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PERAMBALUR-621212, TAMILNADU, INDIA.
Website: www.dsengg.ac.in

MAIN PROJECT PRESENTATION: 2025-2026

DEPARTMENT: AERONAUTICAL ENGINEEERING

Date:25.02.2026 **PROJECT CO-ORDINATOR: R.VIVEK**

S.NO	BATCH NO.	REGISTER NUMBER	NAME	TITLE OF THE POSTER	MENTOR
1.	I	810422101001	ABISHEK KANNA K	DESIGN AND FABRICATION OF AMPHIBIOUS DRONE FOR SURVEILLANCE	Mr.S.PALANIVEL
2.		810422101008	BHARATH S		
3.		810422101010	DINESHBABU P		
4.		810422101019	PRAKADEESH P		
5.	II	810422101002	ADHISHESHAN BEEMARAMAN P	INSPECTION AND DAMAGE DETECTION IN AIRCRAFT WING	Mr.R.RAJESHKUAMR
6.		810422101004	AMEER HUSSAIN J		
7.		810422101013	HARIHARAN G		
8.		810422101017	MOHAMED FAZIL S		
9.	III	810422101003	AKALYA S	DESIGN AND ANALYSIS OF SOLAR POWERED UAV	Mr.K.ARUN PRASATH
10.		810422101012	GOMATHI R		
11.		810422101027	SUSMITHA S		
12.	IV	810422101005	AMRITHAA M	DESIGN AND ANALYSIS OF BIO INSPIRED LOW	Mr.R.VIVEK
13.		810422101014	HARINI S		
14.		810422101022	SHOBIKA K		

				NOISE PROPELLER FOR UAV AND UAM	
15.	V	810422101007	ARUL MURUGAN M	STRUCTURAL ANALYSIS OF AIRCRAFT MATERIAL UNDER COMBINED COMBUSTION CHAMBER LOADING	Mr.S.ATHISAYARAJA
16.		810422101011	GIRITHARAN K		
17.		810422101018	NISANTH S		
18.		810422101030	YOGASARATHI M		
19.	VI	810422101009	CHANDRU J	HYDROGEN POWERED AIRCRAFT	Mr.R.RAJESHKUMAR
20.		810422101015	HARIPRIYAN K		
21.		810422101020	RAGUL S		
22.		810422101021	SANTHOSHKUMAR M		
23.	VII	810422101023	SIVAGURUNATHAN M	DESIGN OF COMPOSITE WING SPAR AND FINITE ELEMENT ANALYSIS	Mr.R.RAJESHKUMAR
24.		810422101024	SUNDARAVEL V		
25.		810422101028	THAMIZHARASAN P		

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DEPARTMENT of AERONAUTICAL ENGINEERING

PROGRESS THROUGH KNOWLEDGE

DESIGN AND FABRICATION OF AMPHIBIOUS DRONE FOR SURVEILLANCE

OBJECTIVE

To develop an **amphibious** drone capable of operating both in the air and on water for surveillance missions.

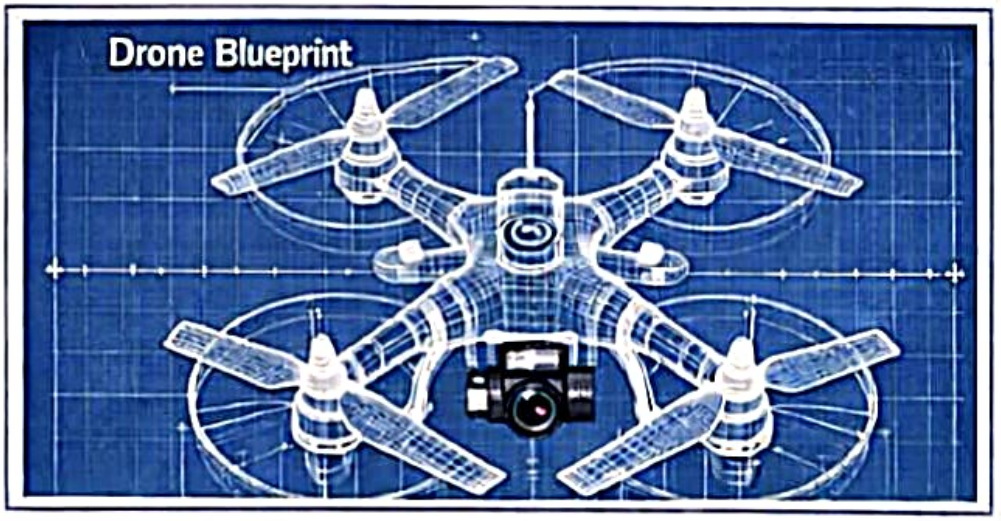
APPLICATIONS

- Coastal and Maritime Surveillance
- Search and Rescue Operations
- Environmental Monitoring
- Border Patrol and Security

INTRODUCTION

Amphibious drones offer versatile capabilities for surveillance in both aquatic and terrestrial environments.

This project focuses on designing and fabricating a drone that can seamlessly transition between flying and floating.



