



International Conference on Future Technologies for **WIND ENERGY**

October 7-9, 2013

UW Conference Center at the Hilton Garden Inn, Laramie, Wyoming

CONFERENCE AGENDA

Monday, October 7, 2013

- 7:00am – 8:00am Registration and Breakfast (Hilton Garden Inn, Ballroom Foyer)
- 8:00am – 8:30am Welcome Remarks, *Jonathan Naughton, University of Wyoming (Salon D)*
- 8:30am – 9:00am Wind Turbine Rotor R&D; an OEM Perspective
Kevin Standish, Siemens – Invited (Salon D)
Introduction: Jonathan Naughton, University of Wyoming
- 9:00am – 12:00am Morning Session

Time	Room #1 – Salon D Turbine Aero 1 Session Chair: <i>Jens N. Sørensen, DTU</i>	Room #2 – Salon C Blade Materials / Manufacturing Session Chair: <i>Bent F. Sørensen, DTU</i>
9:00am – 9:30am	Aerodynamic Testing of Unsteady Airfoils <i>John Strike, U. Wyoming</i>	Mechanics Challenges in Cost-effective Manufacturing of Composite Turbine Blades <i>Ramesh Talreja, Texas A&M (Invited)</i>
9:30am – 10:00am	Alterations in Aerodynamic Loading on a Dynamically Pitching Airfoil <i>Andrew Magstadt, U. Wyoming</i>	Increasing Prototype Airfoil Fabrication Efficiency Through Use of Sectional Molds <i>Adam Karges, U. Wyoming</i>

10:00am – 10:30am Coffee Break

Time	Room #1 – Salon D	Room #2 – Salon C
10:30am – 11:00am	Characterization of Dynamic Stall on 9-12% Thick Airfoils Through Flow-Field and Surface Pressure Measurements <i>Phillip Davidson, U. Wyoming</i>	Automated Manufacturing of High Curvature Blade Geometry via Controlled Deformation of Composite Fabric by Shifting <i>Siqi Zhu, Iowa State U.</i>
11:00am – 11:30am	Steady and Unsteady Flow Characteristics of Wind Turbine Blades with Gurney Flaps <i>Pourya Nikoueeyan, U. Wyoming</i>	Avoiding Waves in Longitudinal Blade Elements via Pre-Shearing of Unidirectional Fabrics <i>Wade Johans, Iowa State U.</i>
11:30am – 12:00pm		On Optimal Large-Scale Wind Turbine Design <i>M. Platzer, U.C. Davis</i>

12:00pm – 1:30pm Lunch (Salon E)

1:30pm – 5:30pm Afternoon Session

Time	Room #1 – Salon D Wakes / Plant 1 Session Chair: Dimitri Mavriplis, UW	Room #2 – Salon C Blade Materials / Testing Session Chair: Lars P. Mikkelsen, DTU
1:30pm – 2:00pm	Simulation of Wind Turbine Wakes <i>Jens N. Sørensen, DTU (Invited)</i>	Comparing Computational Methods and Full-Scale Tests for Ultimate Failure of Blades <i>Kim Branner, DTU (Invited)</i>
2:00pm – 2:30pm	On the Mechanisms of Wake Meandering in Axial Flow Turbines: Insights Gained by Large-Eddy Simulation <i>Fotis Sotiropoulos, U. Minnesota (Invited)</i>	Wind Turbine Blade Reliability - Effects of Defects <i>Douglas S. Cairns, Montana State U. (Invited)</i>
2:30pm – 3:00pm	Simulation of the Flow of Wind-Plant: RANS OpenFoam Solver and Wake Model <i>Mihaela Popescu, SINTEF</i>	Benchmarking of Lamina Failure Tests from WWFE-I and WWFE-II With a Three Parameter Micromechanics Based Matrix Failure Theory <i>Kedar Malusare, U. Wyoming</i>

