Optimized Computer Mount for Elite Cycling

Using Additive Manufacturing to create a reliable and lightweight tour companion

OVERVIEW

Striving for improved performance, Canyon, a market-leading bike manufacturer based in Koblenz, Germany, investigated ways how to optimize their computer mount. The requirements for the new mount were clear – being as light and as steady as possible to always ensure excellent readability of the bike computer during the ride. With regards to market availability, Canyon followed a two-fold approach – the mount was launched with the latest model "Ultimate" from Canyon, but also sold to end customers separately. In close cooperation, Forward AM and Canyon employed the full potential of 3D printing – Virtual Engineering combined with the precise material needed to realize the design

QUICK FACTS

Materials:

- Ultrasint® PA11 CF

Technology:

- SLS

Based in Koblenz, Germany, Canyon is a German manufacturer of road bikes, mountain bikes, hybrid bikes, triathlon bikes and e-bikes. Their mission is to inspire riders to ride and encourage cyclists to engage with their expert staff and interact with a wide array of curated bikes, apparel and accessories available.

CANYON.COM

50% reduction in weight

Near universal bike computer compatibility

Sustainable bio-polymer derived from Castor Oil

Challenge: Design a lightweight and reliable computer mount to minimize vibration

The most important requirement of the redesigned mount is to ensure excellent readability of the bike computer during the ride. No matter the surface, the bike computer should always be clearly legible. For clear visibility, the vibration should be as low as possible – thus, the eigenfrequency (the frequency at which a system tends to oscillate when not subjected to an external force) of the component has to exceed the external excitation. Forward AM's Virtual Engineering experts performed simulative vibration analyses to evaluate different designs and materials. Based on the findings, added by peak load analyses, a topology optimization was performed to achieve the optimal part performance.

"Forward AM's Virtual Engineering expertise and deep material knowledge enabled us to realize the lightest, fully functional computer mount in our portfolio. We exploited the full potential of 3D Printing to quickly iterate innovations and adapt the design of the mount to our exact needs."

-- Christian Gundlach (Product Manager Gear, Canyon)

Challenge: Apply high-performance materials to optimize stability

Combining high rigidity with optimized design for Additive Manufacturing the material is ideally suited for lightweight applications where performance matters. Carbon-fiber reinforcement makes it one of the strongest and most rigid materials in the industry, allowing printed components to deliver optimal mechanical performance when strength and rigidity are crucial. The polymer component of Ultrasint® PA11 Black CF is a bio-polymer derived from castor oil, which contributes to making applications more sustainable.

Learn more about Ultrasint® PA11 CF: