Global Engineering Solutions

Serving Globally

Global Engineering Solutions presents, introduction to :

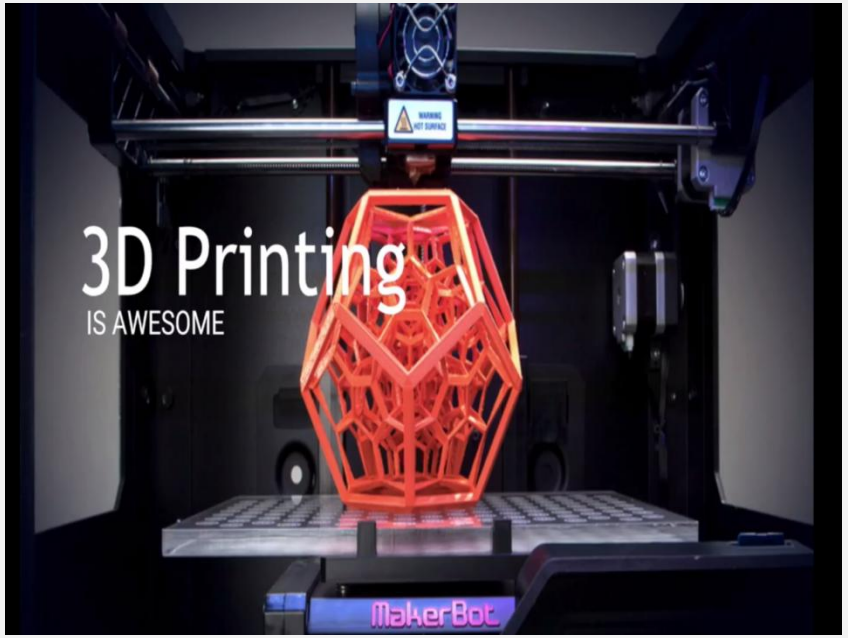
"3D PRINTING TECHNOLOGY"

WHAT IS 3D PRINTING?

‘3D PRINTING’ ***is the form of Additive Manufacturing Technology, where a Three dimensional object is created by successive layers of material.***

Advantages of 3D Printing Technology:

- It’s a fast moving technology under Additive manufacturing technology .
- Enables to create complex engineering design geometries that cannot be done simply and very quickly
- Enables both Rapid prototyping and Manufacturing.
- Can be used to make parts or moulds for parts.
- Less expensive for prototyping or manufacturing of R&D parts.
- This technology have wide applications in Architecture, constructions, industrial designs, Automotive, Aerospace, Military, Engineering etc.



3D PRINTERS:

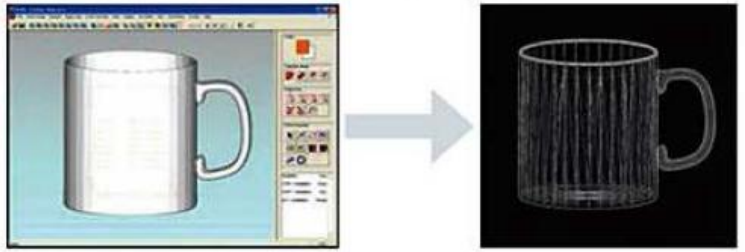
The faster way to create models in Additive Manufacturing technology is 3D Printing process by "3D Printers"

- 3D PRINTERS are capable of carrying out additive process under computer controls
- 3D PRINTERS are generally faster and more affordable & easier to use than other additive manufacturing technologies.

General Steps in 3D PRINTING:

Additive manufacturing → Creates objects through a sequential layering process

Step 1 – From CAD model to .STL file)



