



2025 Drivetrain Reliability Collaborative Workshop

HOSTED BY THE NATIONAL RENEWABLE ENERGY LABORATORY

In-person Workshop | February 17 - 19, 2025

Monday, February 17, 2025

12:00 p.m.	Arrival, Badging, and Check-In
12:30 p.m.	Welcome and Opening Remarks Welcome Jon Keller, National Renewable Energy Laboratory (NREL)
1:00 p.m.	Digital Engineering and Standardization <i>Featured Speakers:</i> <ul style="list-style-type: none"> Unified Approach and Standards Forming for Wind Turbine Blade Damage Quantification and Response Noah Myrent, Electric Power Research Institute WEC Renewables Digitalization and Analytics Platform Josh Knize, WEC Energy Group Building a Wind Turbine Digital Twin: from Concept to Reality Marco Masciola, Amazon
2:30 p.m.	Break
3:00 p.m.	Digital O&M R&D <i>Featured Speakers:</i> <ul style="list-style-type: none"> Smart O&M by Leveraging Physics-based and Data-driven AI Approaches to Process Field Data of Offshore Wind Farms Jan Helsen, Vrije Universiteit Brussel Assessing Gearbox Vulnerability to Wind Gusts: An Expert Judgement Approach Harikesan Baskaren, University College London (one hour) Leveraging Generative Artificial Intelligence for Wind Turbines Performance and Prognostics Research Mohammed Alabsi, The College of New Jersey
5:00 p.m.	Adjourn

Tuesday, February 18, 2025

7:30 a.m.	Arrival, Badging, and Check-In Light Refreshments
8:30 a.m.	Gearbox and Main Bearing Technology <i>Featured Speakers:</i> <ul style="list-style-type: none"> Dynamic Mechanical Torque and Ring Gear Mesh Load Factor Measurements with Fiber Optic Sensors Unai Gutierrez-Santiago, Siemens Gamesa Renewable Energy and Jon Keller, NREL Potentially Detrimental Impacts of Nonsteady Forcing by Turbulence Eddies in the Atmosphere on Main Bearing Reliability Jim Brasseur, University of Colorado Pushing Boundaries in Wind Energy: Miba's Cutting Edge Hydrodynamic Journal Main Bearing Johannes Hölzl and Patrick Laubichler, Miba Gleitlager Austria GmbH
10:00 a.m.	Break

10:30 a.m.	<p>Pitch Bearing Reliability</p> <p><i>Featured Speakers:</i></p> <ul style="list-style-type: none"> Investigation of Cracked Blade Bearing Rings Florian Schleich, Fraunhofer IWES Tests for an Advanced Rolling Contact Fatigue Life Calculation of Pitch Bearings Oliver Menck, Fraunhofer IWES Pitch Bearing Reliability Research Update Jon Keller, NREL and Aaron Greco and/or Nick Demas, Argonne National Laboratory (ANL)
12:00 p.m.	<p>Working Lunch and Interactive Session on Drivetrain Reliability R&D (Jon Keller)</p>
1:00 p.m.	<p>Lubricants, Tribology, and Materials</p> <p><i>Featured Speakers:</i></p> <ul style="list-style-type: none"> The Impact of Lubrication on Drivetrain Energy Efficiency and Profitability David DiNunzio, Castrol and Robin Elliott, Onyx Insight Aspirin or Vitamin? Top-Treating Gear Oils in the Age of “Oil as an Asset” Mike Blumenfeld, ExxonMobil Beyond Image Analysis: Impact of Improved Steel Quality Inspection on Bearing Reliability Randy Velikan and Loren Walton, NSK
2:30 p.m.	<p>Break</p>
3:00 p.m.	<p>Main Bearing Reliability</p> <p><i>Featured Speakers:</i></p> <ul style="list-style-type: none"> Field Investigations of Wind Turbine Generator Stray Electrical Currents Jason Shapiro, Pattern Energy Main Bearing Testing Results Aaron Greco and/or Nick Demas, ANL Main Shaft Grounding for Wind Turbines David Duch, Helwig Carbon
4:30 p.m.	<p>Adjourn</p>
6:00 p.m.	<p>No-Host Dinner The Golden Mill 1012 Ford St, Golden, CO 80401</p>

Wednesday, February 19, 2025

7:30 a.m.	<p>Arrival, Badging, and Check-In Light Refreshments</p>
8:00 a.m.	<p>Condition Monitoring and O&M R&D</p> <p><i>Featured Speakers:</i></p> <ul style="list-style-type: none"> Condition Monitoring and O&M Research Update Shawn Sheng, NREL Keynote: TBD Jiong Tang, UConn (one hour)
9:30 a.m.	<p>Break</p>
10:00 a.m.	<p>Condition Monitoring Applications</p> <p><i>Featured Speakers:</i></p> <ul style="list-style-type: none"> Oil Debris Enabled Life Extension Mark Redding, Poseidon Challenges of Blade Root Connection Failure and Proactive Maintenance Forrest French, Onyx Insight and Adi Krishna, EDP Renewables AI-powered Evolution of Drivetrain Diagnostics: Bridging Technology and Expertise Martin Bach-Andersen, SkySpecs
11:30 p.m.	<p>Working Lunch and Interactive Session on Wind Plant O&M R&D (Shawn Sheng)</p>
12:30 p.m.	<p>Reliability and O&M in Practice</p> <p><i>Featured Speakers:</i></p> <ul style="list-style-type: none"> Newer/Larger Wind Turbine Reliability Analysis Raja Pulikollu, Electric Power Research Institute Lessons from a 10 MW Wind R&D Park for Operation in Year 10 and Beyond Robbie Sanderson, WEICan Influence of Oil Cleanliness and Condition Monitoring on Drivetrain Reliability Justin Stover, CC Jensen
2:00 p.m.	<p>Break</p>

2:30 p.m.

Panel Discussion: O&M Field Experience

Featured Speakers: Manny Hernandez, RWE | Vaidy Krishnamurthy, Orsted | Ryan O'Connor, EDF | Joey Roulier, Engie

- Top failed components
- Monitoring and mitigation solutions
- Use of advanced technologies e.g., AI/ML

4:00 p.m.

Adjourn