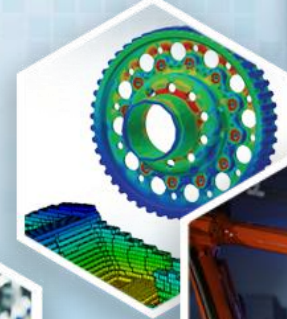


IACMI Summer 2022 Members Meeting

Wind Energy Working Group Report

Derek Berry, NREL

June 29, 2022



IACMI Wind Energy Working Group Report



- Wind Working Group meeting goals (Derek Berry)
- IACMI 2.0 (Dale Brosius)
 - Mission and priorities
 - Renewal process
 - Technical scope
- Group discussion (Steve Nolet):
 - Updated wind industry priorities
 - Connection to IACMI 2.0 renewal / DOE AMO / DOE WETO
 - Revisit wind research topics
 - Focus on three to five comprehensive research topics
- Path forward and action items (Derek Berry)

Wind Research Discussion Overview

- Updated priorities for wind industry
- Alignment with IACMI renewal process
- Review and update composite materials and manufacturing wind research topics
- Identify three to five topics for large scale research



Source: NREL

Wind Energy Areas of Research / Prioritization



Potential Research Categories

- Manufacturing Optimization
- Automation
- Sustainability / Circular Economy
 - End-of-Life
 - Extension, reuse, recycling, etc.
- Advanced Materials
- Inspection
- Validation
- Others?

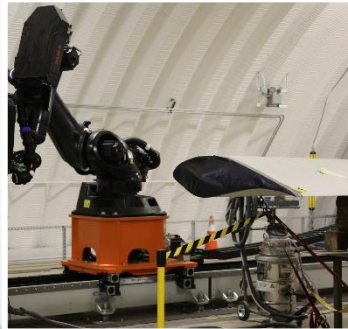
- Wind turbine blade EOL: recyclability, reuse, etc.
- Innovative composite materials: in-situ thermoplastics, reversible thermosets, basalt, TCF
- Targeted automation in blade manufacturing
- NDE/NDI: in manufacturing and in field
- Maintenance, inspection and repair of composite blades
- Development of standards
- Technology demonstration at scale
- Blade manufacturing optimization / techno-economic model
- Additive manufacturing for tooling and/or blade composite structures
- On-site manufacturing / Factory in a box
- Large onshore blade design and manufacturing
 - Segmented / modular blade technology
 - Transportation challenges
- Offshore wind technology challenges
- Testing and validation (e.g., subcomponents)

IACMI Wind Energy Working Group Report



- Comprehensive discussion about recycling, reuse and sustainability for wind turbine blades and other wind composite structures
 - Responsibility for sustainability costs (OEMs, blade manufacturers, owner/operators, material suppliers, etc.)
 - Repurposing blade structures: Re-Wind Network
 - Who in supply chain is leading discussion on recycling? (many discussions: OEM, material suppliers, IEA Wind Task 45, National Labs and DOE)
- Inquiry on the priorities of wind OEMs (cost, transportation issues → modularity)
- Research topics specific to offshore wind technology (reducing mass at top of tower)
- Spar cap technology – innovative CF, low-cost CF, long tapered beams
- Lower TRL material development (vitrimers, other reversible thermosets, biobased resins)
- Potential changes in blade design (modularity, SC design, AM, assembly processes)
- Repair technology to extend blade life (although... repowering) [10-year life blade?]

Wind Working Group Action Items



- Derek to compile discussion notes
- Highlight trends and priorities
- Feedback from working group members
- Begin proposals for wind research topics
- Incorporate discussion and feedback into IACMI renewal process
- Longer term planning for wind research projects

Thank you

IACMI Wind Energy Working Group

Derek Berry, NREL
derek.berry@nrel.gov

Steve Nolet, TPI Composites
snolet@tpicomposites.com

