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New Proposal for Future Wind Turbines

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ABSTRACT: *Wind turbines with wider tipped blades were historically used. Wider tips absorb more energy from the moving Air / wind and produce higher turning moment at their Root. At present most of the commercial wind turbines are fitted with sharp tipped blades. Wider Tipped blades require additional support for longer length, smaller length and medium length.*
KEY WORDS: *Wider Tipped Blades, Higher Efficiency, Circular ring, New Tower Design, Radial Arm Support.*

INTRODUCTION

Long ago in wind turbine's historical design, wider blade tips are very common. Wider tips require better supports. Radial arm from the supporting vertical Tower with circularring connecting all the blades and having additional support by the Radial arm is the suggested redesign.

1.1 Adding Structural Strength and Rigidity:

Optimised structural support of individual rotor with all the blades connected by a circular outer Ring with radial arm extending from the tower as a Cantilever support touching the circular ring and supporting, is the new Conceptual Design Proposed.
Small, medium and large wind turbines can be fitted with the radial arm and the circular ring to improve the structural stability, to improve effectiveness of energy transfer and for higher overall Efficiency.

1.2 Expected Advantage:

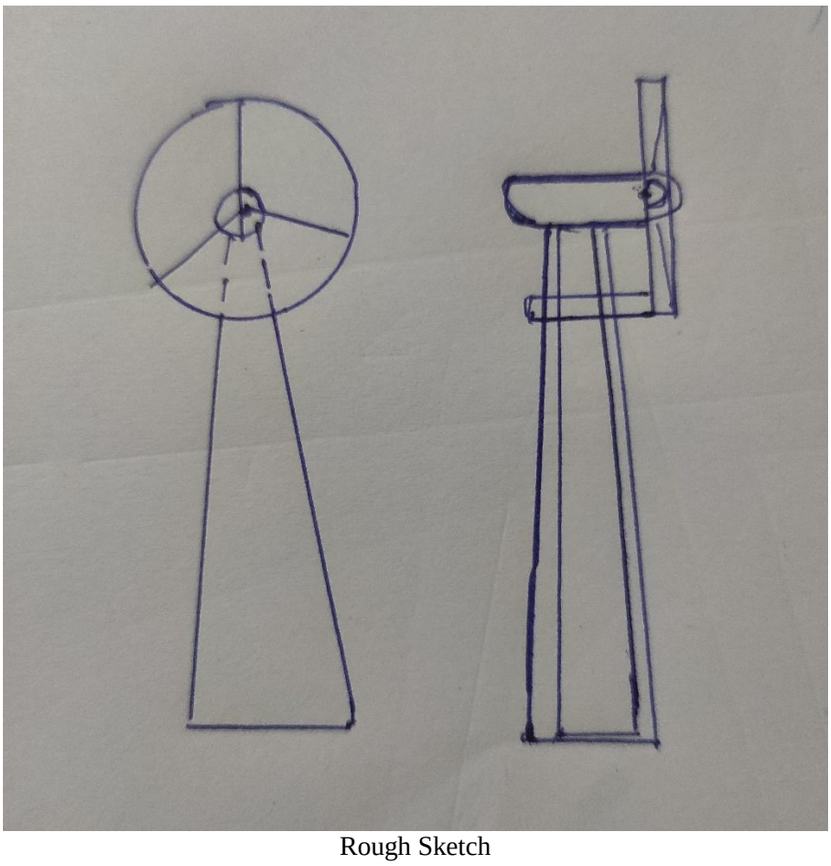
Addition of the Ring and cantilever beam for increased blade width can lead to better performance with lower vibration and higher Efficiency for the same Rotor Diameter, Increased Tip speed ratio, Increased Solidity ratio and for the same Swept area. Higher turning moment is the result from wider blade width at the tips by receiving larger kinetic energy from the moving air.

REDUCED CUT IN VELOCITY OF THE TURBINE

Starting the rotation of the turbine for a gentle breeze air is the aim. Lower cut in velocity having higher kinetic energy conversion efficiency leading to on shore and offshore electricity production with higher profit of the entire wind form is the final success involved by implementing the suggested Modifications.

2.1 Circular area and Solidity Ratio:

As the annular circular swept area increases from the root of the blades towards the tip of the turbine blades, the width of the blades must also increase Gradually otherwise the entering wind, will simply pass through the gaps or escape through the gaps between the rotating blades without transferring kinetic energy. Smaller width of the blades at their roots and broader width at their Tips is suggested to harness higher wind power.



Rough Sketch

CONCLUSION

About a Minimum of 25 % to a Maximum of 30 % increase in performance or power output for the same swept area and for same wind velocity is expected after making the suggested design modifications.