



## KYRONMAX® CASE STUDY: SPORTS & LEISURE

# Creating a stronger lightweight suspension with a breakthrough partnership

Teaming up with a leading bicycle manufacturer to convert an existing molding tool to allow for the molding of composite materials, KyronMAX® has helped to rapidly prototype and improve the performance of a key bicycle suspension component.

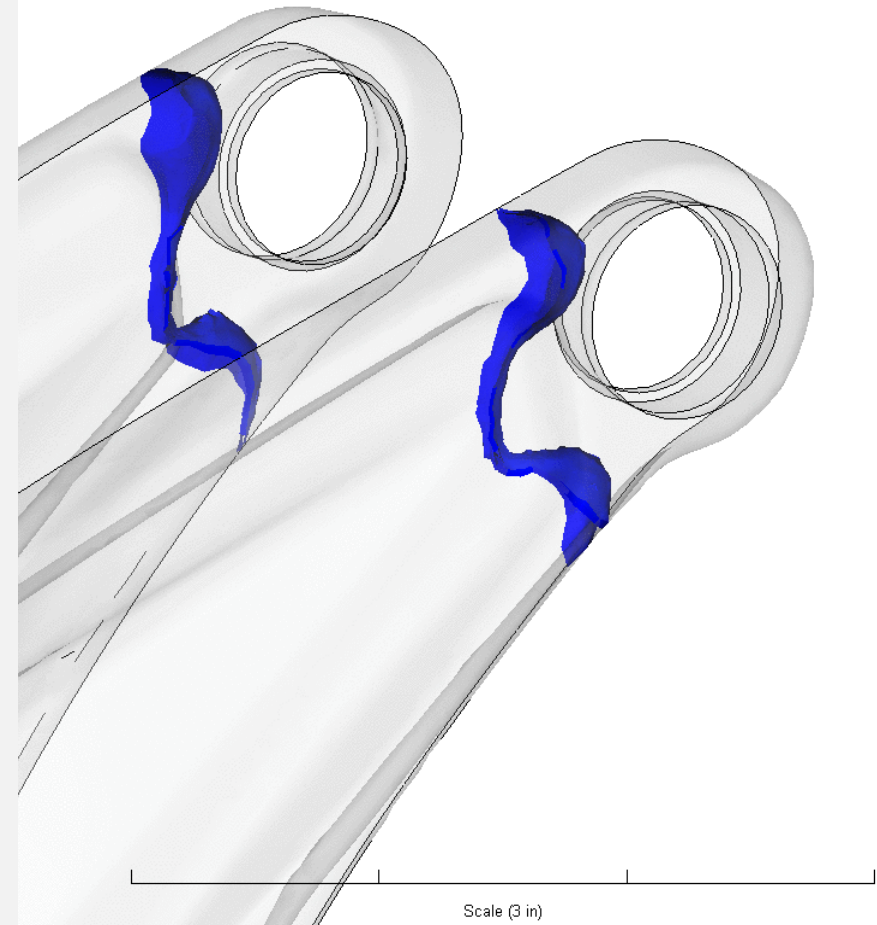


# The KyronMAX® challenge

Unable to achieve the desired performance using LFT compounds, the Advanced Materials Engineered Solutions technical team of Mitsubishi Chemical Group (MCG) was consulted and ran trials using KyronMAX®.

Utilizing our MCG Advanced Materials mold-flow software technology together with the KyronMAX® material files, the team developed favorable process conditions, gate design, validations and testing of the final composite structure.

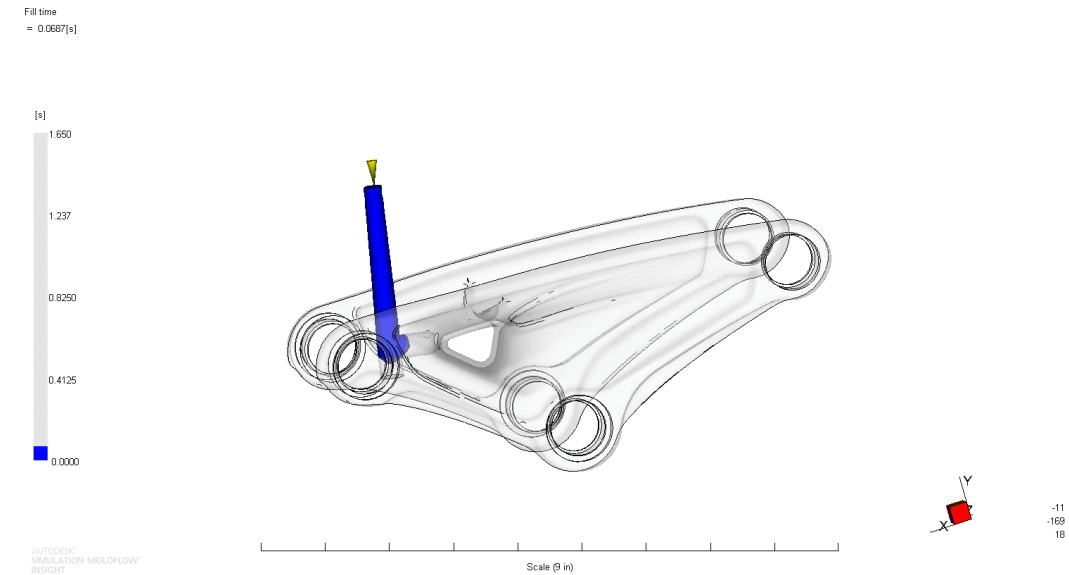
The engineering team of MCG Advanced Materials has developed several proprietary technologies for reducing weld-lines and increase mechanical strength in these vulnerable areas.



