

DESIGN AND FABRICATION OF CLUTCH GEAR-MMC'S THROUGH LASER SINTERING PROCESS

A Project report submitted
in partial fulfillment of the requirements for the award of the degree of

**BACHELOR OF TECHNOLOGY
IN
MECHANICAL ENGINEERING**

Submitted by

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AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY**

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DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

This is to certify that project work is entitled **“DESIGN AND FABRICATION OF CLUTCH GEAR-MMC'S THROUGH LASER SINTERING PROCESS”** is a bonafide record done by **B.TEJA (15811A0315), B.JAYADEEP (15811A0320), D.POLARAJU (15811A0327) CH.MURALI (15811A0323)** students of final year B.Tech in the Department of Mechanical Engineering, Avanthi Institute of Engineering and Technology, Visakhapatnam.

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ABSTRACT

Gears are one of the most critical components in power transmission system of an automobile and also many rotating machinery. Many studies have been conducted on optimum gear design. The main objective is to design metal matrix composite gears before and after optimization. Metal matrix material composites are preferred mostly due to their low density. Also the high specific mechanical properties make these alloys one of the most interesting material alternatives for the manufacturing,

Additive manufacturing is an advanced technology to produce quality gears of metals and plastics. some significant benefits such as capability to handle complex gear shapes and design, and produce near net-shaped gears; resource efficiency; and rapid product development etc. make this process a sustainable alternative to other manufacturing processes of gear manufacturing. This project is done to gain industrial experience in additive manufacturing of gears and to find best method among some of the important additive layer manufacturing processes such as stereo lithography, Fused Deposition Modeling, and 3D Printing to manufacture gears. This project aims to facilitate researchers and encourages them to do further research and development for improved gear quality, process productivity, and sustainability.

In the present work materials considered are gear are manufactured, tested in and laboratory and the results are validated with Finite Element Analysis performed using ANSYS software