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EXECUTIVE SUMMARY FOR FINAL REPORT

THE SMOOTH OPERATORS' X1 SNOWBOARD BINDING QUICK ADJUST SYSTEM

In snowboarding there exists a problem in that there are optimal stance positions for different snow conditions and types of riding for each individual snowboarder, yet there also exists difficulty in making on mountain adjustments to the previously set binding position. Our group has continued to make progress towards solving this problem.

Through research and surveys we have we have created a good customer profile. Our target is upper-class males from the ages of 12 to 24. Surveys have helped us to gain knowledge about riders' desire to change snowboard bindings and what they would look for in a product such as ours. Of those surveyed, four out of five replied that they would change their stance more often as snow-conditions and riding styles dictated with a tool-less adjustment system. When asked to give an estimation of how long it takes them to adjust their bindings we received times ranging from 2-15 minutes and 2-20 minutes to adjust the rotational and longitudinal orientation of their bindings, respectively, with an approximate mean of 7 minutes.

In addition to surveying snowboarders we talked to sponsored riders at Dartmouth and at snowboard shops more in depth. One of our concerns about our product was that it would add too much lift to the current bindings. However, we learned that for free-riding more lift is beneficial because it improves a riders carving ability by giving added leverage while turning. In fact, there exists in the market riser plates whose sole purpose is to be placed under the binding and add lift. Freestyle riders on the other hand want to be lower and closer to the board so that they may have a better feel of the board.

Using Pro-E and Pro-Mech we designed and ran statistical tests on our product. We have completed the machining of our system. We made the rail pieces out of Delrin. After completion of the rails flex tests with our rail system mounted in comparison to the board alone and other binding systems. We found as expected that our rails inhibit the board's natural flex slightly more than current bindings alone. The aluminum circular plate had two levers on each side added to it to serve as the locking mechanisms for rotation and longitudinal motion. Our longitudinal locking system strongly resembles that found on a ski binding we acquired designed by Marker involving a pin loaded with a spring that falls into slots maintaining its position. The rotational lock is spring-loaded and has a pin that falls into the holes on the side of the Delrin turntable inside of the aluminum ring. Once all was completed we were able to do on-slope testing and conduct a focus group. The focus group, which also tested our product, gave us favorable feedback. Notable was the system's high functionality and ease of use, along with the durability to hold up during an entire day of riding.