3:00pm – 3:30pm Coffee Break

Time	Room #1 – Salon D	Room #2 – Salon C
3:30pm – 4:00pm	Blade Boundary Layer Response to Convective Atmospheric Boundary Layer Turbulence on a NREL 5MW Wind Turbine Blade with Hybrid URANS-LES <i>James Bresseur, Penn State U.</i>	Strength Distribution Comparison of Aerospace and Wind Energy Carbon Fiber Reinforced Epoxy <i>Eric Jensen, U. Wyoming</i>
4:00pm – 4:30pm	On Turbine-Turbine Interactions Subject to Atmospheric Boundary-Layer Inflow - The Effect of Various Actuator-Line Approaches <i>Sven Schmitz, Penn State U.</i>	Facilities for In-Situ and Dynamic Testing of Residential Wind Turbine Blades <i>Charles Schmidt, U. Wyoming</i>
4:30pm – 5:00pm	Study of Wake of Two Rotor System <i>A.R. Sudhamshu, Amrita Vishwavidyapeetham</i>	
5:00pm – 5:30pm	Relating the Stability of the Atmospheric Boundary Layer to Fluctuating Surface Pressure Statistics <i>Gregory Lyons, U. of Mississippi</i>	

5:30pm – 7:00pm Cocktail Reception (Salon E)

Tuesday, October 8, 2013

7:00am – 8:15am Breakfast (Hilton Garden Inn, Salon E)

8:15am – 8:30am Announcements, *Jonathan Naughton, University of Wyoming* (Salon D)

8:30am – 9:00am Promotion of Wind Energy in Germany Consequences Arising Out of the EEG-Report 2011
Rainald Kasprik, U. Heilbronn (Salon D)
Introduction: R.J. Schmidt, UW

9:00am – 9:30am Structural Design of Adhesive Joints for Wind Turbine Rotor Blades – On the Use of Cohesive Laws
Bent F. Sørensen, DTU – Invited (Salon D)
Introduction: Ray Fertig, University of Wyoming

9:30am – 12:00pm Morning Session

Time	Room #1 – Salon D Turbine Aero 2 Session Chair: Mihaela Popescu, SINTEF	Room #2 – Salon C Materials Testing / Design Session Chair: Ramesh Talreja, Texas A&M
9:30am – 10:00am	High Fidelity Analysis and Optimization of Wind Turbine Blades <i>Asitav Mishra, U. Wyoming</i>	Testing Composites For Wind Turbine Blades <i>Lars P. Mikkelsen, DTU (Invited)</i>

10:00am – 10:30am Coffee Break

Time	Room #1 – Salon D	Room #2 – Salon C
10:30am – 11:00am	Understanding the Rotor-Tip Vortex Generation and Evolution <i>Mithu Debnath, U. Texas, San Antonio</i>	Experimental Assessments and Analysis of Steel Fibre/Polyester Composites - Interface and Compression Failures <i>R.T. Durai Prabhakaran, DTU</i>
11:00am – 11:30am	Aeroelastic, Time-spectral Method for Wind Energy Applications <i>Nathan Mundis, U. Wyoming</i>	Finite Element Model for Aero-elastically Tailored Residential Wind Turbine Blade Design <i>Eric Robinson, U. Wyoming</i>
11:30am – 12:00pm	Analysis of Vertical Axis Wind Turbine Aerodynamics by Using a Multi-fidelity Approach <i>Yi Han, U. Wyoming</i>	

12:00pm – 1:30pm Lunch (Salon E)

1:30pm – 5:30pm Afternoon Session

Time	Room #1 – Salon D Wakes / Plant 2 Session Chair: Torben Mikkelsen, DTU	Room #2 – Salon C Facilities / Reliability / Health Monitoring Session Chair: Kim Branner, DTU
1:30pm – 2:00pm	Wind Resource and Wakes - Results from the 3D Wind Experiment Rebecca Barthelmie, Indiana U. Bloomington (Invited)	Physical Modeling for Wind Energy Applications Horia Hangan, Western (Invited)
2:00pm- 2:30pm	Multi-Fidelity Wind Farm Simultions on Massively Parallel Compute Systems Jayanarayanan Sitaraman, U. Wyoming (Invited)	Moving Towards Damage Tolerant Design of Wind Turbine Blades Josh Paquette, Sandia National Laboratories (Invited)
2:30pm – 3:00pm	Microscale Wind Simulations over Arbitrarily Complex Terrain Using Cartesian Methods and GPUS Inanc Senocak, Boise State U.	Carbon Nanofibers for Strain Sensing in Wind Turbine Blades J. Cai, Texas A&M U.

