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THE FABRICATION PROCESS USING STRAIN SENSORS IN 3 D PRINTING

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ABSTRACT;

The main objective of this study is to conclude the fused deposition modeling (fdm) process which the worldwide used printing technology for the three-dimensional objects.these can also print the very large size of implants.

The fabrication process is the main process which is used in the three-dimensional printing using a three-dimensional printer in the fused deposition modeling process. Various other adaptive measures are take in control for the printing of the objects.the printer which is used for the fabrication process in fused deposition modeling in optima fused deposition modeling printer.this printer is used due to its printing quality in various other kind of materials such as

Keywords: fabrication, strain sensors, fdm,

LITERATURE REVIEWL:

The study in this paper defines the purpose of the fabrication process which is used in the fused depostion modeling process using the strain sensors which plays an important role in the printing of three-dimensional models. The main purpose was to get a review about the importance of the strain sensors and fabrication process, due to which the printing could be done easily

HIGH PERFORMANCE POLYMERS:

- **PEEK**
- **CFR - PEEK**

EXTREME TEMPERATURE PLASTICS:

- **PBI**
- **PI**
- **TPI**

Various other high temperature plastics and plastics of engineering are also used.
The fabrication process is keen to its performance and is cost saving with its efficiency of being use for more time.the materials which are used in this process is cfr-peek apium, which a very high-performance **polymer.**

MATERIALS AND METHODOLOGY USED:

The materials which we used in this process of fabrication of the three-dimensional models mainly based on the high performance and sustain in the extreme temperatures. This technology improves the part quality of the fused deposition modeling process and can also provide various advantages of the fabricated materials.
Some of the factors which are depends on this process are -

1. FDM
2. RP Technology
3. Strain Sensors
4. Solidworks Modeling

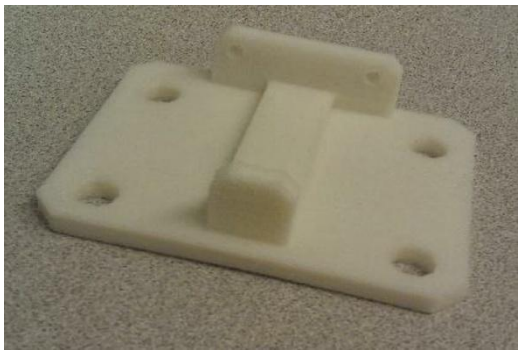
5. Three-Dimensional Modeling
6. Stiffness Of The Materials
7. CFR - Peek
8. Specimen Fabrication

TECHNICAL SPECIFICATIONS OF THE PRINTER

Technical Specifications of The Printer	
Length & width of the machine	RESOLUTION OF THE PRODUCT - 0.5mm
	RESOLUTION OF THE MACHINE - 0.0125mm
Resolution of height	RESOLUTION OF THE PRODUCT - 0.1 mm RESOLUTION OF THE MACHINE - 0.05mm
Production	0.1mm
Diameter of the nozzle	0.4mm
Bed print	TEMPERATURE REACHED UPTO 160’ C
Size of the plate which is printed	155 * 155 220 * 175
Size of the machine	850 * 685 *675

Apium printer used for the fabrication process

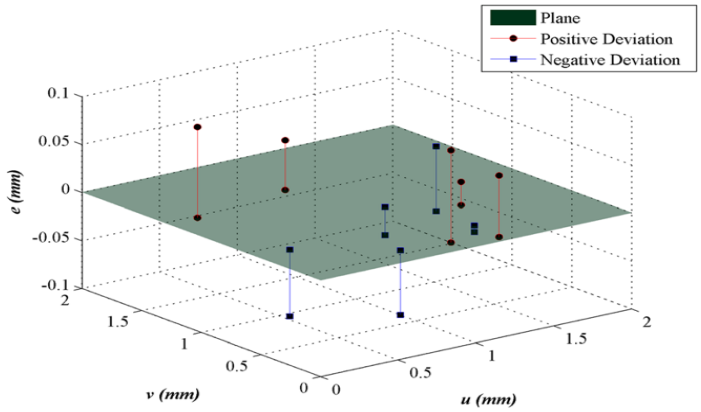
The printer shown in the figure is used for the printing of three-dimensional modelling and uses fabrication process with strain sensors



Samples from the Printer in Fabrication Process

The above samples are taken through the fused deposition modelling process and the fabrication of the models is also done through the strain sensors

This deviation model clearly explains the deviation occurred during the printing process in the fused deposition modeling. The fabrication depends on the size and material of the models. Negative devaiation and postive deviation are done



DEVIATION MODEL OF THE STRAIN SENSOR

FABRICATION USING STRAIN SENSORS

The various three-dimensional models which are used in the fabrication process of the fused deposition modeling are fabricated through the help of strain sensors. The strain sensors are also conforns the model and sliced into the various parts such as

1. ORIENTATION OF THE MODEL
2. THICKNESS OF THE LAYER
3. SPEED OF PINTING

CONCLUSION:

The main of the study was to see the difference in the strain sensor used fabrication process and it can be done through the three-dimensional modeling of the models. With its high demand in the market, the process is done worldwide and due to its efficiency it can also fit in the princing. The build materials are deposited to form another model and can be used after and after.

SUMMARY:

The author in this paper reviews the process of fabrication which is used in the printing of 3 dimensional objects. This process is done along with the fused deposition modelling process. The main purpose is to study the various strain sensors which are used in this process for the fabrication of the objects.

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