

Revolutionizing Road Infra with Modern Equipment, Technologies, Sustainable Materials and Policy Guidelines

February 29th - March 1st, 2024, Manekshaw Centre, New Delhi

3D CONCRETE PRINTING
SHASHANK SHEKHAR
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International Road Federation
India Chapter

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Understanding 3D Concrete Printing

- 3D CAD model converted to Printed Structure layer-by-layer
- No need of formwork / shuttering
- Ease of creating complex, optimized, and modular structures
- Robust quality control from raw material input to finished 3D concrete structure
- Minimal construction waste
- Lower dependence on labor, higher productivity
- Reduced Total Cost of Ownership



Market Trends



Global 3D Printing Construction Market to Garner \$750.8 Billion by 2031: AMR

Surge in use of 3D printers in the construction industry for making precise final products, developing prototype while lowering the production and materials cost and increase in adoption of green buildings and structure drive the growth of the global 3D printing construction market. The market across North America held the largest share in 2021, accounting for nearly two-fifths of the market.

July 14, 2022 07:22 ET | Source: Allied Market Research

By 2030, 25% of Dubai buildings will be Constructed through 3D Printing

By MANUFACTUR3D • August 9, 2021 • 2 Mins read

⚡ 396 ❤️ 0



ANI
@ANI
Official

3D-printed permanent defences have been constructed for first time by Indian Army's Corps of Engineers in desert sector. These defences were trial tested against a range of weapons from small arms to the main gun of T90 tank: Indian Army's Engineer-in-Chief Lt Gen Harpal Singh



6:53 PM • Nov 15, 2022 • Twitter Web App

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Delivered Projects

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MiCoB delivers 3D Concrete Printed Runway Controller Hut for the Pune Air Force Station

10 October 2022 12:18 PM IST

f t in e s



MiCoB delivers 3D Concrete Printed Runway Controller Hut for the Pune Air Force Station



ADG PI - INDIAN ARMY @adgpi - Follow

General MM Naravane #COAS reviewed the ongoing preparations for #DefExpo2022 and witnessed the technology adaptation of Army's first 3D Printed Living Shelter as part of #AtmaNirbharBharat endeavours, during the visit to #Gandhinagar #Gujarat.

