MARKET POTENTIAL

Wind power – the potential, location and numbers of Norrland (and potentially Barents) Jens Sperens, Vindfyr

Vem tjänar på vindkraft? Samhällsekonomisk analys av storskalig vindkraft, exempel Markbygden etapp 1 Jonas Lundmark, Vindkraftcentrum i Barentsregionen

MAPPING AND FORECASTS OF ICING

The benefits of forecasting icing on wind energy production Øyvind Byrkjedal, Kjeller Vindteknikk

Wind tunnel tests on ice accretion on wind turbine blades Adriána Hudecz, Holger H. Koss and Martin O. L. Hansen, DTU

Highest meteorological station in Canada designed for cold climate and complex terrain recognition Cedric Arbez, Hussein Ibrahim, Wind Energy TechnoCentre, Canada

WRF sensitivity analysis of boundary layer clouds during the cold season Neil Davis (DTU & Vestas), Andrea Hahmann (DTU), Niels-Erik Clausen (DTU), Mark Zagar (Vestas)

Method for estimating wind turbine production losses due to icing Ville Turkia, Saara Huttunen, Tomas Wallenius, VTT

Evaluation of WRF mesoscale model for icing events characterization, some insights on model performance, limits and capabilities Pau Casso (Vortex), Gil Lizcano (Vortex & University of Oxford), Pep Moreno (Vortex), Josep Calbo (University of Girona)

Long-term estimates and variability of production losses in icing climates Stefan Söderberg, Magnus Baltscheffsky, WeatherTech Scandinavia

Comparison of visibility observations at a meteorological tower to cloud base height observations from nearby and distant weather stations Jarkko Hirvonen, Finnish Meteorological Institute

Progress in design of icing detection system for wind turbine X. Yi, China Aerodynamics Research and Development Cente, L. Ye, J. F. Ge, Huazhong University of Science and Technology

Future wind power forecast errors, and associated costs in the Swedish power system Fredrik Carlsson, Vattenfall

DE-ICING AND ANTI-ICING TECHNOLOGIES

Wind turbine blade heating – can it pay even more? René Cattin, Meteotest

Sensor fusion for a blade surface-mount icing detector for wind turbines Michael J. Moser, Markus Brandner and Hubert Zangl, Graz University of Technology

Design principles of VTT ice prevention solution Tomas Wallenius, Petteri Antikainen, Esa Peltola, Jeroen Dillingh, VTT

Image analysis of icing on wind turbine blades Jenny Ericson, Patrik Jonsson, Mikael Töyrä, Combitech

Evaluation of ice phobic coatings for the application on wind turbines – screening of different coatings and influence of roughness Markus Susoff, Cornelia Pfaffenroth, Konstantin Siegmann, Martina Hirayama, Zurich University of Applied Sciences

Luminescent technique for temperature characterization of supercooled water Hirotaka Sakaue, Katsuaki Morita, Yoshimi Iijima, Japan Aerospace Exploration Agency, Shigeo Kimura, Kanagawa Institute of Technology

Thermal analysis of a heated rotor blade for wind turbines Richard Hann, Sven Olaf Neumann, Universität Stuttgart, Alexander Miller, Kenersys GmbH, Jeroen Dillingh, VTT

TopNANO - new Nordic research using nanotechnology to avoid problems with ice Kenth Johansson, Agne Swerin, Mikael Järn, YKI

Estimating energy production losses, comparison with ice detection Rolf Westerlund, HoloOptics

STANDARDS, CERTIFICATIONS AND RECOMMENDED PRACTICES

IcedBlades - Modelling of ice accretion on rotor blades in a dynamic overall wind turbine tool V. Lehtomäki (VTT), S. Hetmanczyk, M. Durstewitz, A. Baier (Fraunhofer IWES), K. Freudenreich, K. Argyriadis (Germanischer Lloyd Renewables Certification)

The need for ice detection standards Jarkko Latonen, Labkotec

Study of wind turbine foundations in cold climates Anders Bernholdsson, Nordisk Vindkraft

NONE -TECHNICAL CONSIDERATIONS

Social micro-siting - Increasing acceptance through local adaption Mariann Mannberg, Riklund

