CREW Center for Research and Education in Wind

CREW Seminar Series: Fall 2011

Wind Turbine Drivetrain Condition Monitoring

Abstract
Although wind energy is currently the fastest growing renewable energy source in the world, the industry is still challenged by premature turbine component failures that subsequently increase the overall cost of energy. One means to mitigate these premature failures is through condition monitoring. Condition monitoring is a method to assess a system's health; thereby, enabling proactive maintenance planning, reducing downtime, reducing operations and maintenance costs and, to some extent, increasing safety. This presentation will focus on the investigation of various wind turbine drivetrain condition-monitoring techniques based on two 750-kW test wind turbine gearboxes. The investigated techniques include stress wave analysis, vibration analysis, real-time oil condition and debris monitoring, and offline oil sample analysis. The presentation will also discuss the National Renewable Energy Laboratory's gearbox reliability collaborative project and the role condition monitoring plays. The National Renewable Energy Laboratory 2.5-MW dynamometer test rig used in the gearbox reliability collaborative tests will be introduced. Several tests relevant to the presented condition-monitoring research will be presented; results and observations will be highlighted; and future research and development areas for wind turbine drivetrain condition monitoring will be described.

By **Shuangwen (Shawn) Sheng** from **NREL**

On **Friday, October 7, 2011,** at **11:00 am**
In **Room ECCS 1B14**
(CAETE studio, Engineering Center, University of Colorado at Boulder)
Refreshments will be available at 10:50pm

Dr. Shuangwen (Shawn) Sheng is a senior engineer at the National Renewable Energy Laboratory (NREL). He has B.S. and M.S. degrees in electrical engineering and a Ph.D. in mechanical engineering. Shawn is currently leading the wind turbine condition-monitoring work at NREL. Under his leadership, NREL initiated an active investigation of various wind turbine condition-monitoring techniques. Shawn also has experience in mechanical and electrical system modeling and analysis, soft computing techniques, and automatic controls. He has published his work in various journals, conference proceedings, and book chapters. Shawn is a member of ASME, AWEA, IEEE, and STLE.

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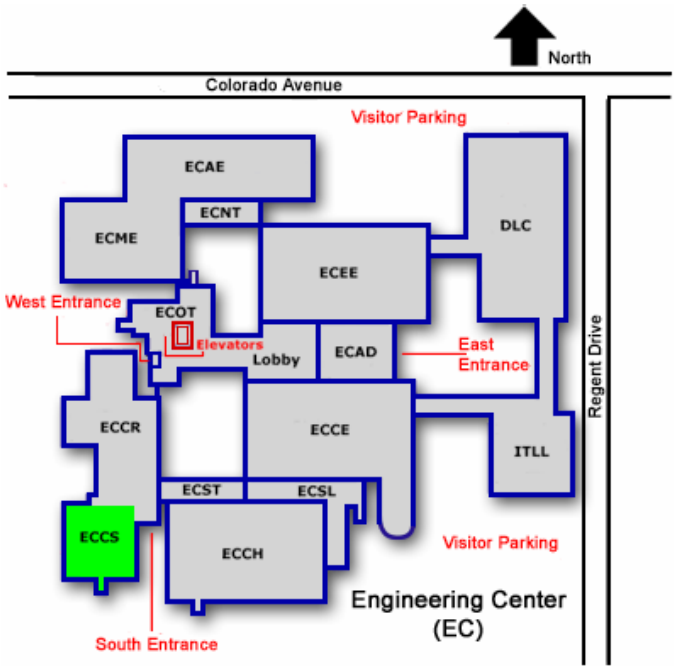
How to get to the CU-Boulder Engineering Center

From 28th Street (Hwy 36), go west on Colorado Ave., which leads into the University. You will see the Engineering Center on the left, one block further along Colorado Ave.
Parking is available at visitor parking lots and nearby meters.



Room **ECCS 1B14** is located in the 1st basement (courtyard level) of the Computer Science Wing (ECCS).

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