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RE-DESIGN PRUSA I3 3D PRINTER USING SOFTWARE SOLIDWORKS 2016

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Abstract

Rapid Prototyping is a technology related to physical objects which are directly derived from the CAD data. This method can produce objects by stacking material in layers. This technology is often called addictive manufacture, there are five of the most common rapid prototyping uses, namely: visualization, appropriate forms, product testing, tools, and use of spare parts. One example of a machine that uses rapid prototyping is a 3D printer. In this study discussed about designing and creating a 3d printer using the FDM method, Where FDM utilizes material extruded from a nozzle which is then driven by a motor. The material is a thread-shaped thermoplastic (coil) which is heated above the melting point by the heater and then extruded through the extruder nozzle hole. The heater maintains that temperature and deforms the material from the solid to semi-solid (liquid) so that it is easy to extrude. The moving nozzle and removing the extrusion liquid form a layer. convection heat transfer at the nozzle, then get the results of the analysis of 208°C and use the nozzle type E2A57. After that, analysis of filament thrust to find the amount of force required for the driving roller so that the filament can flow (due to impulse) to the heater and to determine the filament shift speed (due to the driving force of the roller) and motor rotation speed needed to produce the melt speed that comes out from the nozzle according to 25 mm/s

Author Keywords

Rapid Prototyping, FDM, E2A57, Filament.

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