



BIG energy seminar series

Addressing the scale and complexity of the global energy challenge.



Drive Train Innovations for the Next Generation of Wind Turbines

Sandy Butterfield

Co-Founder and Chief Technology Officer, Boulder Wind Power

Tuesday, January 29, 2013 at 3:30pm

Engineering Building: Room ECCR 265

Summary: As tax credits expire for wind energy, the ability to compete with established energy sources is critical. All wind turbine manufacturers are examining their next generation turbines with an eye towards reducing their cost, increasing energy production, and improving reliability. Because the drive train accounts for such a large part of the rotor nacelle assembly cost, it has become a prime target for design change. Drive train innovations which reduce cost, increase energy conversion efficiency, and increase reliability are now important in every next generation design concept. Manufacturers are looking for drive train solutions that could be used for ever increasing machine sizes across their entire fleet. They are also looking for at least 20 year lifetimes in offshore applications. This poses new challenges for traditional geared concepts and has led to a new look at direct drive generators. This presentation will explore some of the ideas that are being pursued and the unique direct drive solution that Boulder Wind Power is developing. Come see what's on the drawing boards for the next generation of wind turbines and learn why companies are open to such new ideas.

Sandy Butterfield

Sandy Butterfield has been an innovator and leader in the wind energy field over his entire career. Prior to co-founding Boulder Wind Power, Sandy spent over 24 years at the National Renewable Energy Laboratory (NREL), most recently as Chief Engineer at NREL's National Wind Technology Center and leader of the Gearbox Reliability Collaborative. His work at NREL included aerodynamics research, testing, design reviews, contract management, manager of the applied research program, and leader of the certification / standards program. At Boulder Wind Power (BWP), he led the company through its formative stages as CEO, helping to raise \$48 million, forming a world-class team, and stimulating customer interest in BWP's radical direct drive technology.

Sandy was a wind energy entrepreneur prior to NREL. In 1980, he co-founded ESI, a wind turbine manufacturing company, where he was Vice President of Engineering and responsible for all aspects of design and manufacturing. Sandy is currently Chairman of the International Electrotechnical Commission Technical Committee 88 (IEC TC88) which is responsible for international wind turbine standards. He also serves on the American Wind Energy Association's board. He has authored or co-authored more than 100 papers. Sandy graduated from the University of Massachusetts with a Masters in Mechanical Engineering in 1977 where he studied under Bill Heronemus, who is famous for his floating offshore wind farm proposals in the early 1970s.

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