Mechanical Subgroup Lead

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CAL POLY
WIND POWER

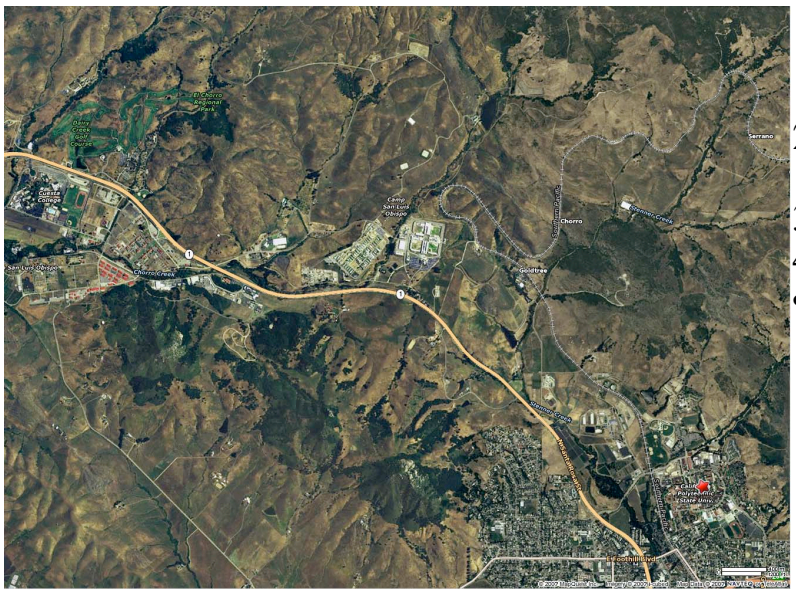
Distributed Wind Activities

Objectives and Mission of Wind Power Research at Cal Poly:

1. *"Prepare undergraduate and graduate Mechanical Engineering students for careers in the wind power industry, in the best tradition of Learning by Doing."*
2. *"Study and develop novel wind turbine technologies, and collaborate with industry research and development, both for the testing of existing designs and for the development of new ones."*
3. *"Provide a test center for the community, to test machines and participate in the dissemination and evaluation of wind energy engineering conceptual designs."*

Distributed Wind Activities

- Developed a WTG Laboratory Facility



Features:

- 3kW research wind turbine
- Designed/built in-house:
  1. Nacelle
  2. Drivetrain & Control System
  3. Rotor (hub & blades)
  4. Foundation
- Designed in house: tilt-up tower

Distributed Wind Activities

Selected projects: Blade manufacturing

Static blade strength and tip deflection test:

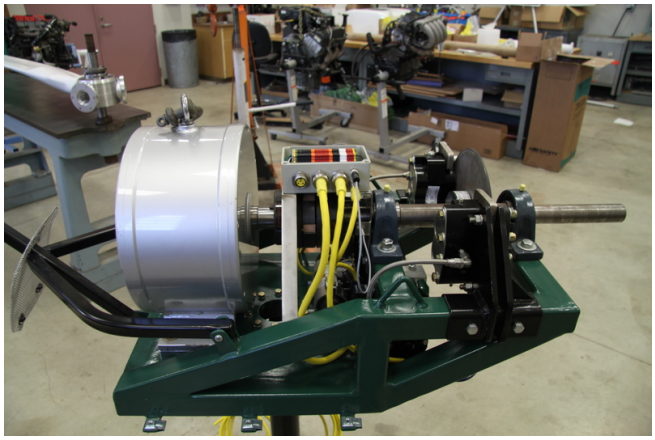
- Max operating load: 114 lbs, distributed over blade;
- Test load: was 120 lbs (placed at tip in 20-30 lbs increments)

