Sandia National Laboratories

2010 Wind Turbine Blade Workshop

July 20-22, 2010

Sandia National Laboratories

Tuesday, July 20

(Check-in and Continental Breakfast 7:00-8:00am)

Welcome/Industry Status — 8:00am

Welcome, Daniel Laird, *Sandia National Laboratories*

Energy and Security Systems, Terry Michalske, *Sandia National Laboratories*

DOE Wind and Water Program, Jacques Beaudry-Losique, *U.S. Department of Energy*

Wind Industry Status, Daniel Laird, *Sandia National Laboratories*

Trends in Turbine and Blade Technology – 2010, Thomas Ashwill, *Sandia National Laboratories*

Break (9:20-9:35am)

Turbine Manufacturers — 9:35am

Blade Design Challenges - Where is the Next Achilles Heel(s)?, Carsten Westergaard, *Vestas*

Wind Blade Technologies Overview, Shu Quek, *General Electric*

Turbine and Blade Technology at Northern Power, Jonathan Lynch, *Northern Power Systems*

Break (10:50-11:10am)

Blade Manufacturers — 11:10am

Boosting the Aerodynamic Performance of the Blade Root Region, Frank Nielsen, *LM Wind Power*

Blade Manufacturing Requirements & Developments, Steve Nolet, *TPI Composites*

Rotor Maintenance in the Field, Gary Kanaby, *Knight and Carver*

Lunch/OEM Manufacturers Panel (12:25-1:40pm)

Blade Testing — 1:40pm

Blade Testing at NREL's NWTC, Scott Hughes, *National Renewable Energy Laboratory*

Massachusetts Large Blade Testing Facility Update, Rahul Yarala, *MCEC WTTC*

Developments in Blade Fatigue Testing, Tim Westphal, *WMC*

Deepwater Floating Offshore Wind Program at UMaine: DeepCwind, Habib Dagher, *University of Maine*

Break (3:20-3:40pm)

Sensors — 3:40pm

Sensor Systems and Applications, Mark Rumsey, *Sandia National Laboratories*

Fiber Optic Sensors and the Sensor Blade Collaboration Between Micron Optics and Sandia National Laboratories, Alan Turner, *Micron Optics*

Adjourn (4:35pm)

6:00-7:30pm Reception

Hosted by: Mesalands Community College Foundation, Inc.

Wednesday, July 21, Track I

(Check-in and Continental Breakfast 7:00-8:15am)

Materials 8:15am

The SNL/MSU/DOE Fatigue Program: Recent Results, John Mandell, *Montana State University*

Advances in Wind Turbine Blade Composites, Mala Nagarajan, *Owens Corning*

Performance Evaluation and Recent Developments of Fiber Glass Laminates, Juan Serrano, *PPG Industries*

Break (9:30-9:50am)

Next Generation Infusion Resin for Wind Blades - Fatigue Performance of a New High-toughness Resin, Tim McCarthy, *Materia*

Advanced Material Solutions for Blade Construction, Jay Bhatia, *BASF*

Break (10:40-11:00am)

Advances in Epoxy Technology as Matrix Materials for Wind Turbine Blade Composites, George Jacob, *Dow Chemical Company*

Nanostrength Block Copolymers for Wind Energy, Robert Barsotti, *Arkema*

Lunch (11:50-1:05pm)

UD Prepregs for Load Carrying Structures in Infused Blades, Chris Shennan, *Hexcel Composites*

Webcore and Performance of General Sandwich Core Materials, Frederick Stoll, *WebCore Technologies, LLC.*

Titanium for Offshore: Properties and Applications, William MacDonald, *Timet*

Break (2:20-2:40pm)

Inspection 2:40pm

Optical Measurement Systems Applied to Wind Turbine Blades for the Detection and Characterization of Defects, Matt Crompton, *Dantec*

Transportation 3:05pm

Challenges w/Wind Blade Road Transportation and Break-down of In-situ Dynamics, Pari Tathavadekar, *Clipper*

Manufacturing 3:30pm

Manufacturing, Daniel Laird, *Sandia National Laboratories*

Break (3:55-4:20pm)

Offshore Wind 4:20pm

Overview of the DOE Offshore Wind Program, Jose Zayas, *Sandia National Laboratories*

Adjourn (4:50pm)

6:00-7:30pm Reception

Hosted by: BASF

Wednesday, July 21, Track II

(Check-in and Continental Breakfast 7:00-8:15am)

Blade Research and Innovative Design 8:15am

Blade Noise Research at Sandia National Labs, Dale Berg, *Sandia National Laboratories*

A Focus on the Flow in the Inboard Part of the Blade, Case van Dam, *UC-Davis*

Multi-disciplinary Design Optimization of Wind Turbines, Carlo Bottasso, *Politecnico di Milano*

Break (9:30-9:50am)

Smart Blade Update, Jonathan White, *Sandia National Laboratories*

Adaptive Trailing Edge Flap: Recent Development in Smart Blades, Leonardo Bergami, *Risø*

Break (10:40-11:00am)

Innovative Blade Research: Passive Load Reduction & 100-m Blade Design, Thomas Ashwill, *Sandia National Laboratories*

Probabilistic Design of Wind Turbine Blades, John Dalsgaard Sørensen, *Aalborg University & Risø-DTU*

Lunch (11:50am)

Wind Turbine Design and Analysis Codes 1:05pm

Integrated System Design and Analysis at Sandia, Brian Resor, *Sandia National Laboratories*

Recent Analysis Code Development at NREL, Jason Jonkman/Gunjit Bir, *National Renewable Energy Laboratory*

VABS-IDE: VABS-Enabled Integrated Design Environment (IDE) for Efficient High-Fidelity, Phillip Richards, *Georgia Tech*

Break (2:20-2:40pm)

Wind Turbine Blade Automated Structural Analysis and Minimum Weight Design using HyperSizer®, James Locke, *Collier Research Codes*

FOCUS 6: The integrated Modular Wind Turbine Design Tool, Richard Numan, *KC WMC*

Risø HAWC2: Models and Capabilities, a Quick Overview, Leonardo Bergami, *Risø*

Break (3:55pm)

Offshore Wind 4:20pm

Overview of the DOE Offshore Wind Program, Jose Zayas, *Sandia National Laboratories*

Adjourn (4:50pm)

6:00-7:30pm Reception

Hosted by: BASF

Thursday, July 22

(Check-in and Continental Breakfast 7:00-8:15am)

Small Wind 8:15am

Strategies for Stabilizing the Small Wind Market, Trudy Forsyth, *National Renewable Energy Laboratory*

Water Power 8:40am

Marine Hydrokinetic Technology Development: Synergies with Wind Power Research, Joshua Paquette, *Sandia National Laboratories*

Radar 9:05am

Research Options for Wind/Radar Challenges, Jose Zayas, *Sandia National Laboratories*

Break (9:30am)

Reliability 9:50am

DOE/SNL Reliability Overview, Daniel Laird, *Sandia National Laboratories*

CREW Database, Bridget McKenney, *Sandia National Laboratories*

BRC Overview, Daniel Laird, *Sandia National Laboratories*

Blade Standards, Derek Berry, *National Renewable Energy Laboratory*

Break (10:45-11:00am)

BRC Survey, Alistair Ogilvie, *Sandia National Laboratories*

Effects of Defects, Doug Cairns, *Montana State University*

Non-Destructive Inspection, Dennis Roach, *Sandia National Laboratories*

Closing Remarks 11:45am

Closing Remarks, Daniel Laird, *Sandia National Laboratories*

Adjourn (11:50pm)