

2016 Wind Turbine Blade Workshop

Sandia National Laboratories

August 30 - September 1



Monday, August 29th

4:00 pm – 6:00 pm **Early Registration and Booth Setup, Embassy Suites, Sandia Ballroom V**

Tuesday, August 30th

8:30 am – 10:00 am *Chair: Josh Paquette, Sandia National Laboratories*

Sandia Ballroom V-VIII

Opening Remarks

Josh Paquette

Principal Member of the Technical Staff, Sandia National Laboratories

Wind Energy and Renewables Policy

Honorable Martin Heinrich

U.S. Senator, New Mexico

DOE Wind Program Blade Research Objectives

Jose Zayas

Director, Wind & Water Power Technologies Office in the Office of Energy Efficiency and Renewable Energy at the U.S. Department of Energy

Sandia's Renewables Research

Carol L. Adkins

Director, Energy Technologies & System Solutions Sandia National Laboratories

The Dynamic Wind Energy Market and Impact on Blade Technology

Aaron Barr

Senior Technology Advisor, MAKE Consulting

10:00 am – 10:30 am **Break, Booths, and Posters**

10:30 am – 12:00 pm **Panel: Trends in Blade Technology and Changing R&D Needs**

Chair: Carsten Westergaard, Sandia National Laboratories

Anurag Gupta

Director for Advanced Technologies, Vestas Wind Systems A/S

Ken Lee

Blades Structures ,Engineer, Envision Energy

Jesper Månsson

Senior Director, Technical Business Development, LM Wind Power

Jacques Nader

Head of Blade Design and Boulder R&D Office, Siemens Energy, Inc.

12:00 pm – 1:00 pm **Lunch, Sandia Ballroom IV**

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1:00 pm – 2:30 pm
Sandia Ballroom V-VIII

Panel: Establishing a Successful Blade Maintenance Program

Chair: Carsten Westergaard, Sandia National Laboratories

Josh Crayton
Director of Business Development, Rope Partner

Jeffrey Hammit
Principal Technical Specialist, NextEra Energy Resources

Olen Richardson
President, Blade Consultant Services

Gary Kanaby
Commercial Manager, WindCom

2:30 pm – 3:00 pm

Break, Booths, and Posters

3:00 pm – 4:30 pm

Panel: Blade RCA Processes and Inspection Methods

Sandia Ballroom V-VIII

Chair: Matt Malkin, DNV GL

Ron Grife
Director of Engineering, Leeward Renewable Energy

Fabrizio Leone
Manager, Blades Engineering, Vestas Wind Systems

Ben Rice
Operations Engineering Manager, Pattern Energy Group, Inc.

4:30 pm - 5:00 pm

Wrap-up

6:00 pm - 8:00 pm

Evening Reception – Hosted by [Hexion](#)

La Ventana

Wednesday, August 31st Track 1 (see page 4 for Track 2)

8:30 am – 10:00 am

Power Performance I

Sandia Ballroom IV

Chair: David Maniaci, Sandia National Laboratories

Structural Enhancements – The Way to Lower LCOE

Find Jensen
Founder, Bladena

Sandia National Laboratories Leading Edge Erosion Project

David Maniaci
Senior Member of the Technical Staff, Sandia National Laboratories

A Validation and Verification Plan for Wind Turbine and Wind Plant Computational Models, and How it Relates to Blade Design

Jonathan Naughton
Director, Wind Engineering Research Center, University of Wyoming

Performance of Northern Power's Rotor Systems

Garrett Bywaters
Chief Engineer, Northern Power Systems

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10:00 am – 10:30 am	Break, Booths, and Posters
10:30 am – 12:00 pm	Power Performance II
<i>Sandia Ballroom IV</i>	<i>Chair: David Maniaci, Sandia National Laboratories</i> The Impact of Atmospheric Stability on Wind Structure and Turbine Wakes as Revealed by Radar Measurements John Schroeder <i>Professor of Atmospheric Science, Texas Tech University</i> National Rotor Testbed Chris Kelley <i>Senior Member of the Technical Staff, Sandia National Laboratories</i> Wake Steering Andrew Scholbrock, Engineer, <i>National Renewable Energy Laboratory</i>
12:00 pm – 1:00 pm	Lunch, Sandia Ballroom V
1:00 pm – 2:30 pm	Large Rotor Design I
<i>Sandia Ballroom IV</i>	<i>Chair: D. Todd Griffith, Sandia National Laboratories</i> LM 88.4P Blade: The World's Longest Blade Jesper Månsson <i>Senior Director, LM Wind Power</i> AVATAR Project: Advanced Aerodynamic Tools for Large Rotors Gerard Schepers <i>Researcher, Energy Research Center of the Netherlands</i> Design of an Aeroelastically Tailored 10 MW Wind Turbine Rotor Frederik Zahle <i>Senior Scientist, Wind Energy Department, Technical University of Denmark</i>
2:30 pm – 3:00 pm	Break, Booths, and Posters
3:00 pm – 4:30 pm	Large Rotor Design II
<i>Sandia Ballroom IV</i>	<i>Chair: D. Todd Griffith, Sandia National Laboratories</i> Challenges and Opportunities for Large-scale Floating Offshore Vertical Axis Wind Turbines D. Todd Griffith <i>Principal Member of the Technical Staff, Sandia National Laboratories</i> IEC Blade Standard Dayton Griffin <i>Senior Principal Engineer, DNV GL</i> 50 MW Segmented Ultralight Rotor: Design Concept and Controls Strategies Daniel Zalkind <i>University of Colorado-Boulder</i> Dana Martin <i>Colorado School of Mines</i>