OPERATIONS AND MAINTENANCE

A new methodology to increase fatigue life and optimise design and maintenance operations for wind turbines in forest and cold climate environment Jean-Marc Battini, Raid Karoumi, KTH

Flexible and light platform for wind turbine wing service Byron Hulsart, Njords Ära

Canadian R&D activities on wind energy production in cold climate and in complex terrain Hussein Ibrahim, Cédric Arbez, Mariya Dimitrova, Wind Energy TechnoCentre, Christian Masson

FEB 7 CONFERENCE PROGRAM

Winterwind 2012
INTERNATIONAL WIND ENERGY CONFERENCE

09.00–10.30 REGISTRATION & EXHIBITION

WELCOME TO WINTERWIND 2012!

Chairs: Fredrik Lindahl, Frédéric Côté

10.30–10.40 **Welcome to Winterwind 2012** Fredrik Lindahl, Swedish Wind Power Association

10.40–11.00 **Skellefteå Kraft - a driving force in the development of wind power in cold climate** Gunnar Eikeland, Skellefteå Kraft

11.00–11.30 **Institutional interest and cold climate wind** Otto von Troschke, SUSI Partners

11.30–12.00 **Global wind energy development from a European R&D perspective** Jos Beurskens, Jos Beurskens SET Analysis

12.00–13.30 LUNCH & EXHIBITION

WIND TURBINES IN COLD CLIMATE & ICING CONDITIONS: PRESENTATIONS BY MANUFACTURERS & PANEL DISCUSSION

Moderator: Jonas Hållén Chairs: Jenny Ericson, Stefan Skarp

13.30–13.40 **Blade de-icing, an historic perspective in Siemens** Finn Daugaard Madsen, Siemens

13.40–13.50 **Vestas de-icing development** Morten Sloth, Vestas

13.50–14.00 **Operational experience under icing conditions of REpower MM-Cold-Climate-Version turbines under the influence of different icing solutions** Kurt Stürken, REpower

14.00–14.10 **Operating experience with an anti-icing system** Günter Steininger, Nordex

14.10–14.20 **Further development of Enercon's de-icing system** Christoffer Jonsson, Enercon

14.20–14.30 **WinWind, Ice prevention system – operating experience and future development** Anders Sjögren, WinWind

14.30–15.30 **Panel discussion** Finn Daugaard Madsen, Siemens, Morten Sloth, Vestas, Kurt Stürken, REpower, Ingo Hirschhausen, Nordex, Christoffer Jonsson, Enercon, Anders Sjögren, WinWind

15.30–16.00 EXHIBITION & POSTER SESSION

INTERNATIONAL RESEARCH: MAPPING AND FORECASTING

Chairs: Niels-Erik Clausen, Andreas Krenn

16.00–16.20 **Simulation of icing events over Gaspé region** Jing Yang, Climate Research Division, Environment, Canada

16.20–16.40 **Mapping of icing in Sweden – On the influence from icing on wind energy production** Øyvind Byrkjedal, Kjeller Vindteknikk

16.40–17.00 **Examination of real-time laps – Lowice runs over Scandinavia from the 2011-2012 icing season** Ben C. Bernstein, Leading Edge Atmospherics

17.00–17.20 **Windpower in cold climates – Vindforsk project V-313** Hans Bergström, Uppsala University

COLD CLIMATE CONSTRUCTION AND LOGISTICS

Chairs: Qiying Zhang, Lars Tallhaug

16.00–16.30 **Large scale wind power in cold climate** Mikael Lindmark, BlaikenVind

16.30–16.45 **Design of base slab structures for fast construction on "Cold Sites"** Sten Forsström, SWECO Infrastructure

16.45–17.00 **Sustainable solutions for faster construction of the higher tower and foundation** Martin Nilsson, Luleå Tekniska Universitet

17.00–17.30 **Prefabricated wind turbine foundations, ways to optimize building in harsh climate** Lars Andersson, Jemtska

17.30–18.30 DRINKS & REFRESHMENTS IN THE EXHIBITION AREA

CONFERENCE DINNER

through the courtesy of Skellefteå Kraft

19.00 Enjoy a hot beverage and a special northern Swedish experience

organizer: Svensk vindkraft förening

main sponsor: Skellefteå kraft

sponsors: Vestas, Siemens, Nordjysk Elhandel, Nordex, Enercon Energy for the world, StormGeo, Skellefteå kommun

08.30–10.00 WORKSHOP: WHERE DO WE GO FROM HERE?

