Wind Energy Research at Boise State University

Lewandowski Wind Farm Test Facility

One of the three Micon ® 108 wind turbines at the Lewandowski Wind Farm. Boise State is unique in that it has access to a grid-connected wind farm for research purposes.

Research Funding
- United States Department of Energy
- Idaho Board of Education Research Initiation Grant
- Private donations
- Bonneville Power Admin. (pending)

Current & Recent Activities
- Distributed Wind Energy in Idaho
  - Wind for irrigators study
  - Active drivetrain control for small wind turbines for variable speed operation
  - Retrofit controllers at the Lewandowski Wind Farm
  - Series connected induction generators for multi-speed operation
- Rotor blade design studies for low wind rotors
- Student capstone design projects
  - 5 Mechanical and Electrical Engineering design projects since 2003
- Energy storage solutions for wind farms
  - Compressed fluid energy storage
  - Mechanical energy storage using flywheels
  - Hydrogen as a storage medium

Design, Modeling & Control Of Innovative Drivetrains

Simulink® block diagram of two-stage planetary differential gear train.

Resource Assessment & Siting

FloWorks® Flow Field Visualization from a student capstone design project, assessing the Boise State engineering campus for possible turbine siting.

Community Partners
- Idaho Energy Division
- Idaho Power Company
- Idaho National Laboratory
- Lewandowski Wind Farm
- Power Engineers
- Synthetic Energy

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