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4:30 pm – 5:00 pm **Wrap-Up**

Wednesday, August 31st **Track 2**

8:30 am – 10:00 am **Blade Materials, Manufacturing, and Transportation**
Sandia Ballroom VI-VIII *Chair: Brian Naughton, Sandia National Laboratories*

Trends in Rotor Blade Manufacturing

Dirk-Jan Kootstra
Director and Co-Founder, Pontis Engineering

Printed Molds

Lonnie Love
Group Leader, Automation, Robotics and Manufacturing; Oak Ridge National Laboratory

Space Frame Blade Technology

Ryan Barnhart
Lead Engineer, Materials & Processes, Wetzel Engineering, Inc.

Blade Transportation Challenges

Brian Vargas
Manager, Landstar Global Logistics

10:00 am – 10:30 am **Break, Booths, and Posters**

10:30 am – 12:00 pm **Blade Materials, Manufacturing, and Transportation**
Sandia Ballroom VI-VIII *Chair: Brian Naughton, Sandia National Laboratories*

Institute for Advanced Composites Manufacturing Innovation

Derek Berry
Senior Engineer, National Renewable Energy Laboratory

Low Cost Carbon Fibers for Wind Energy

Cliff Eberle
Director, Materials and Processing, Institute for Advanced Composites Manufacturing Innovation

Advancements in Composite Materials for Wind Blades

Dave Hartman
Scientist, Program Manager, Owens Corning

Effects of Defects in Wind Blade Laminates

Doug Cairns
Professor of Mechanical & Industrial Engineering, Montana State University

12:00 pm – 1:00 pm **Lunch: Sandia Ballroom V**

1:00 pm – 2:30 pm **Defects, Damage, and Repair**
Sandia Ballroom V-VIII *Chair: Josh Paquette, Sandia National Laboratories*

Lightning Protection: Securing Higher Reliability and Meeting the New Standards

Kim Bertelsen
CEO, Founder & Owner, Global Lightning Protection Services A/S

Lightning Detection System: Strategies for Monitoring & Integrating Into a Blade Maintenance Program

Ben Rice
Operations Engineering Manager, Pattern Energy Group, Inc

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Blade Repairs

Sheryl Weinstein

Blade Services Manager, Rope Partner, Inc.

Toward a New Sub-component Test Method for the Trailing Edge Region of Wind Turbine Blades

Kim Branner

Head of Structural Design & Testing Team, Technical University of Denmark

2:30 pm – 3:00 pm

Break, Booths, and Posters

3:00 pm – 4:30 pm

Blade Materials

Sandia Ballroom V-VIII

Chair: Josh Paquette, Sandia National Laboratories

Optimizing Quality Assurance Inspections to Improve the Probability of Damage Detection in Wind Turbine Blades

Dennis Roach

*Senior Scientist, Transportation Safeguards & Surety Program,
Sandia National Laboratories*

Drone Inspection

Chris Bley

CEO, InspecTools

Ground-Based Inspection

John Newman

President, Digital Wind Systems, Inc.

John Lindberg

Program Manager–NDE Innovation, Electric Power Research Institute (EPRI)

Field Inspection of Wind Turbine Blades Using a Microwave Interferometric Method

Alexander Tran

Lead Engineer of Structural Design, Wetzel Engineering, Inc.

4:30 pm – 5:00 pm

Wrap-Up

Thursday, September 1st

Post-Workshop Meetings

8:00 am – 12:00 pm

Sandia Ballroom II

IEA Task 35 Meeting

Chair: Scott Hughes, National Renewable Energy Laboratory

Sandia Ballroom III

IEC 61400-5 Stakeholder Group

Chair: Dayton Griffin, DNV GL

10:00 am – 12:00 pm

Blade Reliability Collaborative

Sandia Ballroom III

Chair: Josh Paquette, Sandia National Laboratories

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12:00 pm – 1:00 pm **Lunch, Sandia Ballroom TBA**

8:00 am – 12:00 pm

Sandia Ballroom II

IEA Task 35 Meeting, continued

Chair: Scott Hughes, National Renewable Energy Laboratory

1:00 pm – 5:00 pm

Sandia Ballroom III

Scaled Rotor Testing: Tutorial and Research Discussion Forum

Chair: David Maniaci, Sandia National Laboratories