Moderator: Jonas Hållén

In this session researchers and industry will meet to discuss cold climate issues and recommendations for future research. The workshop will start with a presentation of a draft version a report "Icing of wind power: A survey of research efforts and needs" by Rene Cattin, Meteotest **followed by a presentation by** Tomas Wallenius, VTT **of the coming report from IEA RD&D Wind, Task 19 "Expert group study on recommended practices for wind energy projects in cold climates".**

The workshop will include a discussion with the audience and a panel with René Cattin Meteotest, Jos Beurskens, Jos Beurskens SET Analysis, Dag Haaheim, Vattenfall, Søren Plagborg, Vestas, Lars Tallhaug, Kjeller Vindteknikk and Martin Lindholm, E.ON

10.00–10.30 EXHIBITION & POSTER SESSION

MEASUREMENTS AND SENSORS

Chairs: René Cattin, Ben C. Bernstein

10.30–10.50 **The effects of cold weather on wind data quality – An empirical study on how data produced from met mast and SODAR is affected by cold weather** Oscar Winter, Greenbyte

10.50–11.10 **Windcube measurement data correction by CFD method for fjeld region** Tuomas Jokela, VTT Technical Research Centre Of Finland

11.10–11.30 **Identification of ultrasonic anemometer's invalid data transmission** Shigeo Kimura, Kanagawa Institute of Technology

11.30–11.50 **Intelligent load control for heated wind measurement sensors** Andreas Krenn, Energiwerkstatt

ENERGY PRODUCTION IN NORTHERN SWEDEN

Chairs: Antoine Lacroix Petra Thorsson

10.30–10.50 **Uljabuouda – a pilot project in arctic environment** Helen Rudholm, Skellefteå Kraft

10.50–11.10 **Evaluation and experiences from the Vindpilot project at Dragaliden and Gabrielsberget** Helena Karlsson, Svevind

11.10–11.30 **O2's wind pilot project – Large-scale cost-effective wind energy development in icing climates** Göran Ronsten, O2 Vindkompaniet

11.30–11.50 **Market conditions and experiences with the new swedish price areas with a focus on SE1** Jacob Vive Munk, Nordjysk Elhandel

12.00–13.30 LUNCH & EXHIBITION

INTERNATIONAL RESEARCH: DE-ICING AND ANTI-ICING SOLUTIONS

Chairs: Shigeo Kimura, Bjørn Egil Nygaard

13.30–13.50 **Benefit and expected gains with use of de-icing technologies** Hans Gedda, H Gedda Consulting

13.50–14.10 **State-of-the-art of ice detection** Petteri Antikainen, VTT Technical Research Center, Finland

14.10–14.30 **China low-temperature wind turbine design and application** Qiying Zhang, Guodian United Power, Dexin He, CWEA

MAINTENANCE & SAFETY, WORKING IN COLD CLIMATE

Chairs: Øyvind Byrkjedal, Tomas Wallenius

13.30–13.50 **Rotor blade repairs in cold climate using advanced UV curing resin system – Cold weather blade repairs, climate controlled solutions** Ville Karkkolainen, Bladefence

13.50–14.10 **Ice throw reloaded – studies at Guetsch and St. Brais** René Cattin, Meteotest

14.10–14.30 **How dangerous are wind turbines in cold climate regions? Can we do something about it?** Bengt Göransson, Pöyry

14.30–15.00 EXHIBITION & POSTER SESSION

CONCLUSIONS AND DISCUSSION

Moderator: Linda Vikström

15.00–15.45 **Industry demand and further development, panel discussion** Stefan Skarp, Skellefteå Kraft, Tord Östlund, PWP, Karl Folkerman, WPD, Robin Murray, Vattenfall

15.45–16.00 **Conclusions:** Jos Beurskens, Jos Beurskens SET Analysis

organizer: Svensk vindkraft förening