IIT Hyderabad and Simpliforge Creations install India's first Pedestrian Bridge using Indigenous 3D Printing Technology

Highlights:

- ***India's first 3D Printed Bridge deployed on the campus of IIT Hyderabad (IITH).***
- ***Material and printing technology collaboratively developed by IITH and Simpliforge Creations, a young startup.***
- ***The bridge designed by IITH presents an efficient structural form that was optimized for strength and performance.***
- ***Technology demonstration for 3D printing technology for form-efficient structures in transportation sector.***

Hyderabad, 19 June 2024: A 3D printed bridge has been deployed on the campus of IIT Hyderabad (IITH). The concept and design were developed and evaluated by Prof. K.V.L. Subramaniam and his research group, Department of Civil Engineering, IIT Hyderabad. The bridge was off-site printed by Simpliforge Creations, a startup company specializing in providing 3D concrete printing solutions. Designed as a pedestrian bridge, a full-scale 7.50 m bridge was field deployed after load testing a smaller prototype bridge. The bridge has been designed broadly following form optimization to minimize the use of concrete and reinforcement. The concept of the bridge was developed broadly following 'Material follows Force' and the reinforcement/shape have been determined from stress analysis. Several advances in material processing, and design methodology are highlighted in the bridge design. The material developed by Simpliforge Creations was tested and validated for the required rheological performance. 3D concrete printing is an emerging technology that offers the potential for rapid and efficient construction. The technology for digital construction promises added flexibility in printed forms and efficient structural systems. The prototype bridge serves as a technology demonstrator for 3D concrete printing in developing light-weight, rapidly deployable bridges and structures that are form optimized for specific applications.

Complimenting Prof K.V.L. Subramaniam & his team on the development, Prof B S Murty, Director, IITH, said, "Technology enabled solutions for rapid and efficient construction is the need for meeting the infrastructure requirement of India. *Developing indigenous capability for efficient construction with incorporation of digital technology is a creditable stride towards realizing our dream of Aatma Nirbhar Bharat. I am sure such innovations will not only benefit local development in terms of economic & efficient infrastructure but also extend its advantage to the infrastructure sector globally."*

Enlisting the uniqueness of the 3D Printing technology, Prof K.V.L. Subramaniam, IITH, said, "*The 3D printing technology has the potential for transforming the construction industry. Technology application in this space requires innovative solutions that require advancements in material processing, design methodologies and production procedures that are aligned with established principles of additive manufacturing*".

Prof. K.V.L. Subramaniam and his group have worked extensively on developing 3D printing technology for building and infrastructure applications. IITH is actively working with Simpliforge creations at developing applications using 3D concrete printing technology.

Electronic Release:
https://youtu.be/Zjo0enwcCUU

About IIT Hyderabad:

IITH, established in 2008, as one of the second Generation IITs, has reached a respectable position in both academics, research, technology development and startups in the short span of 15 years. In the recent Indian National Ranking (NIRF-2023), IITH is placed at 3rd in Innovation and 8th among Engineering institutes in India.

It has 310+ full-time faculty, 4,700+ students (PG + PhD students accounting for about 60%). The institute has a strong research focus with Rs. 1100+ Cr of R&D funding, 10,500+ publications, 275+ Patents, and about 190+ startups (that have generated 1100+ jobs and a revenue of Rs. 1500+ Cr). Follow us on Instagram, LinkedIn, Twitter, Facebook, Koo, and YouTube for the latest updates.

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