ABCorp™
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TEAM USA PARALYMPICS

ABCorp leverages Multi Jet Fusion technology to cut production costs by 50% and reduce turnaround time from 15 to 3 days

THE CHALLENGE

Curling Tool Precision

Curling requires distinctive sports gear for Olympic athletes. ABCorp and Brad Carlson have helped design and manufacture a curling tool that aids in more precise management of sweeping the granite stone, allowing athletes to perform at the highest level. Team USA Paralympics is currently utilizing the benefits of this new design in their curling trials.

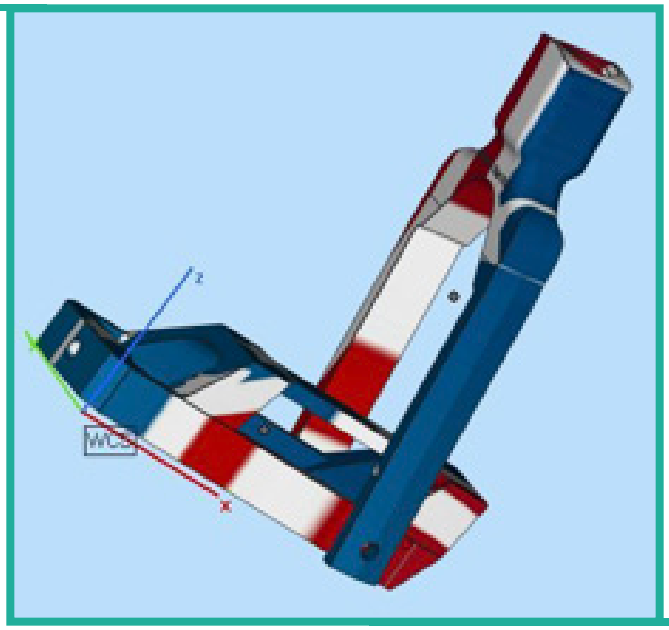
Curling Origins

The first curling club appeared in Scotland with the Grand Caledonian Curling Club, formed in 1838, responsible for formulating the sport's first official rules. The Club was renamed the Royal Caledonian Curling Club in 1843.

The most significant modern developments in the sport have been the standardization of the stone, the development of the slide delivery, and indoor refrigerated ice facilities. ABCorp and Brad Carlson are among the innovators improving the game.

THE SOLUTION

Curling Head Design



The improved curling head is custom designed and patented to assist with reliability and game improvement. An example of this is the conventional curling heads rotate 3 to 3-1/2 rotations. The new design will elevate the rotations to 4 1/2.

Brad Carlson, designer and entrepreneur of the curling head technology, had an innovative idea to improve the game. This idea came from twenty years of competitive curling with Team USA. During this time, Carlson utilized curling heads that failed and consistently broke. Amid this frustration, he set out to improve the device and make it stronger and more functional.

In searching for a solution, Carlson reached out to ABCorp, a certified HP 3D printing partner with production capabilities in multiple substrates, to help modify the current underperforming model in these areas:

- Improve design and cost
- Improve granite stone rotations
- Make a robust part that can be warrantied
- Redesign to streamline the parts for easy assembly
- Customizations of colors and identification requirements

THE RESULT

Following many iterations and tests, we finalized a curling head design with the flexibility to perform and increase the stone rotation to a consistent 4-1/2 rotation while making a cost-effective and customized part.

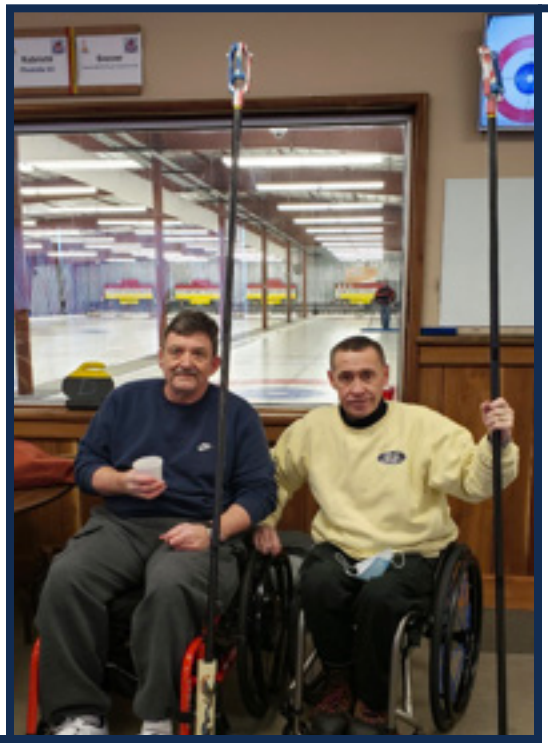
Turnaround time and customization of this product can be done from order to shipping in as little as three days using the HP MJF 3D Printing Technology vs fifteen days using other technology. All while reducing costs by 50%.

ABCorp used multiple technologies to create and finish the curling head, starting with the design in Onshape. Collaborating with Brad using this software made the changes fast and efficient. Brad consulted on the nine iterations then the testing began by printing on the HP 3D Printing MultiJet Fusion (MJF) technology. Using the MJF process allowed for many iterations to quickly transform. **Brad had parts, all nine iterations, in his hands within 24 hours of starting the print.** The HP process uses powdered nylon for the material. MJF leverages the HP printheads and agents to react with light. When hit with light, the nylon melts, repeating layer by layer to make isotropic and injection mold quality parts. Fusing the material during this process allows for no layer lines like traditional 3D printing. Doing so makes the part stronger. Once Brad chose a design that worked best for his product, ABCorp utilized image wrapping software from Materialise to project an American flag onto the part—giving the part a patriotic feel of pride. ABCorp's automated finishing services of depowdering and smoothing from AMT completed the curling head, resulting in a clean, professional feel that **seals the parts and increases mechanical properties.**

THE RESULT

“My excitement of the new curling head is overwhelming. I could not have done this without the ABCorp team. Quality and experience shined when working with ABCorp’s team,” says Mr. Carlson.

“Working on this project with Brad was a great opportunity for leveraging ABCorp’s full capabilities. The HP MJF technology helped create a superior, stronger, more functional product, and our collaborated design aided in the cost savings, quick turnover to market, and customizability, in the end, a sure fire-fit for the curling sport,” says Neil Glazebrook, VP of 3D Solutions at ABCorp.



Chuck Houle(L) with Brad Carlson. Testing the new curling head.

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Throughout the past 225+ years, ABCorp has provided essential goods and services to world-class companies and federal, state, and local government agencies in more than 120 countires. Now, ABCorp is pleased to expand our partnership with HP and launch the first global, enterprise-grade additive manufacturing platform.

We hope that you found this case study insightful. We'll reach out to see how you can leverage this technology to benefit your business. In the meantime, please feel free to contact us directly with any questions you may have.

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