

CATEGORY

POTENTIAL TECHNOLOGY – INCUBATION : GHTC-INDIA



PRODUCT / TECHNOLOGY



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Technology Detail

3D PRINTED HOUSES TECHNOLOGY

Alternate to conventional construction system



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Video

CONTACT DETAILS

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BRIEF

M/s Tvasta is a start-up company, which has developed end to end 3D Printing Technology for the construction of house/building. The developed Printing Technology comprises of;

- Hardware (3D Printer, Material delivery system etc.) & Software (Digital Construction software that can print with a BIM file).
- Material (Specialized concrete mix design that can be used for 3D Printing).
- Development of Printing Strategy and Design for Additive manufacturing.

The company has presently filed seven patents & several are in pipeline, these are in the domain of 3D Printing system, materials delivery system, hardware software integration etc. One of its innovation is on material side where it has considerably brought down the cost of material for 3D Printing to comparable level with normal concrete. The company aims to automate 80% of construction including activities such as painting and plastering.





SALIENT FEATURES

- Faster Construction as walls and foundation can be printed in days
- Precision with respect to construction is very high.
- India's first concrete 3D Printer which can 3D print concrete mixture layer by layer with the help of in-house developed specialized software.
- Less waste as 3D printer will utilize the exact amount of material needed.
- Increased affordability due to less wastage and reduced labour dependency. Once the training is done the construction is very easy.
- Labour safety is very high.

ECONOMIC ASPECTS

- With the system, the cost of the construction can be brought down considerably.

SUSTAINABILITY ASPECTS

- Reducing the carbon foot print by introducing other industry waste like fly ash, Silica fume etc.
- Reducing the overall material quantity.
- Using construction & demolition waste to reduce the usage for the natural material.





SUITABILITY & AVAILABILITY

- Suited for all weather conditions.
- It is available, first player to develop this technology

LIMITATIONS, IF ANY

- Technology adoption is difficult, Technology awareness and Codal provision is not available.
- As against suitability of technology against natural hazards, further evaluation/study is required.

MARKET LINKAGES

- Being a start up, the product at prototype stage only.

MAJOR PROJECTS

- 2018 - India's first Concrete 3D Printed Structure inside IIT Madras
- 2020 - India's First 3D Printed House inside IIT Madras
- 2021 - Installed 3 Doffing Unit for the Covid - Ward Doctors across Chennai in 3 different hospitals





CERTIFICATION/INDIAN STANDARD/ ENDORSEMENT

- Fresh Concrete Testing - Extrudability, Buildability, Flowability, Open Time, Bleed Value, etc.
- Mechanical Characterization - Compressive Testing, Flexural testing, Bond Strength, Porosity, etc.
- Structural Component Testing - Wall Module Testing
- Under Incubation at IIT, Madras

