3D Printing Construction Market to Reach $3.3 Trillion by 2032, growing at a 105.8% CAGR | CyBe Construction, Peri group

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NEW CASTLE, DE, UNITED STATES, June 18, 2025 /EINPresswire.com/ -- The construction industry stands on the edge of a technological revolution, with 3D printing technology redefining the usual building process. This innovative technology, also known as additive manufacturing, has changed how we design and construct our built environment. 3D printing, a subtype of additive manufacturing, is a process of creating a physical object from a digital model. This technology has been rapidly advancing in recent years and has found a wide range of applications, including in the construction industry.

> The market has witnessed significant growth in the past decade, owing to increase in investment from various government toward construction of new buildings and infrastructure.”
>
> *Allied Market Research*

According to a new report published by Allied Market Research, titled "3d printing construction market was valued at $5.5 billion in 2023, and is projected to reach $3.3 trillion by 2032, growing at a CAGR of 105.8% from 2024 to 2032.

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Construction 3D printing is a process for printing concrete, polymer, metal, or other materials layer by layer using a 3D printer to create construction pieces or full buildings. The most prevalent form of printer is one that uses a robotic arm to extrude concrete back and forth. Furthermore, 3-dimension printers are totally automated, removing the possibility of human mistake. In addition, the rise in government investments in the approaching construction sector expansion is expected to boost the 3D printing construction industry during the forecast period.

Various governments take initiatives to enhance the living standard of citizen. For instance, in

June 2022, the plan of UAE government to construct approximately 25% of new buildings in Dubai as per 3D printed buildings technology by 2032. In order to attain this target, government has selected CyBe construction. Hence, these investments are expected to provide significant growth in 3D Printing Construction Market.

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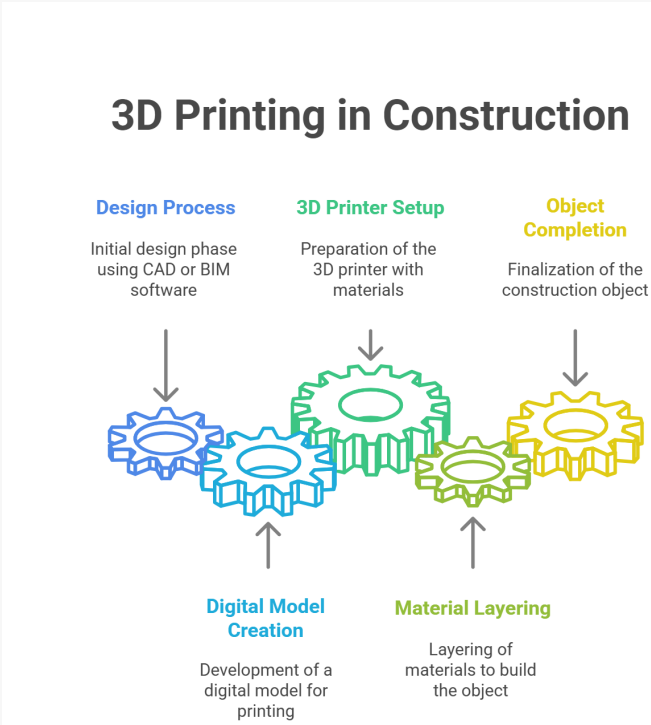

3d printing construction market

North-America accounted for the largest share of the global market and dominated the global 3D printing construction market in terms of revenue in 2023 owing to expansion of residential and commercial sectors. However, Asia Pacific is expected to register highest CAGR during the forecast period. This is due to increase in R&D investments in developing countries and rise in government investments day-by-day in construction of buildings and infrastructures.

However, during the COVID-19 pandemic, various manufacturers in the 3D printing construction market had to stop their business in countries such as China, the U.S., and India. This break directly impacted the sales of 3D printing construction companies. In addition, lack of manpower and raw materials also constricted supply of equipment for 3D printing construction, which negatively influenced the 3D printing construction market growth. Morever, reopening of production facilities and introduction of vaccines for coronavirus disease are anticipated to lead to re-opening of 3D printing construction companies. By region, the market is analyzed across North America, Europe, Asia-Pacific, and LAMEA. In 2023, Asia-Pacific had the highest 3D printing construction market share and is anticipated to secure the leading position during the forecast period, due to extensive demand in the construction & infrastructure segment.

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Digital fabrication techniques

At present, the combination of digital fabrication techniques and cementitious materials has led to the development of innovative manufacturing processes for fabricating concrete-like products, objects, and structures. These include layered extrusion, binder jetting, and slip-

forming.

Most developments in digital fabrication of concrete-like products have been focused on layered extrusion technology (such as contour crafting, and concrete printing), as its operating procedure is based on the more widespread production scheme of polymeric customized parts. However, its implementation in construction processes requires much larger printers than those used for metal or plastic objects, due to the dimensions of the final objects to be printed.

