



3D PRINTER

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Abstract

3D printing also known as Additive manufacturing technology has been dubbed the next big thing and be as equally wide spread as cellular telephone industry. 3D printers print objects from a digital template to a physical 3-dimensional physical object. The printing is done layer by layer (Additive manufacturing) using plastic, metal, nylon, and over a hundred other materials. 3D printing has been found to be useful in sectors such as manufacturing, industrial design, jewellery, footwear, architecture, engineering and construction, automotive, aerospace, dental and medical industries, education, geographic information systems, civil engineering, and many others. It has been found to be a fast and cost effective solution in whichever field of use. The applications of 3D printing are ever increasing and it's proving to be a very exciting technology to look out for. In this paper we seek to explore how it works and the current and future applications of 3D printing.

Description

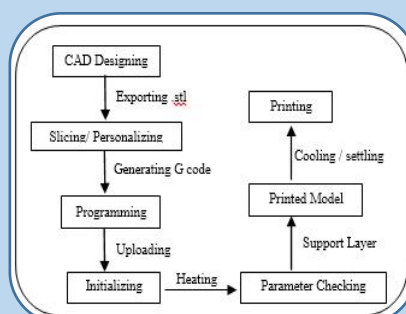
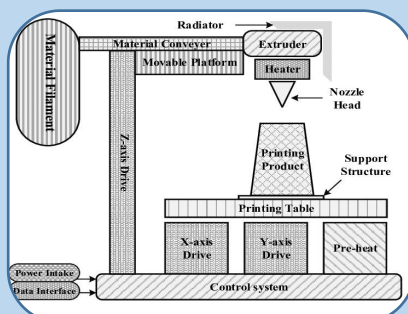
There are various ways to get it, but the most common is to disjoin the 3D model into a very thin layer that is printed one on top of the other, and after that fix them we have a 3D object.

To make it better sympathize, let's check at one of the most used processes, stereolithography: the printer produces a thin layer of resin and "draws" a thin straight section of the product with a laser beam. That laser solidifies the pattern he drew and sticks it to the next layer of resin, and so the process is repeated layer by layer. At the end of all that resin comes forth the 3D object designed.

This is not the only method and different materials like as dust or metals can be used, or even liquid plastic material that solidifies when leaving the printer, but the concept of layers constantly implement.

3D Printing objects are commonly measured in centimeters (it is a small object). but some printers can reach up to several meters. It is also a slow process that needs solitude: for a 100-gram object, something build complex objects may require several hours. Finally, mention that the materials they use in the 3D Printer are not cheap.

Structure Diagram



Technologies

- Internet of Things
- stereolithography (SLA)
- selective laser sintering (SLS)
- fused deposition modeling (FDM).

Requirements

Hardware

- 3D Printer Arduino kit
- Ramps 1.4
- Hot end
- Extruder
- Stepper motor
- 12 Volt 10 Amp Power Supply
- PLA Filament 1.75 mm
- Limit Switch(3 no)
- Acrylic Sheet
- Wooden Block
- Old DVD Writer

Software

- Fusion 360
- Xloader
- Pronterface

Key Features of 3D Printer

- Flexible Design. 3D printing allows for the design and print of more complex designs than traditional manufacturing processes.
- Rapid Prototyping
- Print on Demand.
- strong and Lightweight Parts
- Fast Design and Production.
- Minimising Waste
- Cost Effective
- Ease of Access

Applications & Future Enhancement

3D printers are part of the additive manufacturing family and use similar methods to a traditional inkjet printer- albeit in 3D. It takes a combination of top-of-the-line software, powder-like materials and precision tools to create a three-dimensional object from scratch.

New materials and material composites, lower pricing, and mature post-processing options will make it more viable to integrate 3D printing into production cycles. As the technology keeps developing, it provides an ever more competitive alternative to injection molding for low-volume plastic parts.

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