

## Project I Description

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**Project Name:** Design and construction of vertical-axis wind turbine

**Team Size:** 2 MEE Students

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### Project Overview

Wind is an ideal alternative to fossil fuels as a renewable, non-polluting and local resource. Wind power produced by wind turbines today is more than ever before and is increasing every year. Numerical work will be carried out to design an optimally performing micro vertical-axis wind turbine (VAWT) with variable-pitch straight blades. Various turbulence models will be employed to simulate the aerodynamic response of the turbine. Performance analysis of the rotor will be carried out to understand the effects of variable-pitch with different airfoils and hence, optimize them for maximum performance, after which construction and testing will take place.

### Project Areas

- Fluids/ Energy (3 MEE Students)

### Project Deliverables

Project deliverables consist of the following:

- Selection of wind turbines (airfoils/ pitch/ size) that maximize the wind power harvesting for Lebanon
- Design a layout for wind turbines utilizing ANSYS CFD software

### Project Constraints

- NA

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**Students:**

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