Distributed Wind Activities

Selected Projects: Nacelle Design and Fabrication

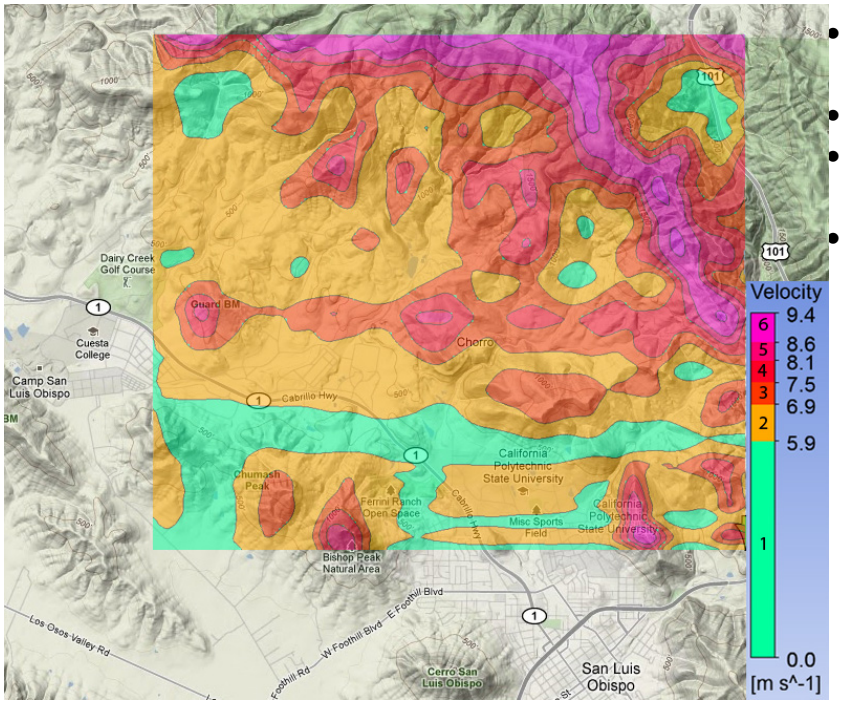
- Undergraduate, Senior Project
- Design included:

1. nacelle platform,
   fairing,
   Drivetrain (and brake)
   Control housing



Distributed Wind Activities

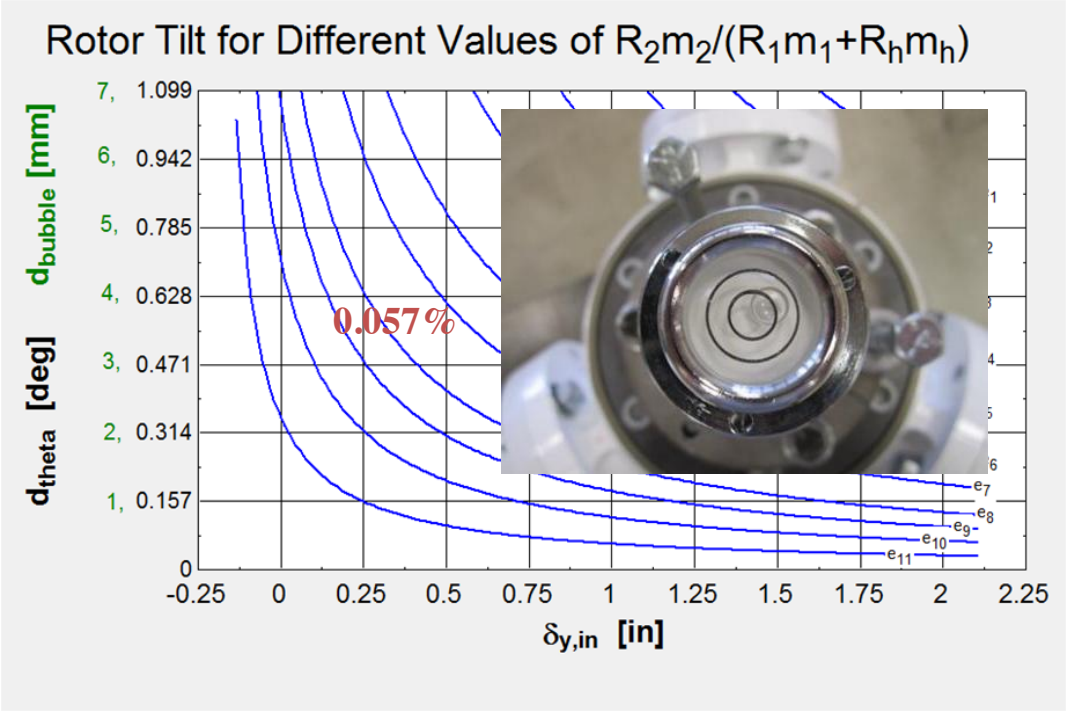
Selected Projects: Wind resource assessment



- 80’ meteorological tower with four stations
- 1 year of data
- Input to Computational Fluid Dynamics simulation
- Result shows Wind Power Classes at 50m

Distributed Wind Activities

Selected Projects: Static Rotor Balance



Distributed Wind Activities

Class projects & activities