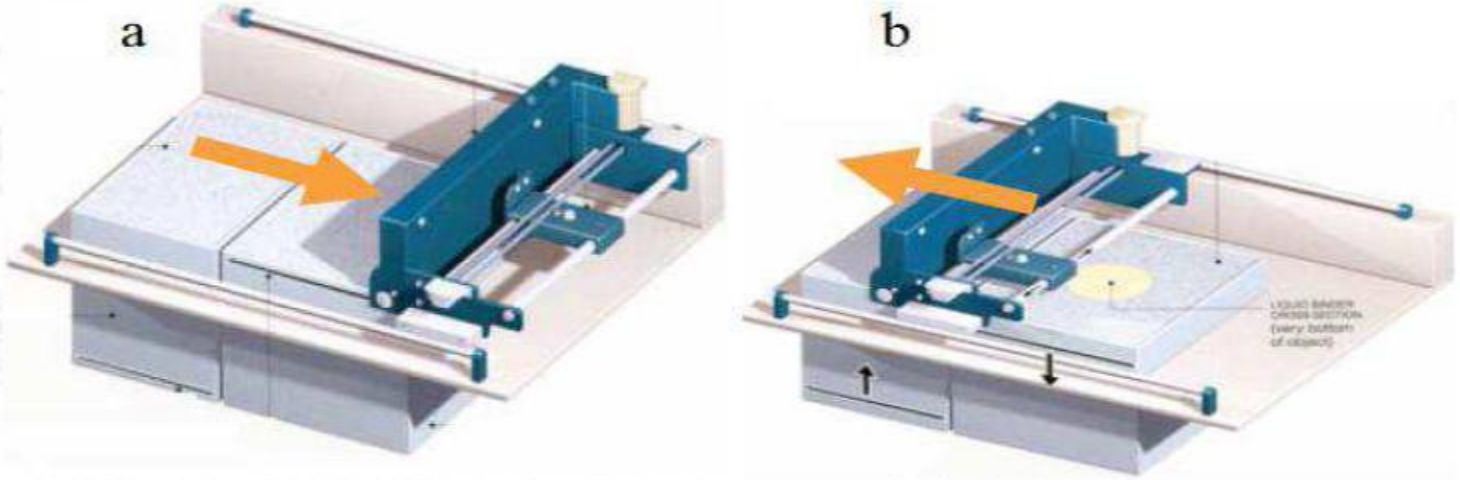
Step 2 - Virtual slicing

Step 3 - Printing

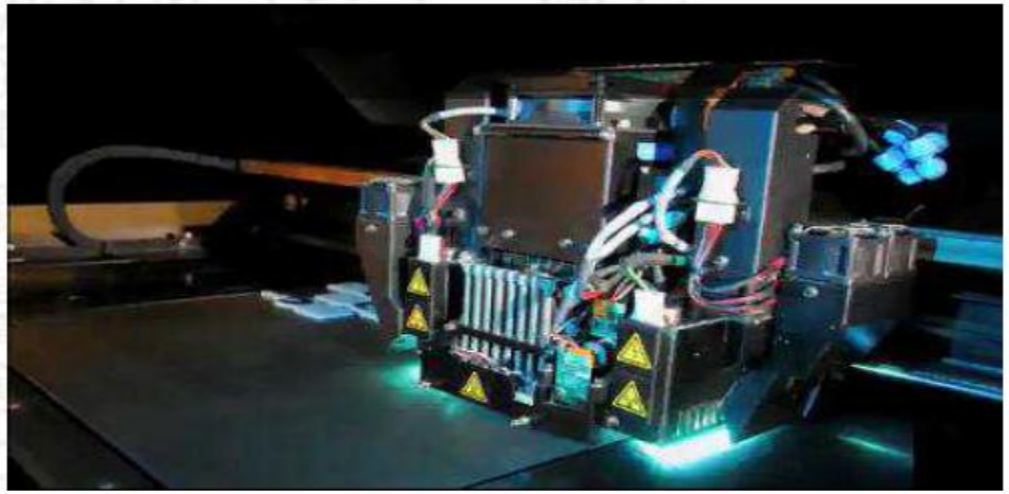
General Steps in 3D PRINTING :

Printing: 3 steps

1) Printing head deploy a layer of material
2) Layer is cured
3) The printer tray moves down



Printing technologies **differ in the way layers are deposited** or cured



Technologies of 3D PRINTING:

3D Printing technologies are divided in Varies types :

- **SLA – StereoLitography Apparatus**
  - **Material**: liquid material
  - **Building**: UV laser beam that traces each slice of the object on the surface of this liquid, causing a very thin layer of photopolymer to harden
- **Material Extrusion: FDM – Fused Deposition Modeling**
  - **Material**: semi-liquid material (usually thermoplastic)
  - **Building**: material is deposited from a computer-controlled print head
- **SLS - Selective Laser Sintering**
  - **Material**: fine layer of powder (wax, polystyrene, nylon, glass, ceramics, stainless steel, titanium, aluminium)
  - **Building**: a laser selectively fuse a layer of granules together

Technologies of 3D PRINTING:

- **Material Jetting**
  - **Material**: photo-polimeric material
  - **Building**: object layers are created by emitting liquid photopolymer from a print head (like inkjet printers). The layer is cured using UV light.

- **Polijet technology (Objet Connex printers)**
  - **More than one** photo-polimeric material at a time
  - **Digital materials**:
    - Set resulting object mechanical properties
    - Print two different materials at a time

Global Engineering Solutions

Serving Globally