



Swiss Ski Binding Maker Chooses ZW3D Software

Fritschi AG Swiss Bindings, the maker of sophisticated binding systems for touring, alpine and freeride skiing, recently introduced what has been called the first thoroughbred freeride ski binding, the Diamir Freeride.

Initially unveiled in 2001 at the ISPO Winter/Trade Fair for Sports Equipment and Fashion in Munich, Germany, the Diamir Freeride is the only ski binding with an integrated climbing function, which opens up a whole new world of possibilities in snow for freeriders.

Freeride skiing, a style of skiing characterized by an all-mountain terrain of cruising, powder, jumps and trees, demands the kind of rugged, sophisticated bindings needed to withstand a variety of conditions and terrains, including jumps, walking, downhill and touring, and yet still remain comfortable.

Although fundamentally a downhill binding, the lightweight Diamir Freeride features a stable walking function and has been designed to consistently meet the demanding requirements of the freeride enthusiast. Drawing on Fritschi's expertise in ski-touring, the Freeride provides a fluid walking motion, minimum weight and unequalled flexibility, allowing "freeride" skiers to execute smooth jumps in fresh powdered snow or to climb deep, pristine snow slopes away from densely-packed snow trails.



High-tech materials and construction are used in the Diamir Freeride of Fritschi, including a unique sliding bar permitting unrestricted flexing of the ski underneath the binding. The special shock-absorbing elements that minimize vertical impacts and flexing improve ski control, under all conditions. The bar achieves the necessary length and compensates to guarantee constant release values in every skiing situation.



Fritschi's products have endeared themselves to users with their patented system and a design strategy that minimizes muscle strain across all of its product applications. Yet achieving the level of flexibility and fluidity of motion displayed in the Diamir Freeride and other Fritschi bindings is no small task.

It is therefore essential that Fritschi have access to superior freeform surfacing in both CAD and CAM when developing its products, and why the company turned to ZW3D software from ZWSOFT.

"We were inspired by the unlimited possibilities of ZW3D's freeform surfacing and filleting," said Martin Jordi, manufacturing engineer for Fritschi. "That was three years ago. Now the Freeride system is but one part of the Fritschi products palette, which is developed exclusively using ZW3D."

Because of its integrated design-through-manufacturing solution and hybrid modeler with advanced surfacing, ZW3D has been adopted as the solution of choice by Fritschi to produce high-tech products that provide a full range of functionality and features demanded by high-impact skiers.



New product development and enhancements at Fritschi begin by defining the scope of the specific function of the product, such as the quick-release system, which Jordi believes is what gives his products their competitive edge. Then, preliminary wireframe geometry is constructed by Fritschi's builders group.

At this point ZW3D is used to develop the 3D design by first sketching part geometry to unite the function and the design. Jordi says ZW3D's superior freeform surfacing and filleting give Fritschi the ability to design an attractive, stylish product while ZW3D's integrated CAM accelerates the process from design through manufacturing. All detailed 2D technical drawings are also produced with ZW3D Overdrive.



For its high-performance bindings, Fritschi uses leading-edge synthetics, nylons and acetalpolymer (POM) in its products. “In fact, the biggest challenge we encounter in the entire design and manufacturing process is translating our designs into a manufacturable binding with durable, real-world performance based on the actual mechanical properties of the high-tech materials we use,” said Jordi.

In contrast to even the most meticulously defined design geometry, the real-world mechanical parts in ski bindings succumb to different rules. In practice, it’s difficult to calculate the effects of the various mechanical forces on different parts of the bindings individually and together. “Ski bindings operate under a different set of principles than most other products,” said Jordi.

As a result, Fritschi generally needs to create five or six prototypes using laser sintering or stereolithography, and from those test samples develop final dimensioning of the critical components. Fritschi uses ZW3D during this process for part fitting and also to reliably export data in STL or IGES format to the prototyping machine. As soon as the final parts are refined, the CAD data is sent directly to molding and milling operations. Fritschi now relies on ZW3D to generate milling cuts quickly and easily to shape the synthetic parts for all of their products.

The result is high-performance athletic equipment products that are durable, functional and attractive.

Note: VX CAD/CAM software and technology has been acquired by ZWCAD Software Co., Ltd. VX CAD/CAM has been rebranded as ZW3D. All the testimonials of ZW3D refer to its predecessor.