# Working with KyronMAX®

Having developed several proprietary technologies for reducing weld-lines and increasing mechanical strength, the first stage was dedicated to weld line prediction and mitigation.

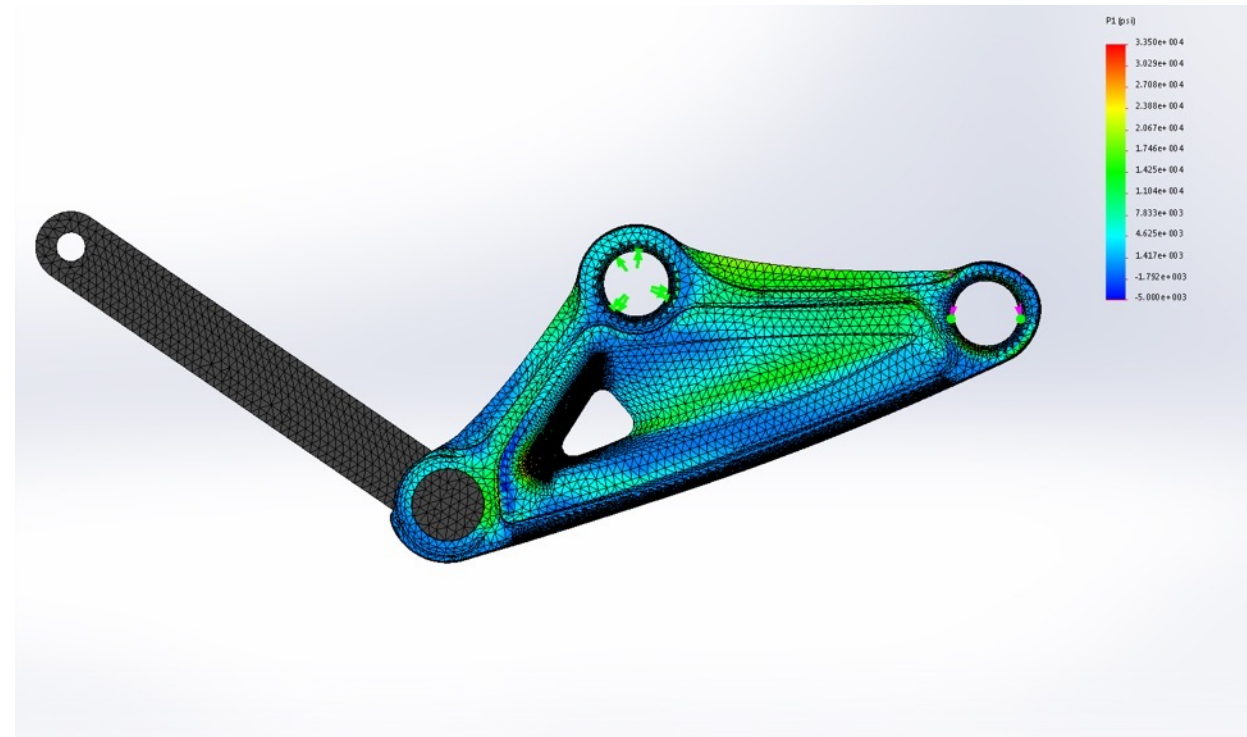
Fiber matrix structure mapping then allowed for a full FEA analysis, while mechanically testing the structure ensured the design met the application requirements in real world testing, not just theoretical modeling.



# Designing with KyronMAX®

Load-cases were then simulated in the FEA software using our advanced fiber matrix analytics.

We applied about 400,000 datasheets, one for each FEA node, to help assess the part. Our software then calculated the fiber placement at each node, working out the associated strength based on pre-programmed data. We then refined the mesh by undertaking a stress analysis.