3:00pm – 3:30pm Coffee Break

Time	Room #1 – Salon D	Room #2 – Salon C
3:30pm – 4:00pm	Fast Multipole Accelerated Free-Vortex Simulations of The Lillgrund Wind Farm K. Brown, U. Wyoming	Investigation of Waviness in Wind Turbine Blades: Structural Health Monitoring Sunil Chakrapani, Iowa State U.
4:00pm – 4:30pm	Mesoscale to Turbine: Aspects and Techniques of Multi-Scale Wind Resource Modeling Wayne Miller, Lawrence Livermore National Laboratory	A Computer-Based Inspection Method for Determining Surface Flaws of Wind Turbine Blades Huiyi Zhang, Iowa State U.
4:30pm – 5:00pm	Wind Turbine Blade Tip Vortex Characteristics using Data from Full Rotor CFD Simulations Beatrice Roget, U. Wyoming	Smart Wind Farm Array Suhas Pol, Texas Tech U.
5:00pm – 5:30pm	Using Mesoscale Weather Model Output as Boundary Conditions For Atmospheric Large-Eddy Simulations and Wind-Plant Aerodynamics Simulations Matthew Churchfield, NREL	Instrumentation of a Small-Scale Wind Turbine Tower at University Of Wyoming Sina Erturk, U. Wyoming

Evening

Dinner on Own

Wednesday, October 9, 2013

7:00am – 8:00am Breakfast (Hilton Garden Inn, Salon E)

8:00am – 8:30am **The Role of Design Standards in Wind Plant Optimization**
Paul Veers, NREL – Invited (Salon D)
Introduction: James Brasseur, Penn State

8:30am – 12:30pm Morning Session

Time	Room #1 – Salon D Wake / Plant 3 Session Chair: Wayne Miller, LLNL	Room #2 – Salon C Offshore, Optimization, Control Session Chair: Josh Paquette, SNL
8:30am – 9:00am	Impacts of Stratification and Non-Equilibrium Winds/Waves on Hub-Height Winds Offshore Ned Patton, National Center for Atmospheric Research (Invited)	Loads and Response of Offshore Wind Turbine Structures to Steep and Breaking Waves Henrik Bredmose, DTU (Invited)
9:00am – 9:30am	Experimental investigations on Wake Interference among Multiple Turbines in Onshore and Offshore Wind Farms Hui Hu, Iowa State U. (Invited)	Challenges in Wind Farm Optimization Gunner Chr. Larsen, DTU (Invited)
9:30am – 10:00am	Unified RANS-LES and Dynamic LES Simulations of the Atmospheric Boundary Layer With and Without Wind Turbines Ehsan Kazemi, U. Wyoming	WindScanner.dk - a New Remote Sensing Based Research Infrastructure for On- and Offshore Wind Energy Research Torben Mikkelsen, DTU (Invited)

10:00am – 10:30am Coffee Break

Time	Room #1 – Salon D	Room #2 – Salon C
10:30am – 11:00am	Estimation of the Resolved Wind Inflow Using Sparse Measurements Raj Rai, U. Wyoming	Stable Adaptive Control of Wind Turbines in Regions 2&3 Mark Balas, U. Wyoming (Invited)
11:00am – 11:30am	Experimental Investigation of Swirl Effects on Axisymmetric Wakes Michael Hind, U. Wyoming	Wind Turbine Contingency Control Through Generator De-rating Susan Frost, NASA-Ames Research Center
11:30am – 12:00pm	Theoretical and Experimental Studies of Wind Turbines Wakes at Multiple Scales in the UNH Flow Physics Facility (FPF) Martin Wosnik, U. New Hampshire	Analysis, Design and Control of a DFIG Wind Farm Integrated DG-HVDC Power System Kaushik Prasad, U. Wyoming
12:00pm – 12:30pm	A Pseudo Spectral Approach to the Vertical Entrainment of Mean Kinetic Energy in a Scaled Wind Farm Jensen Newman, Texas Tech U.	Power Quality Improvement of Grid Connected DFIG through UPQC Satnam Matharu, CTIEMT, Jalandhar

12:30pm Lunch (Salon E)