

3D PRINTING TECHNOLOGY AND ITS INFLUENCES ON THE FASHION INDUSTRY

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Abstract - 3D Printing is a type of additive manufacturing. 3D printers make three dimensional objects by using various methods. 3D printers used in automotive, aerospace industries, in consumer goods industries, in military, in medical applications and in food industries including fashion. There are various 3D printing studies and applications on textiles. In this paper, 3D printers, 3D printing, different 3D printing applications and recent 3D printing developments for textile industry were reviewed and explored

Key Words: 3D printer, Additive Manufacturing, Filament

1. INTRODUCTION

Adding materials to make an object is called as “additive manufacturing” and it is a part of additive manufacturing technique. This technique allows a production of a three dimensional solid object by laying down layers of materials from a digital computer model. Contrary to 2D printers that print dyes on the plane, 3D printers put the desired material in consecutive layers to make a physical object from a digital file. 3D printing can be referred to as a rapid prototyping or solid-freeform technology. 3D Printers was first invented by Charles Hull in the early 1980s

Besides, thin films or plastic sheets can be apply in 3D printers. Moreover, laminated LOM which generates a 3D object by stacking layers of defined sheet materials (like paper, plastic or metal), light polymerized, ink jet 3D printing, electron beam metal are the other types of 3D printers.

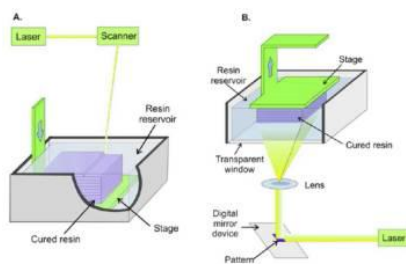


Fig.1. Stereo lithography (SLA)

Fashion and 3D Printing

Additive manufacturing is interesting for fashion as it is allowing to work more easily on fashion designs and to made amazing things for the fashion industry garments, ornaments and meshes. This technology is really provide a lot of freedom to the designers in terms of geometry. It is, for example, possible to made intricate designs for various

projects inside the fashion industry. From shoes and accessories to 3D printed dresses, the fashion industry begin to embrace the full potential of 3D printing and to develop interesting objects.

2. DESIGN CONSTRUCT & OPERATION

The structure of this machine is made out of a aluminum rectangular block's this machine uses the 3 axes for controlling this axes we uses the smooth rods for the smooth controlling on it on that friction's and also threaded rod is needed for the z axis controlling. The X & Z axes move the extruder carriage. While the Y axis moves the bed. For the transmission of X & Y axis we used the GT2 timing belt along that GT2 pulley which can be hooked up we the stepper motor shaft the Z axis using a pair of MY threaded rods coupled with two synchronized stepper motor here we used Nema 17 stepper motor. For controlling the system we used the arduino mega 2560 microcontroller and a RAMPS Shield with arduino. The desktop computer will sends the installation toward's the microcontroller then this Atmega 2560 will decodes this instruction and gives the controlling signal towards MOSFET works as a switching element for hot end by just simply turn ON the power register for melting a filament & stepper motor's to power the overall electronics component we used 12 V DC 20 Amps power supply.

