Freedman Chair - Working Prototype

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Idea

Simon Freedman an osteopath and designer had a vision to improve the way we sit with the focus of our body's structure as paramount. The initial concept and design was developed, the challenge was to engineer this into a dynamic design using as little material as possible to achieve the lowest weight and carbon footprint, as well as considering the ease of manufacture.

Development

After detailed engineering drawings were completed to a high tolerance the prototype was manufactured using a combination of investment casting, CNC maching as well as rapid prototyping.

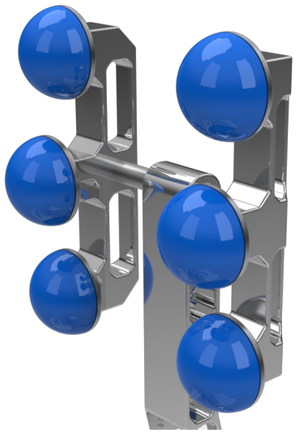
The thin aluminium seat pads were first printed in wax using a Thermojet 3D printer, then covered with a ceramic coating and finally fired to prepare the mould for casting. The molten aluminium was cast and after cooling was shot blasted to produce the final product. Using JNDC's in house assembly facilities all parts were quality checked and assembled to form the first prototype. A limited edition will be manufactured specifically to clients thumb prints.

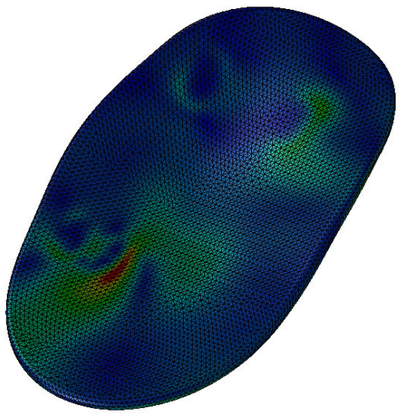
Solution

The results was a light weight working prototype weighing just 5kg (in comparison to a standard office chair weighing approximately 20kg). The customer set an extremely tight deadline to deliver the first working prototype, with no issues or problems, the prototype was displayed at an international exhibition in London.

The Next Steps

The chair won the top award for design at an international show. As a result JNDC are now in the process of preparing the product for the manufacture of 1000 units. JNDC is also working closely with the customer on a wooden version.





Finite Element Analysis of Seat Pads

Using Nastram the complete structure was optimised for maximum strength and minimum weight.

Back Balls

The six back balls are attached to the back rest which has inbuilt flexibility. They offer pressure into the back muscles via a degree of sprung resistance, this mimicking the osteopathic treatment called inhibition to relax the muscles.