Typically, the automated machinery used for the layered extrusion of concrete includes a digitally controlled moving printing head. It precisely lays down the concrete or mortar material layer by layer. This allows the opportunity to create customized structures and functional voids into the printed elements. The manufacturing technology facilitates the development of on-site constructions in one single stage. This reduces the transportation of construction equipment, assembly operations, labor costs and the risk of injuries during construction works. Stanford's Center for Design Research collaborated with ICON, a company specializing in 3D printing for construction, to develop new methodologies for efficient building processes in 2020. This partnership aimed to improve the scalability and adaptability of 3D-printed structures.

3D concrete printing

3DCP is an automated additive manufacturing technique, which uses either a gantry or robotic arm printer to print successive layers of concrete, one on top of the other. It allows limitless geometric configurations for the printed elements or walls, which provides architectural freedom. Although 3DCP technology is a relatively new technology, it is currently attracting a lot of attention because of its advantages of low waste generation, sustainability, construction duration, construction costs, and worker safety. The University of California, Berkeley, partnered with ICON in 2022 to explore the use of 3D concrete printing in creating disaster-resistant housing. This collaboration aimed to utilize the speed and efficiency of 3D printing to provide safe shelter in areas prone to natural disasters.

3DCP creates almost zero waste, requires less transportation during the construction process, and hence has a lower carbon footprint. Furthermore, it reduces the number of trees cut for timber formwork and minimizes the post-construction waste from the used and unused formwork molds. Moreover, the absence of formwork causes a significant reduction in construction cost and duration. Besides the reduction in labor, 3DCP also offers an improvement in the health and safety of the workers during construction, especially in harsh environments.

Alternative climate mitigating solutions

Beyond its existing commercial applications in 3D printing construction market, C3DP has the potential to limit greenhouse gas emissions from the cement supply chain in the production of printable cementitious mixtures. New low-carbon 3D printable cementitious mixtures have been developed with supplementary cementitious materials including industrial wastes and natural

materials, alternative binders, and recycled materials. This reduces emissions on the production side of the cement supply chain. Through structural design optimization and functional hybridization in construction, C3DP is used to fabricate structures that use less cementitious materials, decrease the need for formwork, and reduce waste, lessening emissions compared to conventional concrete construction. For instance, China has also included additive manufacturing in its national development strategies for “manufacturing core competitiveness” as outlined in the 14th Five-Year Plan, which has resulted in an increase in government research funding for C3DP.

BioHome3D and Citizen Robotics’ 3D-printed home

The University of Maine Advanced Structures and Composites Center is 3D-printing housing structures exclusively from bio-resins and wood fibers. This is for combating labor shortages and widen access to affordable buildings. The demo project, known as BioHome3D, begins with a 600-square-foot prototype that features a fully 3D-printed floor and roof. As a whole, the one-bedroom, one-bathroom building is 100 percent recyclable, made up entirely of biodegradable materials, including wooden floors. As a prototype, BioHome3D is equipped with monitoring sensors, measuring thermal, environmental, and structural elements, to gather resilience-based data to better inform future designs.

In 2023, housing construction company Citizen Robotics built the first 3D-printed house in Michigan, with design assistance from develop ARCHITECTURE and the president of the Detroit chapter of the National Organization of Minority Architects. Citizen Robotics applies robotic and automated construction techniques to reduce the costs and materials needed for home construction. A 1,000-square-foot, two-bedroom home, along with its attached wall segments, was 3D-printed at the company’s facility in Southwest Detroit and later transported and assembled on-site in the Islandview neighborhood of Detroit. The home became available for purchase in 2024.

3D Printing Construction Market Report Highlights

By Construction Method
Extrusion
Power bonding

By Material Type
Concrete
Metal
Composite

By End-user
Buildings
Infrastructure

By Region
North America (U.S., Canada, Mexico)
Europe (France, Germany, Italy, UK, Rest of Europe)
Asia-Pacific (China, Japan, India, South Korea, Rest of Asia-Pacific)
LAMEA (Latin America, Middle East, Africa)

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Key Findings Of The Study
The report provides an extensive analysis of the current and emerging global 3D printing construction market trends and dynamics.
Depending on material type, the concrete has dominated the 3D printing construction market, in terms of revenue in 2023 and the metal segment is projected to grow at a significant CAGR during the forecast period.
By construction method, the extrusion segment has registered highest revenue in 2023.
Asia-Pacific is projected to register highest growth rate in the coming years.
The key players within the global 3D printing construction market are profiled in this report, and their strategies are analyzed thoroughly, which help understand competitive outlook of the 3D printing construction industry.
The report provides an extensive analysis of the current trends and emerging opportunities of the market.
In-depth global 3D printing construction market analysis is conducted by constructing estimations for the key segments between 2023 and 2032.
The global 3D printing construction market forecast analysis from 2023 to 2032 is included in the report.
The region and countries are analyzed thoroughly, which help understand the competitive outlook of the 3D printing construction market opportunity.

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