

CHALLENGES IN GPS RECEIVER DESIGN FOR AIRBORNE WIND TURBINE GUIDANCE

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Accurate measurement of position and velocity is important for flight stability, and essential for flight path optimizations that maximize energy production during autonomous crosswind flight.

Differential GPS can provide centimeter-level accuracy, but conventional receivers are hampered by difficulties unique to the airborne wind turbine application. Strong centripetal acceleration, rapid changes in satellite visibility and electromagnetic interference from on-board electronics all contribute to an unfavorable environment for off-the-shelf GPS receivers.

Makani Power has developed a series of custom GPS receivers that mitigate these problems. We explain how GPS works, the nature of the challenges in this application, and how they can be overcome.



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