SYSTEM BLOCK DIAGRAM

PROTOTYPE

MATERIAL USAGE

- **Frame:** Carbon Fiber
- **Floats:** Waterproof ABS
- **Propellers:** Reinforced Plastic
- **Electronics:** Marine-Grade Components

Presented by:

K. Abishek Kanna - 810422101001
S. Barath - 810422101008
P. Dineshbabu - 810422101010
P. Prakadeesh - 810422101019

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PERAMBALUR - 621 212. TAMIL NADU

Inspection and damage detection in aircraft wing

Abatract

This project focuses on inspection and damage detection in aircraft wings to ensure structural safety and reliability. Non-destructive testing methods such as ultrasonic testing, thermography, vibration analysis, and visual inspection are studied to identify defects early and improve maintenance efficiency.

Types of Damage

Common wing damages include:
Fatigue cracks due to cyclic loading
Corrosion in metallic structures
Delamination in composite wings
Impact damage from bird strikes or debris
Early detection is necessary to prevent catastrophic structural failure.

Inspection Method

Visual Inspection
Ultrasonic Testing (UT)
Thermography
Vibration-Based Detection

Modern Technology

AI-based crack detection
Drone-based inspection
Fiber optic sensors
Digital twin monitoring
These methods reduce manual inspection time and improve accuracy.

Application

- Improves aircraft safety and reduces downtime.
- Ensures compliance with aviation standards.
- Enables modern inspection tools like SHM and drones.

Conclusion

Early damage detection in aircraft wings is essential for ensuring flight safety and reducing maintenance costs. Advanced non-destructive inspection techniques provide reliable and efficient methods for detecting structural defects without causing damage. The integration of modern technologies like AI and smart sensors will further enhance aircraft structural health monitoring in the future.

Under the Guidance of
Mr.Rajesh kumar

Presented by

ADHISHESHAN BEEMARAMAN .P
HARI HARAN.G
AMEER HUSSAIN.J
MOHAMED FAZIL.S

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Design and Analysis of Solar Powered UAV

01 Introduction

- A Solar Powered UAV is an unmanned aircraft, that uses solar panels mounted on its wings to convert sunlight into electrical energy.
- The generated power runs the onboard systems, while excess energy is stored in batteries for long-duration and eco-friendly operations.

02 Objective

- Design lightweight, high aspect ratio UAV
- Integrate efficient solar panels
- Analyze lift, drag, and power requirements
- Optimize energy generation and storage
- Increase flight endurance using renewable energy

03 Methodology

- Literature review of solar UAV
- Aerodynamics and structural design
- Solar panel and battery selection
- Power and energy management
- Performance analysis and validation

04 Analysis

- Lift = Weight for steady flight
- Power Required = Drag × Velocity
- Solar Power = Area × Irradiance × Efficiency ×
- Endurance depends on battery + solar support

05 Working Principle

- Solar panels absorb sunlight
- Photovoltaic effect convers light to electricity
- Power drives BLDC motor
- Excess energy stored in batteries
- Lift generated by wings sustains flight

05 Working Principle

- Solar panels absorb sunlight
- Photovoltaic effect converts light to electricity
- Power drives BLDC motor
- Excess energy stored in batteries

06 Conclusion

- The Solar Powered UAV successfully combines efficient aerodynamics with solar energy to achieve longer endurance flight:
- It offers eco-friendly, lightweight design improve endurance and efficiency, making it suitable for sustainable aerial applications.

PROJECT GUIDE:

Arunprasath K

(Assistant Professor)

BATCH MEMBERS:

- Akalya.S (810422201003)
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- Susmitha.S (810422101027)

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Towards Excellence

DESIGN AND ANALYSIS OF BIO INSPIRED LOW NOISE PROPELLER FOR UAV/UAM

ABSTRACT

This project focuses on designing a bio-inspired low-noise propeller for UAV/UAM systems using features like owl-wing serrations and whale-fin tubercles. CFD analysis is performed to evaluate noise, thrust, and aerodynamic performance. Results show reduced acoustic signatures with maintained propulsion efficiency. The study highlights biomimicry as an effective approach for quiet aerial mobility.

FUTURE SCOPE

- The design can be further optimized with better materials and analysis tools.
- It can be tested and applied in future UAV/UAM applications.

OBJECTIVES

- To design and analyze a bio-inspired propeller that reduces noise and improves aerodynamic performance for UAV/UAM.
- To compare the optimized bio-inspired propeller with a conventional propeller to identify noise and efficiency.

PROJECT GUIDE:
Mr.R.VIVEK M.Tech

PROJECT MEMBERS:
- AMIRTHA.A-810422101005
- HARINLS-810422101014
- SHOBIKA.R-810422101022

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PERAMBALUR - 621212 , TAMILNADU

DEPARTMENT OF AERONAUTICAL ENGINEERING

Structural Analysis of Aircraft Materials Under Combined Combustion Chamber Loading

ABSTRACT

This project investigates the structural behaviour of Aluminium Alloy 7075 and Mild Steel 1080 under combined combustion chamber loading conditions in aircraft engines. Static structural analysis is carried out using ANSYS Workbench to evaluate parameters such as total deformation, Von-Mises stress, strain, and safety factor at a rotational velocity of 1500 rpm.

