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Group No: **22**

Guided By

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Project Title

**DESIGN, DEVELOPMENT AND ANALYSIS OF VERTICAL AXIS
WIND TURBINE FOR DOMESTIC USE**

Abstract:

The main objective of this project is to design Multi-bladed VAWT with H type rotor for domestic application which can produce electricity on small scale in order to process of making building as self-sustainable places like highways in the area of energy needs.

For this project design of congenital multi-bladed rotor is studied. From the design calculation and based on previous research data in same domain, basic design parameters of Multi-bladed VAWT is derived which are no. of stages, no. of blades, overlap, frontal area etc. The value for optimum aspect ratio, shape of rotor blades, etc. will be decided for same swept area using numerical analysis.

A renewed interest on Vertical Axis Wind Turbines (VAWTs) arose from their great capacity for integration within urban areas and for applications of distributed generation. In order to be able to highly improve their performance, making them competitive with respect to the more consolidated Horizontal Axis Wind Turbines (HAWTs), it is fundamental to have a deeper comprehension of their fluid dynamic behavior.

Rural coastal communities in developing countries along the equator lack electricity, due to the expenses involved with connecting them to the power grid. An affordable local solution, such as on-site micro power generation, would benefit the local communities and fulfil their basic lighting and ventilation needs. Equatorial coastal areas have constant sea and land breeze patterns as well as consistently high incident solar radiation. Therefore, these regions would be ideal to implement a solar-wind power generation unit.

The end product of this project was the fabrication of a 10W type vertical axis wind turbine. After integration with a solar panel the system is capable of generating up to 100W of power.

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