

PROFILE MODIFICATION OF WIND TURBINE BLADE FOR IMPROVING EFFICIENCY

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ABSTRACT

The main objective of this project is to increase the efficiency of the wind turbine generator during low wind season in order to get repeated orders from the customers, by ensuring better customer satisfaction to compete in the global market. This project describes the behavior of the aerodynamic profiled wind turbine blade after introducing vortex generator on it in order to increase the power generation of the horizontal axis wind turbine generator. In this study, a 41 metre long wind turbine blade suitable for 1.5 MW is analysed with and without vortex generator using CATIA software. In addition, an analysis was made in Computational Fluid Dynamics Software version 14.5 (ANSYS WORKBENCH) to evaluate the performance between them at 12 m/s wind velocity. The outcome of the analysis study revealed that there was improvement in the coefficient of lift of 0.0479 for the wind turbine blade with vortex generator

KEYWORDS: Wind Energy, Vortex Generator, Blade Profile, S818 Aerofoil, Blade Efficiency