AerE 344: Undergraduate Aerodynamics and Propulsion Laboratory

Lab Instructions

Lab #13: Demonstration of Wind Turbine Aerodynamics Research

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Objectives:

1. To observe wind tunnel testing of wind turbine aerodynamics.

The flow field to be measured:

The experiments will be performed in a closed-circuit atmospheric boundary layer wind tunnel located in the Aerospace Engineering Department of Iowa State University. The tunnel has a test section with an 8 ft wide test section and variable ceiling height. The wind tunnel has a contraction section upstream the test section with honeycomb, screen structures and cooling system installed ahead of the contraction section to provide uniform low turbulent incoming flow to enter the test section.

The experiment consists of an array of 9 wind turbines: 6 dual rotor wind turbines and 3 classic horizontal axis wind turbines.

What you will do during the lab time:

- Visit the Aerodynamics and Atmospheric Boundary Layer Wind Tunnel
- Observe a wind turbine array experiment.

Requirements for the Lab Report

This lab is a demonstration. No report is required for this lab!