



AERODYNAMIC ANALYSIS OF A VERTICAL AXIS WIND TURBINE

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ABSTRACT

A Darrieus type Vertical Axis Wind Turbine (VAWT) has been designed and analyzed based on analytical and numerical models. The Double Multiple Stream Tube (DMST) model and Ansys Fluent® Computational Fluid Dynamics (CFD) has been used to identify the major design parameters which affect the performance of the design. The initial design of the wind turbine has been optimized using an objective function without altering the initially selected blade profile. The results indicate that the efficiency of VAWT strongly depends on the blade chord length and the number of blades present in the rotor.

Keywords: CFD, Darrieus VAWT, DMST, Optimization, Wind Turbine