**Let’s Learn About 3D printing benefits and applications**

*If you have the desire to explore your world of imagination in reality, just start learning and utilizing the 3D Printing Technology.*

**What Is 3D-Printing?**

Basically, 3D Printing is an awesome ***Additive Manufacturing Technique*** that complements the ancient techniques to create the 3 Dimensional solid objects or prototypes from a digital design “***Blueprint***” with a new transformation. The *Additive Manufacturing/Fused Deposition Modeling* **(FDM)** technology is a process that develops an object by the addition of material **layer by layer**. Both 3D Printing and Additive Manufacturing are interconvertible.

**Process Of Creating The Revolutionary 3D Objects**

*Don’t just print the objects using ink on a paper, Create them in Real with 3D printers.*

* For creating a 3D prototype, the very first thing we require is- ***A Blueprint*** of the object we desire to print. Prototyping or Blueprint Designing is done using a **CAD (Computer-Aided Design)** software like ***Blender***.
* Once the digital model is ready, the next step is to send this designing information about the amount, materials to be used etc., into the 3D printer for its conversion into the physical form.
* The deposition of material occurs in successive layers and thus, the 3D object of desired dimension and shape with a series of **cross-section** gets created to revolutionize the technology.

**Materials Used for Printing**

The core of any successful object created is the material used for its creation and the 3D objects are one of the best examples of this. The materials used for 3 Dimensional creation are highly *durable, flexible, detailed, corrosion resistant, having outrageous mechanical strength with good resolution features*.

**Examples of Materials:**

* ABS (Acrylonitrile Butadiene Styrene)
* Ceramics
* Nylon
* Glass filled Polyamide
* PLA (Poly Lactic Acid)
* HIPS (High Impact Poly Styrene)
* PC (Poly Carbonate).

**Merits and Benefits of 3D Printing**

*3D printing is becoming a* ***boon*** *for the industrialization and has a revolutionary impact on businesses. It is proliferating and transforming almost every sector of life.*

***Some of the merits are described below:***

1. **Less Time:** One can create anything that can be imagined in short span of time as no tooling process is involved.
2. **No Wastage:** *Say NO to Wastage with 3D printing technology*. As no machining of the parts is required so there is no wastage of any raw materials.
3. **Transformation:** 3D printing is transforming traditional production methods to digital manufacturing for creating splendid products. Any design can be created no matter how complex it is!
4. **Quick Production:** This technique enables designers to quickly transform their designs into a tangible object. It enables them to find flaws in their products and thus, can overcome those to enhance the product quality and development.
5. **Save Money:** The cost of installation of 3D printers is definitely high but it is affordable as compared to high labor, inventory, and stock costs, the amount to be spent for product remodeling, and the changes that has to be made after manufacturing of product and reduces process failure chances as one can take the key decisions like changing material, product testing etc. at earlier stages of design development.
6. **Conserve Energy:** The technique requires fewer processing steps, little assembly and materials thus, conserve energy.
7. **Effortless Interaction:** A descriptive way of representing a product design is a less effective approach to be used for sales and marketing as one can get confused and can misapprehend the design. 3 Dimensional Printing technique is thus, useful in eliminating this confusion and cater a path of effortless interaction as one can show the visible physical form of the design.

**Future Applications of 3D printing Technology**

3D printing is metamorphosing almost every major industries including ***Aerospace, Health, Gaming and Entertainment, Fashion, Food industry*** etc. and will transfigure other industries too in the near future.

**Some examples for showing the Purpose of 3D Printing in these sectors:**

**Aerospace:** Here, 3D printing is used for prototyping, modeling and manufacturing Jigs, Jet Engine Parts, Fixtures, Rocket Injectors etc.

**Health and Medical Industry:** In Medical industry, 3D printing is effectively employed for Bioprinting blood vessels, for printing tissues, affordable prosthetic parts viz. Limbs, Biocompatible and Biodegradable drugs, Multiple Electronic Sensors to detect the functioning of heart etc.

**Gaming and Entertainment Industry:** It is used to generate Computer Graphics which are implemented and presented as CGI (Computer Generated Imagery) to create dynamic or static visual scenes, contribute in image art, simulators, and videos.

**Fashion Industry:** In fashion industry 3D printing is utilized to create prototypes and samples of 3D costumes, footwears, jewelry etc., and also for creating Digital Patterns.

**Food Industry:** 3D printing is used for printing nutritional and healthy products like 3D Meat, Chocolates, Pasta, Raw Dough, Brownie etc. in a strict portion size, use fresh food ingredients, reduces wastage thus, keeping a sustainable environment. ***Foodini*** is an example of 3D- Printer used in food industry.