Wind Turbine Blade Tip Tracker

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Background

• Knowing blade deflection → better blades → more power output
• Current methods don’t give full deflection data
• Turbine blade tips move at 200+ mph and deflect 10 m

Objective

Build a blade tip tracking device capable of 3 cm global position tolerance and 1° orientational tolerance using Global Navigation Satellite Systems (GPS, GLONASS, Galileo)

Requirements

• 4 Hz sampling rate
• Weatherproof
• Record 1 day of data
• Easy to assemble
• $2000 Budget

Data Flow:

Rover Electronic Components:

Design:

Testing:

Next Steps:

Future Work:

• Deliver system to SGRE
• SGRE modifies TRL 7 system to fit larger blades
• SGRE uses tip tracker alongside current methods to validate new blades