INFOGRAPHIC

3D PRINTING IN THE CONSTRUCTION SECTOR

2023

CONSTRUCTION 3D PRINTING APPLICATIONS

Houses
Walls of houses can be 3D printed, allowing for new and unique geometries, reduced material usage and faster building times.

Schools
3D technologies are also used for public institutions including the construction of schools, offices and hospitals in remote areas. Notably, the cost of construction is reduced.

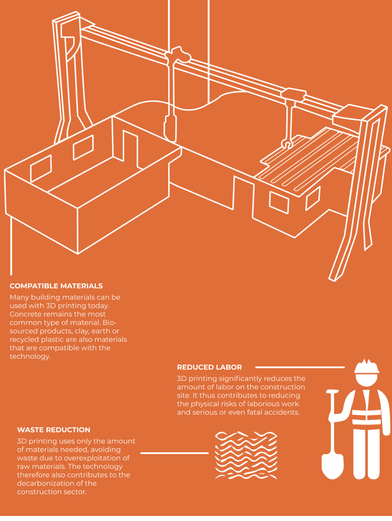
Public Works
Additive manufacturing is contributing significantly to public works, such as the construction of a wastewater treatment chamber or water collectors installed in urban areas.

Bridges
3D printing is now a preferred method for building bridges, whether they are made of concrete, recycled plastic or metal.

Street Furniture
Public benches, decorative elements for parks, planters: 3D printing makes it possible to create innovative urban furniture pieces at a lower cost.

Pavilion
Used as a shelter or to dress up an outdoor space, 3D printed pavilions can be built quickly, directly on site and with local materials, thus making them more sustainable. Their shape is usually innovative as well.

USING 3D PRINTING ON A CONSTRUCTION SITE



ROBOTIC ARMS
Construction 3D printers use extrusion. The machine is equipped with a robotic arm capable of depositing material according to a predefined 3D model. It can also be placed on rails to facilitate its movements.

CURVED STRUCTURES
The walls of the house are 3D printed, allowing for complex geometries that are impossible with traditional techniques. For example, 3D printing is able to create curved structures.

COMPATIBLE MATERIALS
Many building materials can be used with 3D printing today. Concrete remains the most common type of material. Bio-sourced products, clay, earth or recycled plastic are also materials that are compatible with the technology.

REDUCED LABOR
3D printing significantly reduces the amount of labor on the construction site. It thus contributes to reducing the physical risks of laborious work and serious or even fatal accidents.

WASTE REDUCTION
3D printing uses only the amount of materials needed, avoiding waste due to overexploitation of raw materials. The technology therefore also contributes to the decarbonization of the construction sector.

KEY FIGURES FOR ADDITIVE MANUFACTURING IN CONSTRUCTION

$750.8B
The estimated value of the 3D printing construction market in 2031, growing 87.3% annually from 2022 to 2031.
(ALLIED MARKET RESEARCH)

24 HOURS
How long it took to 3D print the walls of a 38 square meter house in 2017.
(APIS COR)

10 METERS
The size of the tallest fully 3D printed building in the world, located in Saudi Arabia.
(COBOD)

6,000 Kg
The amount of steel needed to print the bridge installed in the heart of Amsterdam.
(MX3D)

30,000
The number of recycled plastic bottles needed to print a 3.3 meter high pavilion.
(MIDDLE EAST ARCHITECTURE NETWORK)

56 SQUARE METERS
The size of the first 3D printed school in Malawi, made in just 18 hours.
(14TREES)

KEY DATES

2009 A project to commercialize Contour Crafting 3D printing technology is launched, led by Professor Behrokh Khoshnevis.

2014 Winsun presents one of the first 3D printed houses, built in just one day.

2015 WASP unveils the largest Delta 3D printer for the construction industry, standing 12 meters tall.

2016 The Emirate of Dubai launches a strategic plan to build 25% of new buildings with 3D printing by 2030.

2018 The first 3D printed social housing is finally inhabited by a French family in Nantes.

2019 WASP introduces two 3D printed structures, Gaia and TECLA, made from reusable materials.

2020 A 3-story building sees the light of day in Germany thanks to concrete 3D printing.

2021 MX3D's 3D printed metal bridge is installed in the center of Amsterdam.

2022 A 3D printed concrete wastewater treatment chamber is installed and successfully tested in England.

2023 ICON announces the construction of a hotel complex using 3D printing in Texas.

3D natives