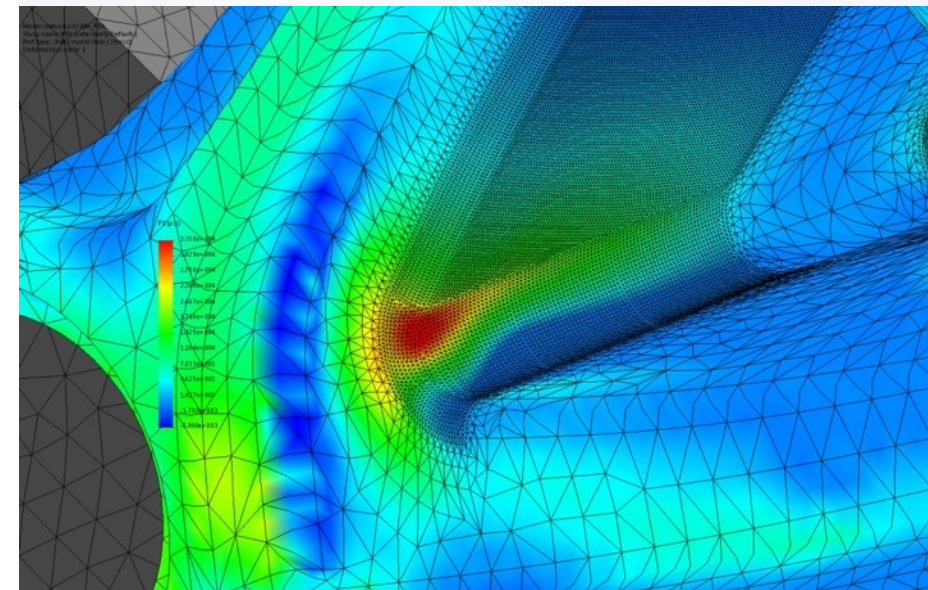
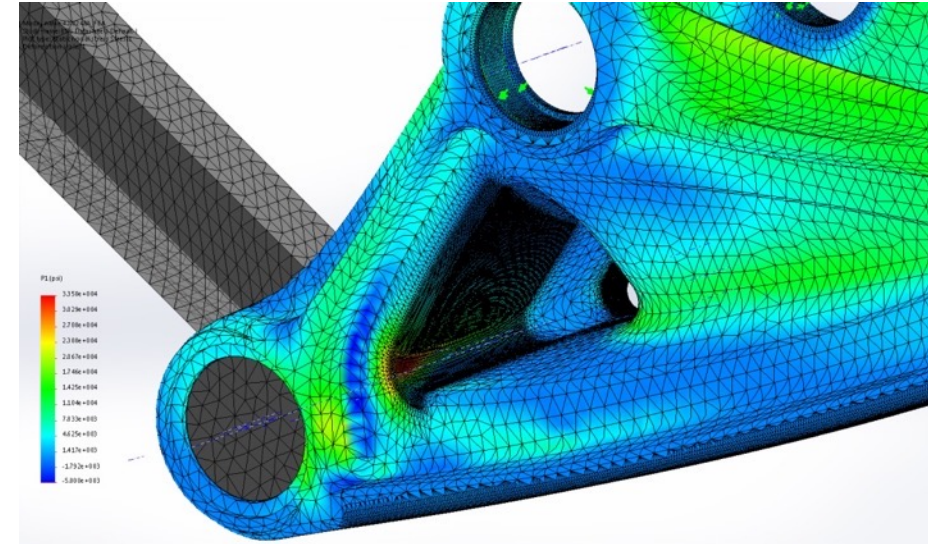


# Designing with KyronMAX®

Our team then worked with the client on:

- geometry alterations to ensure the component was designed to meet its requirements.
- selecting a range of KyronMAX® materials to rapidly produce a prototype.
- simulate the exact load-case that the component would experience using a customized jig.
- real-world testing of the molded part at one of our innovation labs.

This ensured the design process was accurate and the part performed as intended.



# Breakthrough benefits

Our collaborative approach supported our customer to rapidly test and trial several prototype materials, designs, and solutions to determine what was needed for the final component.

The pairing of KyronMAX® technology with the customer's application experience has proven to be beneficial in solving the toughest application needs.



MCG Advanced Materials then produces a prototype either at our Innovation Center, or at the customer's preferred molder. The prototypes are then post machined, if required, any hardware is installed, and the part is ready for testing.

# Get in touch

[brian.yarcich@mcam.com](mailto:brian.yarcich@mcam.com)

Visit:

[Growth Garage](#)

[Mitsubishi Chemical Group - Advanced Materials Division](#)

To find out more about KyronMAX<sup>®</sup>

please visit our new website: [kyronmax.mcam.com](http://kyronmax.mcam.com)

Design and content created by Mitsubishi Chemical Advanced Materials and protected by copyright law.  
Copyright © 2022 Mitsubishi Chemical Advanced Materials.  
All rights reserved.

KyronMAX<sup>®</sup> is a registered trademark of Mitsubishi Chemical Advanced Materials.

