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BigRep 3D Prints Airless Bicycle Tire, in World-First Application

Berlin, 15 May 2018. BigRep has printed the world's first full-scale 3D-printed airless bicycle tire and successfully tested functionality on the streets of the German capital. The tire is the latest application innovation from the Berlin-based large-scale 3D printer manufacturer, as part of the company's focus on crafting industrial-grade solutions for the mobility industry.

Printed using BigRep's new TPU-based filament Pro FLEX, the airless tire was a successful prototype to demonstrate the ease and speed at which flexible spare parts can be 3D printed. Furthermore, this world-first application showcases the potential of 3D printing to develop new complex geometries that cannot be achieved using traditional production methods.

"We were able to replace 'air' as a necessity in the tire by customizing the pattern to be one of a three-layered honeycomb design," said Marco Mattia Cristofori, BigRep Product Designer. "Based on the same principle, the design can be altered to fit the requirements of specific kinds of biking, such as mountain biking and road racing, or for different weather and speed conditions."

Requiring no post-processing or gluing work, it was printed to scale as a large 1:1 object on the BigRep ONE 3D printer, which has a build volume of one cubic meter. Designed to match the dimensions of Cristofori's own bicycle wheel, the Pro FLEX-printed tire has high-strength properties to withstand the conditions of city cycling.

BigRep's CEO Stephan Beyer says that beyond bicycles the material has incredibly broad potential: "We have expanded our technical portfolio with a high-impact, high-temperature-resistant material in Pro FLEX, which has higher interlayer-bonding than we have ever seen before, and robust chemical resistance for a range of technical applications. There is a clear use case for flexible parts that can be customized and printed on a needs basis, across med-tech, aerospace, automotive and other industries."

Printing thermoplastic elastomers is a challenge in the FFF Additive Manufacturing industry, however BigRep engineered Pro FLEX following intensive testing to ensure ease of use. Strong print bed adhesion from this high-performance filament allows BigRep and its Pro FLEX customers to 3D print large flexible parts without detachment issues.

The company and its in-house innovation department NOWlab work to design and print a range of industrial solutions for clients around the world. BigRep works with major global brands in the aerospace, automotive, transportation and education sectors, using large-scale 3D printing technology to create 1:1 objects for prototyping, molding and casting, end-use spare parts and more.

Watch the full video here: https://www.youtube.com/watch?v=9pHJNtH8ltQ

For more information on the material used read in the blog: https://bigrep.com/posts/3d-printing-pro-flex-filament-bigrep/

BigRep's previous vehicle use cases and projects https://bigrep.com/automotive-3d-printing/

About BigRep

BigRep is a technology start-up based in Berlin with offices in Boston, New York and Singapore, which develops and manufactures the world's largest 3D printers. One of the ground-breaking developments of the company founded in 2014 is the BigRep ONE, which is supplemented by the smaller BigRep STUDIO. Interdisciplinarity and well-founded experience in the field of additive manufacturing characterizes the multinational team of BigRep, now comprised of more than 90 employees. In addition to new products, the Berlin company is now concentrating on complete solutions for industrial customers in the form of integrated additive manufacturing systems. The goal of the highly innovative engineering company is to revolutionize design, prototyping and industrial production from the ground up.

For further information, as well as pictures and video material, please contact:

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For more information on the material used, read the blog post:
https://bigrep.com/posts/3c-printing-pro-flex-filament-bigrep/

Additional photographs of the tire: https://bit.ly/2IJnQP1

See more BigRep vehicle use cases and projects: https://bigrep.com/automotive-3d-printing/

See BigRep at Rapid + TCT and other events: https://bigrep.com/events/

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