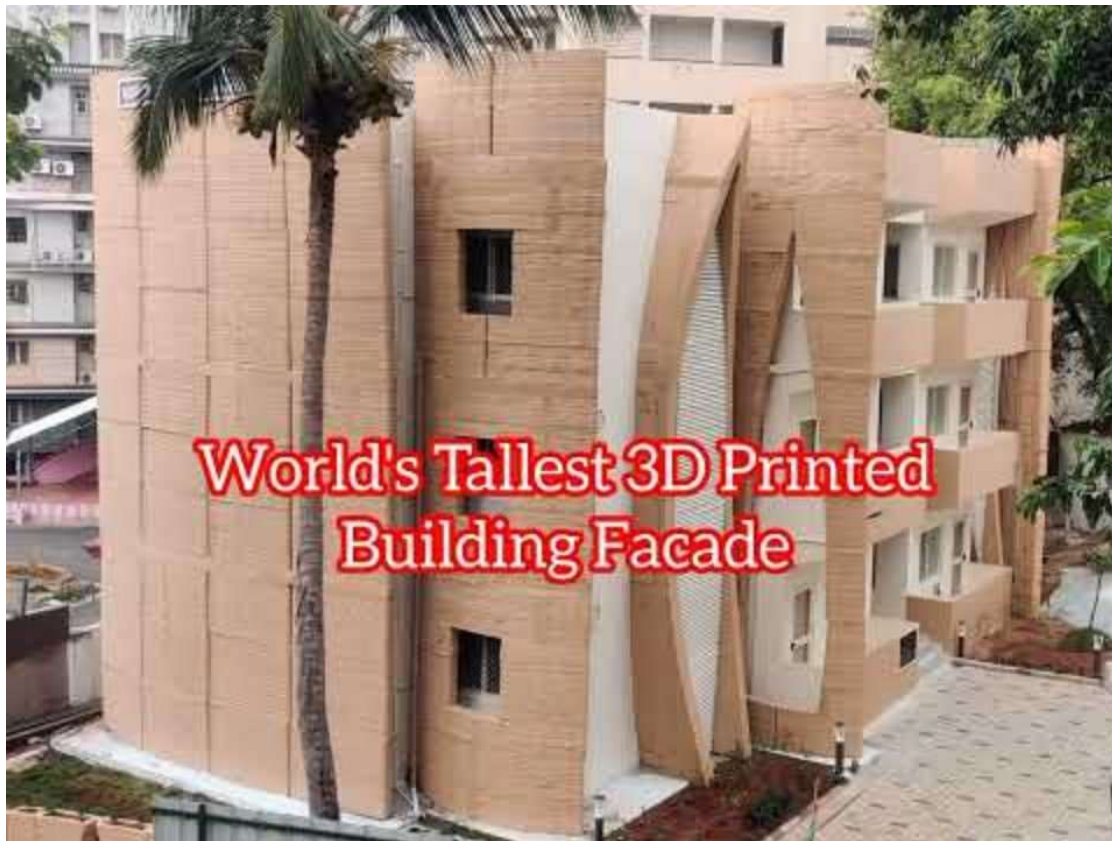
#IndianArmy
#InStrideWithTheFuture



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Traction



- 100+ Anti-tank Bunkers
- 11 Buildings
- 50,000+ square feet built-up
- Grants from Indian Defense, Department of Science and Technology

Products and Use Cases

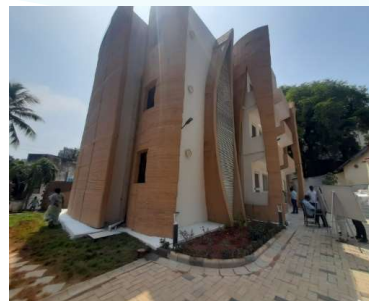
Impact & Blast Resistant Bunker



- ✓ Tank & Rocket Launcher resistant
- ✓ Man-portable & Modular
- ✓ Easier & Faster assembly and relocation in challenging terrain



Hollow Wall Panels and Façade



- ✓ Reduced Dead and Seismic load
- ✓ Saving in steel and concrete for Foundation and Super-structure
- ✓ Enhanced insulation due to air-voids
- ✓ Reduced carbon footprint and enhanced energy-efficiency

Office Building



- ✓ 3D Printed Runway Controller Hut at Pune
- ✓ Hybrid steel & 3D Concrete printed structure
- ✓ Construction in less than 30 days



Products and Use Cases

Residential Building



Landscaping and Outdoor Furniture



Boundary walls/ Retaining walls



Marine Infrastructure



Products and Use Cases

Data Centres



Kraus Group

Culverts and Tunnels



MiCoB

Retaining Wall



WINSUN

Embankments and Sound Barriers



WINSUN

Products and Use Cases

Bridges



TU/e



Products and Use Cases

Bridges



TU/e



Products and Use Cases

Bridges



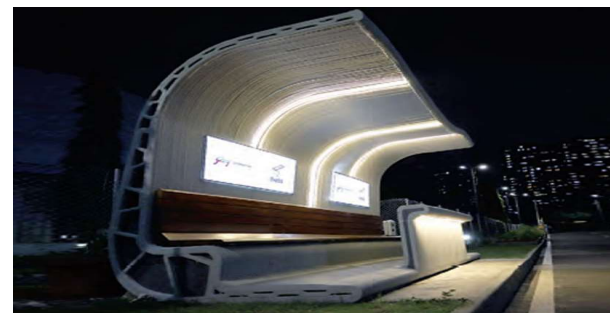
TU/e

Products and Use Cases

Bus Stands



WINSUN



Tvasta / Godrej

Products and Use Cases

Water Tank, Foundations, Trenches



Hyperion



MiCoB

Products and Use Cases

Staircases



MiCoB

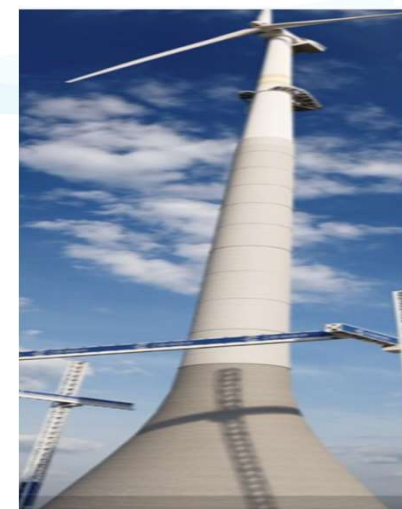


Weber / Saint Gobain

Wind Turbine Foundation



GE / COBOD



Benefits of 3D Printed Elements

- * Faster construction, self-stabilized panels
- * Better thermal insulation due to air voids in the wall
- * No need of external plaster
- * No efflorescence, reduced maintenance which generally happens in the brickwork/masonry
- * Better sound insulation due to air voids in the walls.
- * Lower HVAC cost/ higher building energy efficiency due to air voids.
- * Higher building life due to extra cover to structural members
- * Integration with Building Information Model (BIM)
- * Reduced Total Cost of Ownership



Thank You