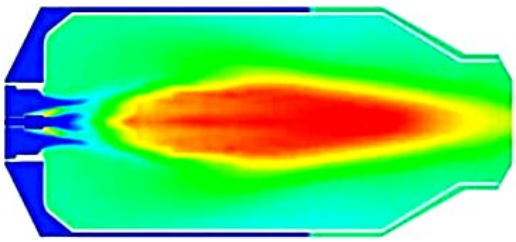
MATERIALS USED

- Aluminium Alloy 7075
- Mild Steel 1080

METHODOLOGY

- CAD modelling of specimen based on ASTM standards
- Material selection: Aluminium Alloy 7075 & Mild Steel 1080
- Import model into ANSYS Workbench
- Apply boundary conditions (Force, Moment, 1500 rpm)
- Generate mesh for structural analysis
- Evaluate deformation, Von-Mises stress, strain, and safety factor

DESIGN SECTION



- The combustion chamber specimen is designed based on ASTM standard dimensions using CAD software. The model is imported into ANSYS Workbench for static structural analysis.
- Both ends are fixed and a force of 147.15 N, moment of 6.62 N·m, and rotational velocity of 1500 rpm are applied to simulate combined loading conditions. Aluminium Alloy 7075 and Mild Steel 1080 are used as materials to evaluate deformation, stress, and safety factor.

APPLICATIONS

- Aircraft combustion chamber structural design
- Material selection for aerospace engine components
- Thermal stress and fatigue life prediction

ADVANTAGES

- Lightweight analysis using Aluminium Alloy 7075
- High strength comparison with Mild Steel 1080
- Predicts fatigue life under thermo-mechanical loading
- Reduces design failure in combustion chamber components

PRESENTED BY,
ARULMURUGAN M (810422101007)
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YOGASARATHI M (810422101030)

GUIDED BY,
MR.ATHISAYARAJA.S
ASSISTANT PROFESSOR
DEPT OF AERONAUTICAL

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HYDROGEN POWERED AIRCRAFT

INTRODUCTION

Hydrogen-powered aircraft uses hydrogen as a clean and efficient fuel, producing zero emissions.

OBJECTIVE

To develop a sustainable and zero-emission hydrogen aircraft for greener aviation.

METHODOLOGY

Designing hydrogen fuel systems, integrating fuel cells, and testing propulsion and storage.

ANALYSIS

Evaluating performance, fuel efficiency, and environmental impact.

WORKING PRINCIPLE

Hydrogen is used in fuel cells to generate electricity or burned in hydrogen-powered engines.

FUEL CELL H_2 TURBINE ENGINE

CONCLUSION

Hydrogen aircraft offer a viable path to sustainable and eco-friendly aviation.

PROJECT GUIDE:
Mr.R.Rajesh
(Assistant professor)

BATCH MEMBERS:
- Ragul S
- Santhosh Kumar M
- Hari Priyan K
- Chandru J

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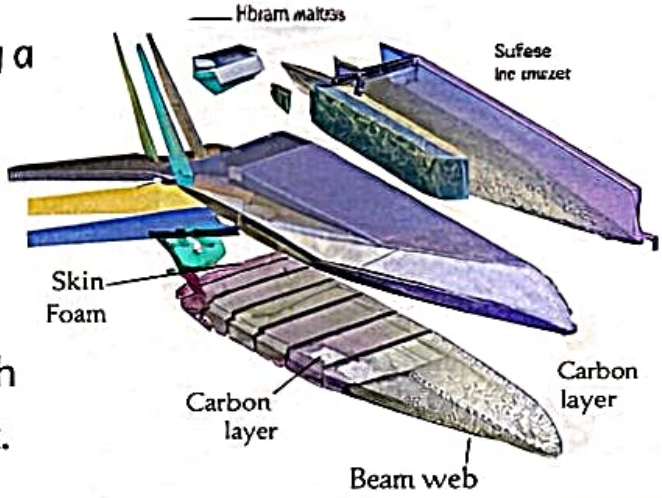
DESIGN AND ANALYSIS OF COMPOSITE WING SPAR AND FINITE ELEMENT ANALYSIS

ABSTRACT

This work involves designing a composite wing spar and evaluating its structural performance using Finite Element Analysis (FEA). The study aims to ensure high strength and reduced weight.



OBJECTIVES

- Design a lightweight composite wing spar.
- Perform FEA to evaluate stress and deformation.
- Optimize structural performance.

SCOPE

- The project focuses on designing a composite wing spar and analyzing its structural performance using FEA.

GUIDE NAME:

Mr. R.RAJESH KUMAR B.E.

PROJECT MEMBERS:

- SIVAGURUNATHAN M
- SUNDHARAVEL V
- THAMIZHARASAN P

SCOPE

- The project focuses on designing a composite wing spar and analyzing its structural performance using FEA.