Electronic Ski Binding

Development Program: Electronic Ski Binding

CLIENT: Marker Ski Binding Company

OBJECTIVE:

Safety in alpine skiing depends, in large part, on the mechanical releasable ski binding, which releases when the applied force on the bone exceeds a preset threshold. In reality, however, bones do not break based only on the amount of force applied, but on the amount of energy absorbed (i.e. force acting over time).

For example, racers' legs commonly experience extremely high forces, but for very short periods of time. Thus, even though the time is too short for the bone to break, a racer can easily pre-release a standard force-based binding.

Conversely, beginners exert very low forces, but they tend to fall in a slow and twisting manner. This low force acting over a long period of time can exceed the force and time threshold, leading to a broken bone with a force-based binding.

There was clearly a need for a binding based on an energy threshold rather than a force threshold.

SOLUTION:

DCI developed the Electronic Ski Binding, an energy-based system that continuously integrated the force over time and compared the value to a preset safety threshold. Extensive analyses and field tests accompanied the effort, and prototype bindings were demonstrated at numerous ski industry trade shows. The new technology virtually eliminated pre-release and non-release situations.

RESULT:

Marker has always been known in the ski industry for its safety ski bindings. DCI helped Marker to raise its reputation by another notch with the development of the first Electronic Ski Binding. The marketing effort that surrounded the development of the technology increased Marker's mechanical binding sales and captured the attention of the West German government, which led to significant grants to assist with the development.

Development work continued long after the initial work was completed, and many of DCI's innovations were incorporated into Marker's mechanical ski binding systems.