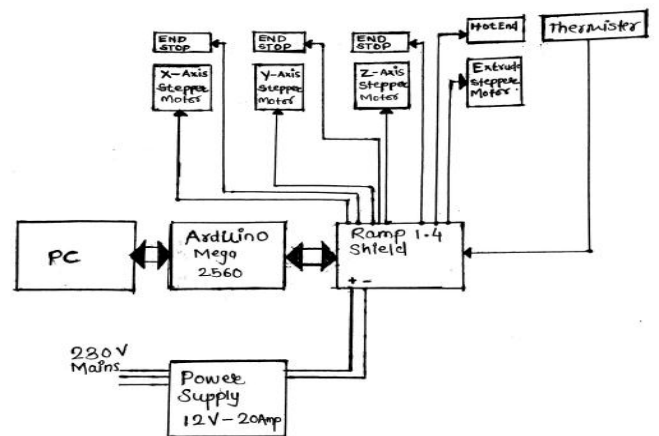


Figure 1: block diagram of additive manufacturing using FDM

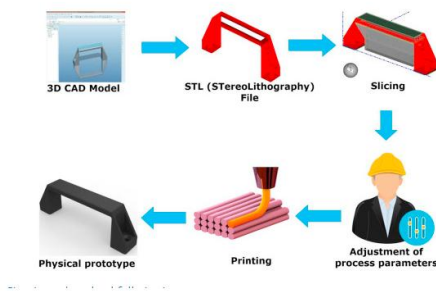


Figure 2: Steps involved in part fabrication by FDM process

3. RESULT ANALYSIS:

This shows the final output scenario of the project.

The working of the project is shown in this chapter.

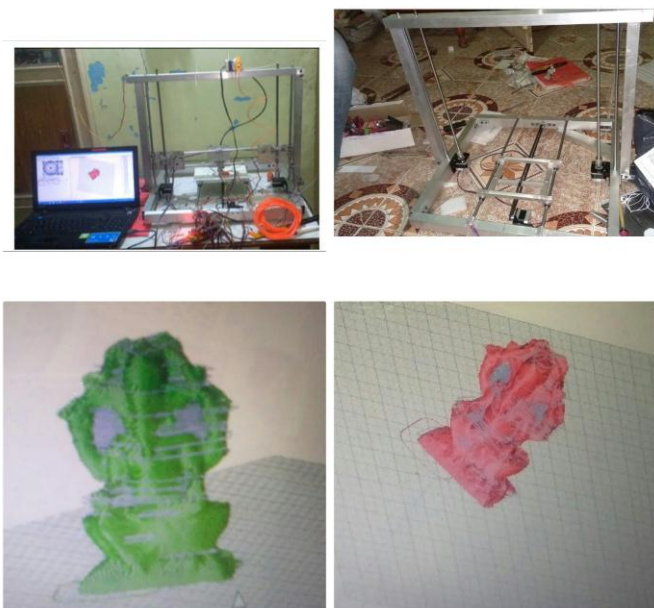


Figure 3: 3D printing model & output

4. ADVANTAGES

1. Time-to-Market: 3D printing allows ideas to be produced faster.

2. Feedback: With a prototype, you can verify the market by presenting it at a tradeshow, showing it to buyers or raising capital by pre-selling on Indigo or Kick-starter.

3. Build your Imagination: we can now 3D print almost everything they imagine after drawing it up virtually or by other.

5. APPLICATION AREAS OF 3D PRINTERS

FOR FASHION INDUSTRY

Since 2013, 3D printed cloth creation has displayed an impressive increment. Nowadays, it is possible to create 3D printed clothes, shoes, accessories (sunglasses, watches) and so on.

5.1. The jewellery sector

3D printing has shown to be particularly disorderly. There is a great deal of interest and uptake based on how 3D printing can, and will, contribute to the further development of this industry. From new design freedoms allowed by 3D CAD and 3D printing, through better traditional processes for jewelry production all the way to direct 3D printed production eliminating many of the traditional steps.

5.2. Fashion industries sector

As 3D printing techniques have better in terms of

Resolution and more flexible materials, one industry, renowned for experimentation and disgraceful statements, has come to the fore. We are of course discussing about fashion. 3D printed accessories shoes, headpieces, hats, and bags have all made their way on to global catwalks.

6. CONCLUSION:

3D Printing technology could revolutionize the world. Advances in 3D printing technology can significantly change and improve the way we manufacture products and produce goods worldwide. An object is scanned or designed with Computer Aided Design software, then sliced up into thin layers, which can then be printed out to form a solid three dimensional product. As shown, 3D printing can have an application in almost all of the categories of human needs. Utilization of 3D printers provides many improvements on automotive and aerospace industries, on consumer goods industries, on military (gun prototyping), on medical applications and on food industries as well as on fashion sector. It seems that, with future research and developments, 3D printing will encompass more and more areas and shares in the textile industry for a more flexible world.

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