

A man in a blue shirt and climbing gear is ascending a red rock face. The image is overlaid with digital elements: binary code (0s and 1s) in yellow and white, wireframe models of mechanical parts in blue, and a yellow 3D model of a mechanical component. The Siemens logo and tagline are in the top left, and the product name and slogan are in a blue box at the bottom right.

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# Black Diamond Equipment

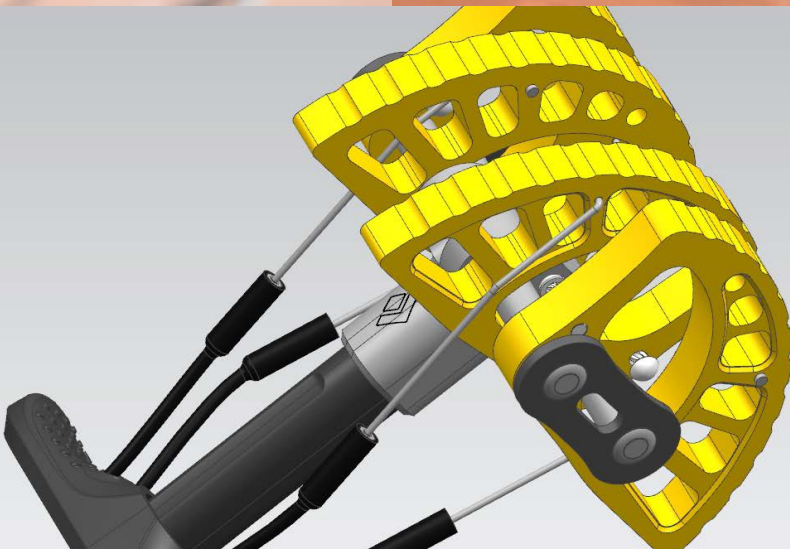
Siemens PLM Software  
enables Black Diamond  
to reach the summit

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The Dawn Wall of El Capitan in Yosemite National Park was long considered too steep and difficult for free climbing – 3,000 vertical feet of rock with no cracks, only tiny and widely spaced handholds and footholds and some of the most challenging pitches in the world. But in January 2015, after six years of planning and a 19-day climb, Tommy Caldwell and Kevin Jorgeson completed the first free ascent of the Dawn Wall, making history and pushing the sport to a new level. Their lives depended on gear from Black Diamond Equipment.

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*Pete Gompert  
Product Designer  
Black Diamond*

Based in Salt Lake City, Black Diamond Equipment is a world leader in climbing, skiing and mountain gear. The company's employees are avid climbers and skiers, dedicated to making the best gear possible for customers who share their experiences on rock and snow. Top athletes and novices alike trust their lives to Black Diamond's products, which inspire confidence with their engineered styling and ergonomics.

To achieve a distinctive marriage of form and function, Black Diamond relies on NX™ computer-aided design (CAD) software from Siemens PLM Software. The company's design team is a mix of industrial designers

and mechanical engineers who collaborate in an iterative process of tweaking and refining designs to develop products that are both beautiful and functional.

#### **Lighter and stronger**

“Lighter and stronger is the name of the game, every day and for everything we make,” says Pete Gompert, product designer at Black Diamond. “We’re doing a lot of analysis and shaving metal off everywhere we can, just to get lighter than the competition. When you’re carrying all this climbing gear, every ounce counts, and that drives customers to select Black Diamond over somebody else.”

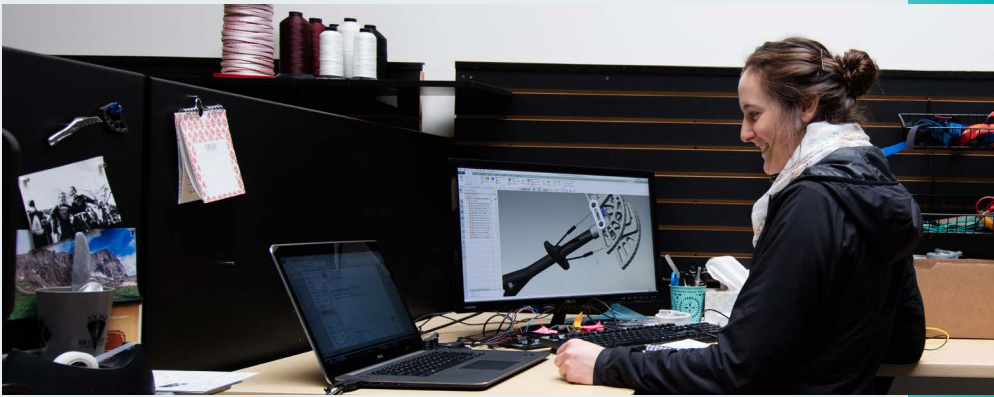
The advanced modeling and design capabilities of NX software help the company engineer lightweight performance into a diverse product line. “NX CAD is the core of everything we do. We use it for everything, from high-end surfacing all the way down to production drawings,” says Gompert. “We’re a small core team and we work on a broad variety of products. NX is really flexible – it lets us tailor the approach to the product and the team that’s working on it. The biggest asset is the ability to do whatever we want, however we want.”

#### **Styling and ergonomics**

Black Diamond achieves a competitive advantage through the tight integration of design, form and function. As mechanical engineers analyze and modify models to achieve targets for strength, weight and manufacturability, they work hand-in-hand with industrial designers to make products aesthetically and ergonomically appealing while performing at a high level. “The function and the engineering are very much tied to the form, shape and ergonomics of the product, even the fit

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Industrial Designer  
Black Diamond*



and finish,” says Jake Hall, industrial designer, Black Diamond. “NX has worked well for us because surfacing, form and sculpting are native in the package. As we sculpt these products to look beautiful, at the same time we are working out the engineering.”

#### **User-centered design**

As skiers and hikers themselves, Black Diamond employees bring drive and enthusiasm to the work of developing gear for the sports they love. “The ability to design products for me, my

family and friends and the community of users is the reason I get up and am excited to come in to work,” says Brendan Perkins, head of engineering at Black Diamond. Hall echoes that sentiment: “‘User-centered design’ is a buzzword nowadays, but what we do is really for ourselves and our friends. We like it, we enjoy it, we care about the products, we care about the process and how it gets done.”