

3D Printing Robot Market by Component (Robot Arms, 3D Printing Heads, Software), Robot Type (Articulated Robots, Cartesian Robots, SCARA Robots, Polar Robots, Delta Robots), Application, End-user Industry and Region - Global Forecast to 2028

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Report description:

The 3D printing robot market is projected to grow from USD 1.6 billion in 2023 and is projected to reach USD 3.2 billion by 2028; it is expected to grow at a CAGR of 14.6% from 2023 to 2028.

Strong focus on achieving production efficiency at manufacturing facilities, and growing adoption of innovative technologies for customized and complex part production are the factors expected to fuel the growth of the 3D printing robot market. "Robots arms segment of the 3D printing robot market to witness major market share during the forecast period." The robot arm segment is projected to be the major market segment over the forecast period. Robotic arm 3D printers offer several advantages, including the elimination of the need for support in printed parts, which enhances design freedom and reduces material costs. While self-supporting structures are preferred, some systems can reorient the building platform to create overhangs. Robotic arm 3D printing offers distinct advantages, enabling the creation of larger-scale models exceeding 1 meter in any dimension and potentially up to 30 meters in one dimension. Its five- or six-axis movement grants unparalleled freedom for the 3D printing head to trace intricate paths, facilitating complex component construction. Moreover, robotic arms often eliminate the need for support due to their flexible movement, although some models may require the build platform to reorient for complete support avoidance. Additionally, these arms can accommodate various 3D printing fixtures, enabling the use of multiple feed materials like WAAM or CBAM.

"SCARA Robots segment of the 3D printing robot market to witness significant growth during the forecast period." The SCARA robot segment is projected to be projected to grow with the highest CAGR over the forecast period. SCARA or Selective Compliance Assembly Robot Arm robots are a type of industrial robot well-suited for assembly and packaging tasks. These robots are characterized by their parallel-axis joint layout, which makes them compliant in the X-Y direction but rigid in the Z direction. This allows them to perform delicate assembly tasks with high precision and accuracy. They are typically four-axis robots, with

two parallel arms that can move in a single plane and a fourth axis that allows the end effector to rotate. They find multiple applications in 3D printing, serving as printer heads for intricate objects, automating post-processing tasks, including support removal and inspection, and enabling large-scale and multi-material printing. Their speed, accuracy, and versatility make them valuable for high-volume production and diverse printing needs, enhancing the 3D printing industry.

"Aerospace & Defense segment will hold for major share for 3D printing robot market during the forecast period." The aerospace & defense sector will hold for majority of the share within the 3D printing robots market. The aerospace and defense sector is rapidly embracing 3D printing robots due to their numerous advantages over traditional manufacturing methods. These include enhanced design flexibility, reduced production time, and cost savings by eliminating the need for expensive tooling. Furthermore, these robots enable on-demand production of spare parts, customization of components for new platforms, and the repair of damaged parts, contributing to reduced downtime and improved operational efficiency. In the aerospace and defense sector, 3D printing robots find versatile applications, from manufacturing aircraft and spacecraft components, including engine parts and landing gear components, to producing spare parts on demand. Beyond specific applications, these robots streamline manufacturing operations by eliminating the need for expensive tooling and molds, automating repetitive tasks, and enhancing precision in part production. In essence, they offer the potential to revolutionize this industry by improving design flexibility, reducing production time, and cutting costs, ultimately leading to more efficient and superior product manufacturing.

"Asia Pacific to grow with the highest CAGR in the 3D printing robot market during the forecast period" The adoption of 3D printing robots in the Asia Pacific is bolstered by government support, investments in R&D, and growing awareness of the technology's advantages. This trend is most prominent in China, Japan, and South Korea, with each country harnessing 3D printing robots for diverse purposes. Furthermore, the reduced lead times, improved supply chain management, and heightened innovation potential are driving forces behind this transformative shift. In essence, the rise of 3D printing robots is a highly promising development poised to reshape industries in the years to come.

Extensive primary interviews were conducted with key industry experts in the 3D printing robot market space to determine and verify the market size for various segments and subsegments gathered through secondary research. The break-up of primary participants for the report has been shown below:

The break-up of the profile of primary participants in the 3D printing robot market:

- By Company Type: Tier 1 45%, Tier 2 35%, and Tier 3 20%
- By Designation: C Level 45%, Director Level 35%, Others-20%
- By Region: North America 30%, Europe 22%, Asia Pacific 40%, ROW- 8%

The report profiles key players in the 3D printing robot market with their respective market ranking analysis. Prominent players profiled in this report are KUKA AG (Germany), ABB (Switzerland), Yaskawa Electric Corporation (Japan), FANUC CORPORATION (Japan), Universal Robots A/S (Denmark), Massive Dimension (US), CRAD B.V. (Netherlands), Caracol (Italy), among others. Apart from this, WEBER Maschinenfabrik (Germany), Meltio3D (Spain), Comau (Italy), Baubot (Austria), MX3D (Netherlands), Twente Additive Manufacturing (Netherlands), Dobot (China), BLOOM Robotics (Netherlands), Dyze Design (Canada), REV3RD s.r.l. (Italy), 3D Minerals (France), Orbital Composites Inc. (US), ADAXIS SAS (France), AI BUILD LTD. (UK), OCTOPUZ (Canada), Hyperion Robotics (Finland), Hypertherm, Inc., (US), Ingersoll Machine Tools, Inc. (US), are among a few emerging companies in the 3D printing robot market.

Research Coverage: This research report categorizes the 3D printing robot market on the basis of component, robot type, application, end-user industry, and region. The report describes the major drivers, restraints, challenges, and opportunities pertaining to the 3D printing robot market and forecasts the same till 2028. Apart from these, the report also consists of leadership mapping and analysis of all the companies included in the 3D printing robot ecosystem.

Key Benefits of Buying the Report The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall 3D printing robot market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

-[Analysis of key drivers (Government-led investments in additive manufacturing projects, Reliance on automated solutions to conduct repetitive tasks and improve workplace safety, Strong focus on achieving production efficiency at manufacturing facilities), restraints (High costs of installation and ownership of 3D printing robots), opportunities (Rising awareness about higher degree of freedom offered by 3D printing robots than traditional printers, Increasing application scope of 3D printing robots in automotive and electronics industries, Growing adoption of innovative technologies for customized and complex part production) and challenges (Interoperability and compatibility issues related to hardware components of 3D printing robots) influencing the growth of the 3D printing robot market.

- Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the 3D printing robot market.

- Market Development: Comprehensive information about lucrative markets - the report analysis the 3D printing robot market across varied regions

-[Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the 3D printing robot market

- Competitive Assessment: In-depth assessment of market shares, growth strategies and service offerings of leading players like KUKA AG (Germany), ABB (Switzerland), Yaskawa Electric Corporation (Japan), FANUC CORPORATION (Japan), Universal Robots A/S (Denmark), among others in the 3D printing robot market.

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