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Press Release

BANYAN ECO WALL by BigRep: The World's First Fully 3D Printed, Irrigated Green Wall Featuring An Embedded Drainage System.

Multipurpose functionality, embedded water supply system and bionic design / Game-changing innovation in vertical farm technology developed by NOWLAB / BigRep's large-format 3D printers open up new opportunities for embedded functionalities in AM.

Berlin (Germany), June 14th, 2019 – BigRep, the global leader in large-format 3D printing, today has premiered its BANYAN ECO WALL, the world's first fully Additively Manufactured (AM) green wall with an innovative embedded water supply and drainage system.

The prototype features unprecedented innovations in design, functionality, technology and size, made possible only by using the world's largest, serial production 3D printers (FFF) by BigRep. It has been developed by NOWLAB, the BigRep Innovation Consultancy, with Mirek Claßen, Tobias Storz and Lindsay Lawson as lead designers.

As an industry-first, the embedded drainage system has been created during the printing process. Until now, 3D printed green walls either relied on (metal) drainage systems integrated later or were based on complicated set-ups involving many different parts. These drainage systems are vital for the proper function of the integrated irrigation system, as excess water must be removed.

Inspired by the multipurpose properties of plants' systems (i.e. roots, stem, and leaves), the BANYAN ECO WALL simultaneously functions as a support structure for plants and a supply system for water. More than simply aesthetic, the bionic design (measuring a total of 2000 mm x 2000 mm x 600 mm) is structurally optimized and the plant carriers organically snap into place. The miniature internal channels are designed for optimal water flow and feature an integrated "micro shower" mechanism to irrigate the plants precisely where needed.

"Our BANYAN ECO WALL is adopting nature's principle with a complex, smart, and elegant design only achievable with AM. Traditional technologies such as milling or injection molding cannot deliver this level of complexity and dual functionality", explains BigRep CEO Stephan Beyer, PhD. "For the first time, thanks to AM and advanced CAD software, it is now possible to create complex functional designs within a fully digitized process chain."

BigRep CIO and NOWLAB Managing Director Daniel Büning adds, "Generative design software was crucial in the creation of the BANYAN ECO WALL to optimize the structure for printability and stability while allowing a rapid iterative design process. This prototype will push the boundaries of AM not only in irrigated plant systems, such as in vertical farming and green facades, but for any application requiring embedded functionalities."

Irrigation systems, implemented to provide a controlled supply of water at requisite intervals, ensure the unique needs of plants and crops are met without the need for human intervention. Systems such as this inspire interior designers and architects developing a greener future – from home or workspace plant walls and green facades to vertical gardens and other forms of urban farming.

The BANYAN ECO WALL at a glance:
Dimensions: 2000 x 2000 x 600 mm, made up of 4 segments
Materials: BigRep *Berliner Weisse Pur* PETG for overall structure; BigRep Black PRO HT for planters
Team: Daniel Büning, BigRep CIO and NOWLAB Co-Founder
Lead Designers – Mirek Claßen, Tobias Storz, Lindsay Lawson

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About BigRep

BigRep develops the world's largest serial production 3D printers, creating the industry benchmark for large-scale printing with the aim to reshape manufacturing. Its award-winning, German-engineered machines are establishing new standards in speed, reliability and efficiency. BigRep's printers are the preferred choice of engineers, designers and manufacturers at leading companies in the industrial, automotive and aerospace sectors. Through collaborations with its strategic partners – including Bosch Rexroth, Etihad Airways and Deutsche Bahn – and key investors – including BASF, Koehler, Klöckner and Körber – BigRep continues to develop complete solutions for integrated additive manufacturing systems, as well as a wide range of printing materials on an open-choice source. Founded in 2014, BigRep is headquartered in Berlin with offices in Boston and Singapore. Leading the way in one of the world's key technologies, our multinational engineering teams are highly trained, interdisciplinary and customer-focused.

For additional information, please contact:

To arrange an interview with BigRep's executive management or NOWLAB team, and for more information on BigRep and its solutions, please contact:

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