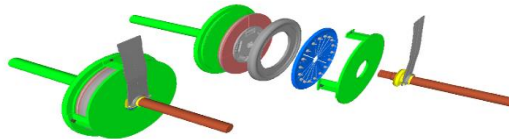
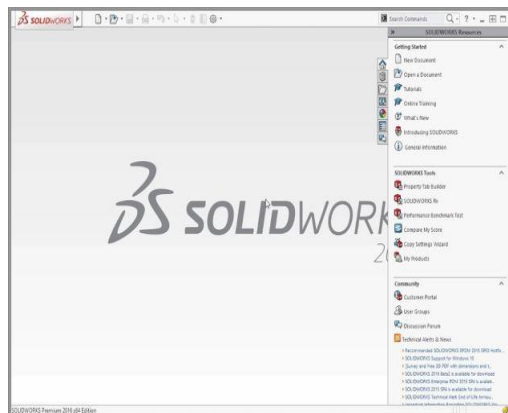


A REVIEW PAPER OF MODELLING AND 3D PRINTING OF SINGLE CLUTCH PLATE**V. GOPAL¹,****A. VISHNU², A. RAGHUNATH³, B. VAMSHI KRISHNA⁴, D. HARISH⁵**¹Assistant Professor, Department of Mechanical Engineering, GNIT, Hyderabad, Telangana.^{2,3,4,5} UG Scholars Department of Mechanical Engineering, GNIT, Hyderabad, Telangana.**ABSTRACT**

Single clutch plates are an essential component in a vehicle's clutch system. which is responsible for transferring power from the engine to the transmission. The clutch plate is located between the engine's flywheel and the transmission's input shaft, and it engages and disengages the engine's power from the transmission. When the clutch is engaged, the clutch plate is pressed against the flywheel by the pressure plate, and the friction between the two plates allows the engine's power to be transmitted to the transmission, which then turns the wheels. When the clutch is disengaged, the clutch plate is released from the flywheel, and the engine's power is no longer transmitted to the wheels.

INTRODUCTION*Figure 1. clutch plate*

Clutches are utilized at whatever point the permission of intensity or movements must be controlled either in sum or after some time. In the most straightforward applications, clutch interface and disengage two pivoting shafts (drive shafts or line shafts). In these gadgets, one shaft is regularly connected to a motor or other power unit (the driving part) while the other shaft (determined part) gives yield capacity to work. While regularly the movements involved included are revolving, direct clutch are additionally conceivable.

Introduction of solid works*Figure 2. solid works*

Solid Works is a 3D solid modelling package which allows users to develop full solid models in a simulated environment for both design and analysis. In Solid Works, you can also ideas and experiment with different designs to create 10 models. Solid Works used by students, designers, engineers, and other professionals to produce simple and complex parts, assemblies, and drawings. Designing in a modelling package such as Solid Works is beneficial because it saves time, effort, and money that would otherwise be spent prototyping the design.

Introduction to 3D Printing

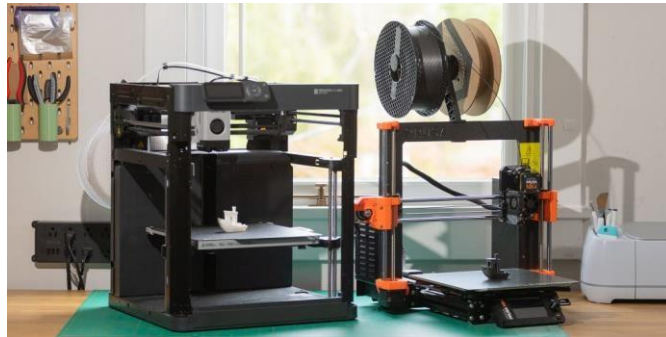
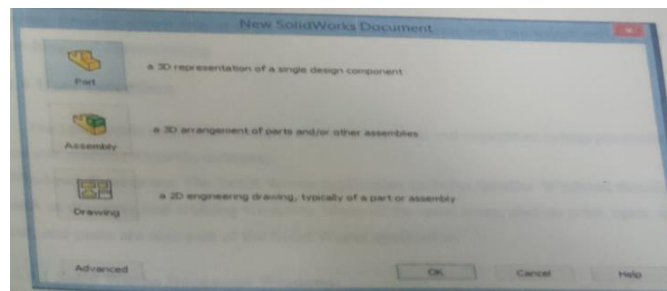


Figure 3. 3D Printing Machine

3D prototyping, also known as rapid prototyping or additive manufacturing, is the process of creating a physical object from a digital 3D model. It involves the layer-by-layer construction of a three-dimensional object using a variety of materials and technologies. 3D prototyping allows for the quick and cost-effective production of prototypes, models, and functional parts for various industries and applications. The process of 3D prototyping typically begins with designing a digital model using computer-aided design (CAD) software or by scanning an existing object to create a digital replica. The digital model is then sliced into thin cross-sectional layers by specialized software in preparation for the 3D printing process.

Modelling of clutch plate

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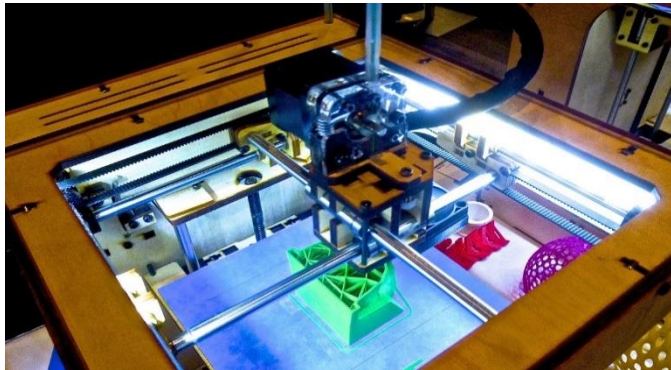
3d printing of clutch plate

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3D Printing technology

3D printing is the type of Additive Manufacturing that is any of various processes for three-dimensional object of almost any shape from a 3D model or other electronic data primarily through additive processes in which successive layers of material laid down under computer control. A 3D printer is a type of industrial robot, Early AM equipment and materials were developed in the 1980s. In 1984, Chuck Hall of 3D Sys Cory invented a process known as stereolithography employing UV lasers cures polymers. Hull also developed the STL file format widely accepted by 3D printing war, as well as the digital slicing and infill strategies common many processes today,



Applications are many, including architecture, construction(AEC), industrial design, Automotive, aerospace, military, engineering, dental and medical industries, biotech human tissue replacement, fashion, footwear, jewellery, eyewear, education, geographic information systems, food and many other field

Additive manufacturing is the official industry standard term for all applications of the technology. It is defined as the process of joining materials to objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies.

Result

In this project modelling of clutch plate is carried out with the Solid Works software by using various commands. After creating model, we save the component in St. File. Import the component into the 3D Printing machine by using idea maker software, by using FDM (Fused Deposition Modelling) method with PLA material (Poly Lactic Acid). And then we get the component. Design and 3D Printing of clutch plate.

Fabrication of product is done with the help of 3d printing by using Fused Deposition Modelling and PLA material.

CONCLUSION

Modelling and 3D printing offer valuable advantages for the design and prototyping of single plate friction clutch plates. The use of 3D printing technology enables rapid prototyping, allowing engineers to iterate designs quickly and evaluate different variations of the clutch plate. It provides customization and design flexibility, facilitating the incorporation of specific features or tailoring the clutch plate to meet specific application requirements Post-processing steps such as surface finishing and treatments may be required to achieve desired performance levels.

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