



Dayananda Sagar College of Engineering

Shavige Malleshwara Hills, Kumaraswamy Layout, Bangalore – 560 078.

Accredited by NBA & National Assessment and Accreditation Council (NAAC) with 'A' grade

Department of Mechanical Engineering (Accredited by NBA)



Autonomous Precision Landing Of Model Rockets

Objectives

Building an aerodynamic rocket body and fins to achieve maximum passive stability

Developing a thrust vector control system for active attitude control

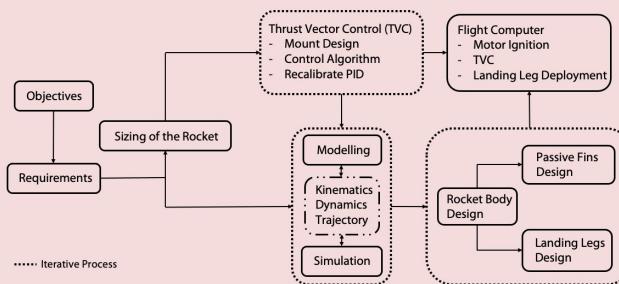
Integrating a flight computer for data logging and various other operations

Developing landing legs to withstand the impact and ensuring the safety of components

Modelling and Simulation of rocket dynamics using MATLAB & Simulink

Testing and validation of designed components

Methodology: Design Phase



Project Guide: Sanketh S
Designation: Assistant professor

Student Name
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USN
1DS17ME093
1DS17ME124
1DS17ME131
1DS17ME145

STAGES OF FLIGHT

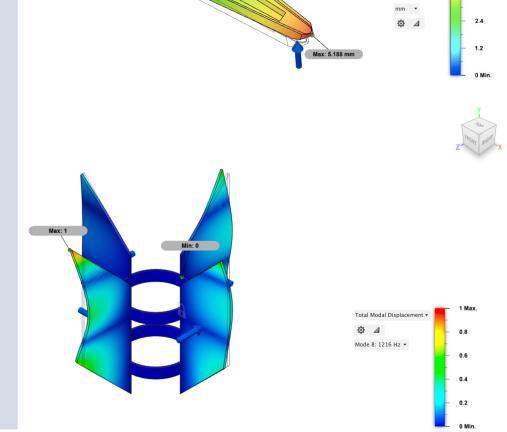
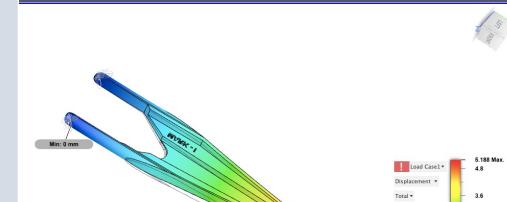
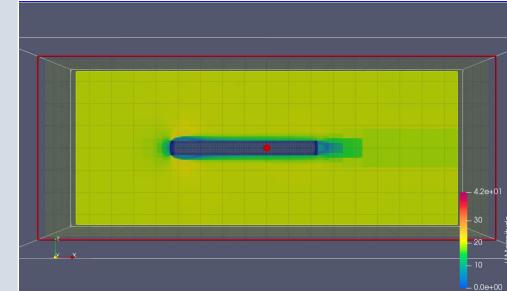


Analysis

CFD analysis was conducted on the rocket airframe

Stress analysis was conducted on the landing legs

Modal frequency analysis was carried out on the fins



Results and Discussion

The rocket experiences freefall as it is dropped from the drop height; its velocity increases and reaches its maximum value until the solid motor is ignited. Upon ignition, acceleration drops and so does the velocity until it reaches near-zero velocity at 6 seconds. Thus zero velocity is achieved close to the ground.

