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CANYON SHOWCASES VISIONARY SUSTAINABLE BIKE FRAME DEVELOPED WITH BIKE MAGAZIN

Industry partners collaborate to produce sustainable mountain bike under Cradle-to-Cradle production principles

KOBLENZ, 15 MAY 2022 | FOR IMMEDIATE RELEASE — When Germany's BIKE Magazin launched a project to develop a mountain bike that was as sustainable as possible without compromising on quality, it piqued Canyon's interest. Could the challenging combination of boundary-pushing innovative design and bicycle performance for the benefit of society be feasible? The answer was yes, and the resulting development became known as the unique Cradle-to-Cradle (C2C) bike, featuring a Canyon frame and finishing kit from other industry partners.

What does Cradle-to-Cradle mean?

The concept behind this production method requires manufacturing using materials that are already in use in a production chain with the ability to be turned into something else at the end of that product's life.

Tell us about the development process:

Canyon stepped up to the challenge by providing a frame and forks using only recyclable materials. The frame was created using a 3D printer, enabling regional production and short lead times, whilst maintaining high customisability, resulting in an innovative design that is turning heads inside and outside Canyon.

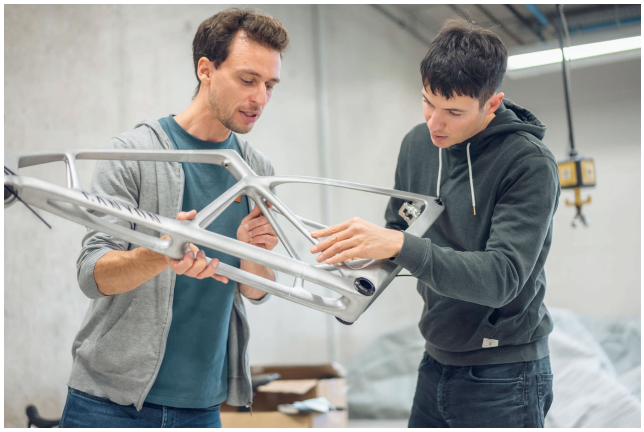
"We completely rethought the traditional bicycle frame shape," said Johannes Thumm, Canyon Engineer. *"After various exploratory meetings with universities and research centres to look at more sustainable fibre composites, the limitations of these products became clear. Therefore, my idea was to use a "traditional", endlessly recyclable metal and push its performance limits by modern means. That meant creating what we call a topology-optimized design, only possible thanks to latest 3D printing methods."*

To ensure structural reliability, Thumm and his team used CAD simulation software to study the forces applied during mountain biking. Together with input from engineers and designers, this allowed a very distinctive frame shape to be developed, optimally designed for the stresses of riding. Struts in the frame triangles ensure an ideal force distribution and an asymmetrical rear triangle allows for targeted power distribution with minimal use of materials.

Thumm explains: *"The advantages of metal lie in the established recycling process. In addition, metal itself can be used to durably engineer critical interfaces such as the bottom bracket or the dropout. Modern 3D printing processes not only offer the possibility of local production but also have another decisive advantage. This technology makes it possible to create a completely new frame shape without design limits. This is the key to being able to process the material more efficiently than ever before."*

Which industry partners did you work with?

The frame was printed by the Bremen-based company Materialise, which specialises in the manufacturing of 3D printed parts through a process called (SLM) selective laser melting.



In terms of components, the suppliers were united by their basic sustainable concept. The metal groupset comes from SRAM and the finishing kit comes from Syntace. Stoppers are provided by Trickstuff Piccola, tyres come from Schwalbe and the lubricants are supplied by Danico Biotech.

One area unable to be realised was sustainable suspension. Due to the various materials involved, it became a complex affair and attempts to implement existing concepts in a sustainable manner had little chance of success. As a result, Canyon also developed a rigid fork together with the frame.

Roman Arnold, founder of Canyon, elaborates on the company's goals in this area: *"It's fair to say that cycling and sustainability go-hand-in-hand. The bicycle is widely perceived as one of the most sustainable means of transport. That's good, but the industry must manage itself to ensure that the idea is also reflected in the products and in general actions. That is extremely important for long-term growth."*

"We recently hired a sustainability manager to focus exclusively on this issue. But it's also clear that we can't throw everything overboard overnight. Projects like this bike show that you have to try certain things and draw the appropriate conclusions from them in order to ultimately find the right path. I understand this more as a development process and not as a catalogue of measures. We will use this experience to continue pioneering our approach towards future sustainable developments."

As the industry moves towards a more sustainable future, game-changing innovations and expertise from all players will have a key role.

Ludwig Döhl, Deputy Editor-in-Chief of BIKE, states: *"The Cradle-to-Cradle bicycle acts as an idea carrier for the development of future sustainable mountain bikes, rather than a complete solution in itself. Throughout this project, it became clear that the social mega-trend for greater sustainability is a real innovation driver for the bike industry. In all the stories we produced in this context, there was extreme interest among the readership, but also from the industry. There is a real spirit of optimism among the companies involved. Established processes are being put to the test and new ways of doing business in a more resource-efficient manner are also being explored. One thing is certain though: The innovative Cradle-to-Cradle bike with all its facets is a real milestone on the way to a greener future."*

What's next? Will this bike be mass produced?

Johannes Thumm has the final word: *“The Cradle-to-Cradle bike is a prototype that has seen the light of day very early on thanks to the challenge from BIKE Magazin. Whilst we assume that this one-off bike has a smaller environmental footprint, we still need to quantify the long-term effect such development processes would have on our CO2 output in mass production. We will also continue to develop this concept internally, testing the microstructure to uncover optimisation potentials. “We already see further potential to create a micro lattice structure, inspired by the principles of nature (e.g. bones with their internal microstructure) that can be covered by a replaceable and fully recyclable protective outer shell. We’re proud to reach this technology milestone in sustainable frame production and it provides a fascinating insight into where bicycle development may go in future.”*

Canyon will continue to study the feasibility of such techniques in a mass production setting. Meanwhile the bike itself will be on display at Canyon shows and events this summer

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ABOUT CANYON

Canyon is one of the most innovative bike brands in the world. The concept began in founder Roman Arnold’s garage and grew to be the world’s largest direct-to-customer manufacturer of road, mountain, triathlon, urban, hybrid, and electric bikes. Canyon have earnt their glowing reputation for innovation through consistently using advanced materials, thinking, and technology. The characteristically classy Canyon design is easy to identify. Alongside being boldly competitive and ever-expanding, they are

committed to make the global cycling community accessible for every rider. While Canyon partners with some of the finest athletes on the planet, their mission, ‘Inspire to Ride’, highlights how they work to promote the power of the pedal stroke to everyone. Canyon products are exclusively available online at www.canyon.com.

Canyon