital tools, and the secret to their long-lasting success becomes clear.

Lean, Mean Biking Machine

"Obviously, one of the biggest challenges we face as a business is our size. We have limited resources and limited staff, which means we have to ensure every one of our employees is operating at maximum efficiency," says Faircloth. "The tools that we use to address this issue, Inventor and AutoCAD, are the keys that allow us to maximize the return we get from each employee."

Long-standing AutoCAD® software users, the designers at Marin Bikes had an easy choice when deciding what software to use when it came time to adopt 3D design.

"The reason we chose Inventor is because it's a continuation of the AutoCAD software we had learned in college," explains Faircloth. "As we started to move from a 2D environment to a 3D environment, it seemed to be the path of least resistance because we understood AutoCAD. Picking up Inventor happened quickly as a result." In addition, they were able to leverage all of their legacy 2D AutoCAD data because Autodesk® Inventor™ software reads and writes DWG™ files natively with full visual fidelity—and without the need for translators.

This quick transition for the designers was invaluable. As Faircloth and his team became more proficient users, they turned to the Autodesk website to download tutorials that helped them work through increasingly complex challenges. Faircloth says that the things they are accomplishing now with Inventor simply would not have been possible before.

"The software lets us easily and quickly work with complicated 3D shapes, simple tube shapes, and complicated suspension designs where you have to

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ensure clearances are maintained and tolerances are kept in check," he says.

Being able to accurately work with complicated suspension designs where designers have components interacting with each other is accomplished by creating digital prototypes that help them simulate the real-world conditions the bike will eventually confront. Before they started working with Inventor, the designers had no way of finding points of potential liability, or seeing compression details like where the loads transmit through the frames, without creating costly and time-consuming physical prototypes.

Digital Prototyping: Cutting Time in Half

A digital prototype is a digital simulation of a product that can be used to test form, fit, and function. A complete digital prototype is a true digital simulation of the entire end product, and can be used to virtually optimize and validate a product in order to reduce the necessity of building expensive physical prototypes.

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To achieve this huge cut in development time, the only thing Marin Bikes did differently was to start using Inventor for Digital Prototyping. Faircloth points out that there was no extra money spent on R&D, nor was any additional staff hired. "It was made possible simply because Inventor was available," he says.

Using Inventor, the designers create the models with all the components of the frame built into them. They then deconstruct the digital model and generate 2D engineering drawings that have all the relevant dimensions and tolerances. To try and do this any other way, such as physically creating all the 2D drawings by hand would take a drafting team days or weeks.

"The actual first sample of working in this new way was a production bike. There was no physical prototyping needed at all," says Faircloth. "Everything was done within the computer, including checking tolerances and mechanics. It saved us a lot of time, expense, and effort."

The best examples of what Marin Bikes designers have been able to do with Inventor that they would not have been able to do with any other tool are their Mount Vision class of bikes. The complexity of these bikes, including the shape of the tubes, the way the suspension works, and the way the swing arm interfaces with the frame, simply wouldn't have been feasible any other way, says Faircloth.

"That was the first project we went through using Inventor, and the fact that we got the Mountain Bike of the Year award from Mountain Biking Magazine for that work proves the method is working," he says.

Looking Forward

According to Faircloth, if you look back at Marin Bikes' product line starting in 2006 and contrast it to 2007 and then again to the 2008 line, there are very few similarities. And he credits that diversity to the tools they now have at their disposal.

"Working with Autodesk Inventor has allowed us the ultimate experience in creativity and developing new ideas," he says. "As we continue to grow and as we expand our product line, Digital Prototyping is going to become more important in the way that we do our business. We're going to rely less and less on physical models."

Faircloth adds that if he was given the task of designing a new bike without having Inventor at his disposal, he doesn't even know how he would start.

"There isn't a single day that goes by where I'm not using AutoCAD or Inventor in some way," says Faircloth. "There was no tool we had before that allowed us to do what we're doing now."

To learn more about Autodesk Inventor software, the foundation for Digital Prototyping, visit www.autodesk.com/digitalprototyping or www.autodesk.com/inventor.

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