



3D Printing Brings Life-Changing Pedal Power

Additive Manufacturing techniques ensure efficiency and revolutionary biomechanical fit for comfort and high-performance



OVERVIEW

For many cyclists, their bike is much more than a means of getting from point A to point B, but also a part of their personality and an essential accessory to their daily lives. So whether a rider is an amateur or pro athlete – high-quality, well-fitting shoes are essential for comfort and performance.

Through Hezo's collaborative work with Elkamet and the use of Forward AM's [Ultrasint® PA 11](#), a castor oil-based bioplastic, they can create a mono-material modular structure through a digital production chain to manufacture a shoe that is made to order with precise measurements. This innovative 3D printing material offers a rigidity and flexibility balance which ensures optimal power transmission through its special integral shape

QUICK FACTS

Materials:

- Ultrasint® PA 11

Technology:

- SLS

Partner:



Hezo was founded in 2020 by Helen, Carsten, David and Nils, a team of passionate cycling enthusiasts who share a common goal of creating a brand that embodies their love for the sport. The team is made up of experienced cyclists, engineers, and designers who are dedicated to creating innovative and high-quality bicycles and accessories that meet the needs of riders of all levels.

By focusing on quality, sustainability and design, Hezo Cycling has been able to create a range of products that are not only reliable and durable, but also stylish and visually appealing.

HEZO-CYCLING.COM/EN



Reduced consumer costs by over 50%



Sustainably produced and recyclable

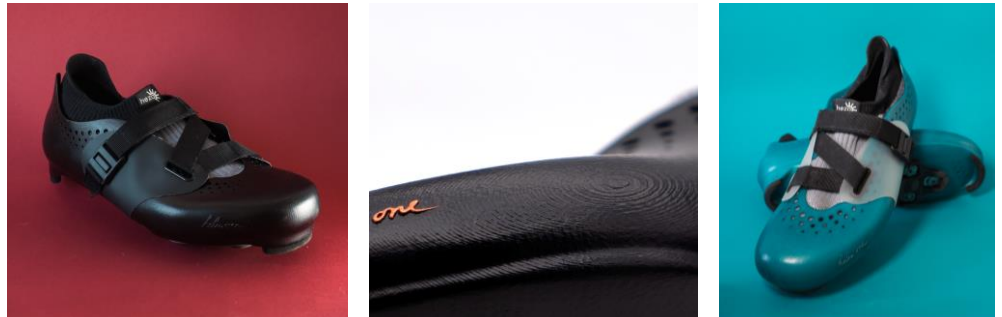


Reduced the number of shoe components from 65 to 20

Challenge: Increase the comfort of cycling shoes while maintaining energy transfer efficiency and reducing costs

Traditional shoes can be uncomfortable with many pressure points as it needs to be stiff and narrow for optimal energy transfer. 3D printing with [Ultrasint® PA 11](#) allows for optimized structural support and ventilation along with customization which ensures a comfortable fit. Through the utilization of scanning software, Hezo can design and manufacture a shoe for the unique needs of each rider offering a fit that is both compatible with their foot shape but is also well-matched with their specific bike. The newly conceived shape and the modular structure combine maximum power transmission for a perfect fit and exceptional durability. A traditional pair of non-customized shoes can cost between €200 to €500 while a tailor-made version can cost up to €1,500. 3D printing technologies enable both high productivity and freedom of design allowing for mass customization and the ability to produce a shoe for around €650 ensuring a cost-effective, replicable and scalable manufacturing process.

“At Hezo, we believe that 3D printing technology has revolutionized the way we produce cycling shoes, allowing us to create customized, high-performance gear with intricate details and offering our customers life-changing pedal power with optimal comfort. Our use of Ultrasint® PA11, a high-performance bio-based powder, delivers a perfect solution with a rigidity and flexibility balance that assures a long life shoe.”



Challenge: Create a sustainable design that would allow for recyclability

Standard cycling shoes are usually made from a variety of different components which are then glued or stitched together making it nearly impossible to dismantle the different components resulting in an inability to recycle them. Using a modular, easy to separate concept with the main part printed out of a bio-based material makes the shoe a sustainable option with 100% recyclability. Additive Manufacturing technologies in conjunction with the speedy SLS printing process also allows for fast and easy changes in design without creating production waste. The sporting goods industry is fast paced and products need to be adaptable to the new trends.

Learn more about Ultrasint® PA 11: