

# Evaluation of Wind Turbine Blade with Stiffeners and without Stiffeners

Saurabh A. Divekar, Rohan M. Dixit, Ganesh P. Katmande, Mohan R. Mane

Department of Mechanical Engineering  
Jayawantrao Sawant College of Engineering, Pune, India

**Abstract:** For wind energy harnessing a lot of development is carried out. The conversion of kinetic energy into mechanical energy is done with the help of a wind turbine. Mechanical energy is used to produce electricity many researchers have carried out work in order to enhance the performance, life, and cost of blades by increasing the strength and reducing weight. Therefore, the use of composite material for this purpose is increasing. Strength is also an important criterion; it is found that when the blade is subjected to incremental loading fatigue failure takes place. The aim of our work is to evaluate the strength of using stiffeners in wind turbine blades. This will help to reduce deflection which will be caused due to loading and will thereby increase the strength of the blade. In our study, we have considered a GFRP material that is a combination of glass fiber and carbon fiber. A blade of length 1.5m is used to carry out the analysis. A comparative study will be carried out for the deformation of blades without stiffeners and along with stiffeners.

**Keywords:** Wind turbine blade, Stiffener, Deformation stress

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