

Steering wheel tailored to driver's grip made possible with 3D printing

The BAC Mono R supercar features several personalization options to improve the driver's experience. DSM and BAC put additive manufacturing to the test, creating durable steering wheels with custom grips. Pairing BAC's award-winning design knowledge with DSM's material and application expertise transformed the automotive manufacturing process, resulting in a lightweight, custom-made end use part.

Customer

Briggs Automotive Company (BAC)

Challenges

- Find alternative to stock steering wheel
- Improve design and development of custom steering wheel grips

- Need for material to be flexible indefinitely

Solution

- Arnitel® ID2045
- Collaboration with DSM and 3D printing ecosystem

Benefits

- Makes strong, pliable, long-lasting steering wheel grips

- Easy to personalize and fine-tune to improve driver experience
- Design and production flexibility
- Proves additive manufacturing as a viable solution for automotive part production



“Being able to produce a steering wheel that fits the driver’s hands perfectly with a DSM material that’s pliable and flexible in production, and doesn’t deteriorate over time, is absolutely key to personalizing the Mono R driving experience.”

Ian Briggs, Design Director, BAC

Challenges

In collaboration with DSM, Briggs Automotive Company (BAC) designed the Mono R supercar and identified over forty end use parts that could be 3D printed using various technologies depending on part requirement. The Mono R is lightweight, high performance and features several options for customization. BAC explored customizing the steering wheel grips for each driver and additive manufacturing was an ideal solution.

The Mono R is made to fit its owner; the seat, pedals, mirrors, etc., are all meticulously measured for each driver. A one-size-fits-all stock steering wheel was just not an option for the supercar. The ability to produce a personalized steering wheel gives the driver a better experience and improved performance on the road.

Ian Briggs, Design Director at BAC, explains, “The material we used for the steering wheel grips was comfortable and molded well to the driver’s hands, but over time it lost some of its elasticity. We aimed to find a material that would remain flexible indefinitely.”

Solution

DSM’s fused filament fabrication material Arnitel® ID2045, was chosen to print the steering wheel grips due to its highly flexible properties. Each new Mono R owner has a “fitting”: the owner sits in the driver’s seat and holds the steering wheel. Made of clay, an impression is made indicating the driver’s hand and grasp angles. This is scanned and turned into a 3D print file. Once printed, the final steering wheel grips are covered in leather for added comfort, then installed in the car.

The 3D printed steering wheel grips have a soft surface touch but are strong and long-lasting. The flexible Arnitel® ID2045 helps absorb and reduce impact on the driver’s hand. Tapping into DSM’s expert knowledge on



how to process its material correctly allows BAC to offer different levels of softness depending on the driver’s preferences.

Benefits

In addition to the performance and personalization aspects of 3D printed steering wheel grips, using additive manufacturing enables BAC to produce the grips internally. This avoids the time and cost of outsourcing, but also shortens production lead time.

The development of personalized steering wheel grips with additive manufacturing is one of many features on the Mono R. DSM’s materials expertise and extensive ecosystem paired with BAC’s automotive knowledge paved the way for the innovation. The result is a road-ready supercar that utilized 3D printing for peak performance and handling - a testament to the use of additive manufacturing in the automotive industry. Not surprisingly, the Mono R won the prestigious Design & Innovation Award at the 2019 Northern Automotive Alliance Awards.

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