

BOREAS IV: Programme of the Cold Climate Conference

The BOREAS IV conference will be held in **Enontekiö, Hetta, FINLAND on 31 March - 2 April 1998** providing a forum for presentation and discussion of aspects of wind energy production in cold climates.

29 and 30 March 1998 Technical visit to Lammasoivi wind farm

31 March 1998

OPENING SESSION

<i>Chairman's opening</i>	B. Tammelin, Organising Committee
Welcome	P. Keskitalo, Enontekiö Commune
<i>Tunturi-Lapin Tuulivoima activities in arctic wind energy production</i>	J. Kaas, Tunturi-Lapin Tuulivoima Oy
<i>EU wind energy programme JOULE</i>	K. Diamantaras, European Commission, DG XII

SESSION A: ICING EFFECTS ON WIND TURBINE OPERATION I

<i>Wind energy production in cold climate (WECCO)</i>	Tammelin, B., FMI, e.a.
<i>The newest wind energy statistics in Germany</i>	Seifert, H., DEWI, Germany
<i>Power curve of wind turbine in iced conditions</i>	Holtinen, H., VTT Energy, Finland
<i>Icing effect upon power production of wind turbines</i>	Tammelin, Kimura, Stuke; FMI; Seifert, DEWI

SESSION B: ICING EFFECTS ON WIND TURBINE OPERATION II

<i>Ice accretion at Aqua Spruzza and its effects on wind turbine operation</i>	Botta, G., Cavaliere M., ENEL, Italy, Holtinen, H., VTT Energy, Finland
<i>Operating generators of wind turbines</i>	Mannila, P., Lemström, B., VTT Energy, Finland
<i>Assessment of safety risks arising from wind turbine icing</i>	Morgan, C. and Bossanyi E., GH & Partners Ltd, UK

SESSION C: RESOURCE ASSESSMENT I

<i>Icing in Europe</i>	Tammelin, B. and Sääntti, K., FMI Finland
<i>Wind energy on the Kola Peninsula</i>	Wolff, J., VTT Energy, Finland
<i>Wind energy in Alpine region</i>	Horbaty, R., ENCO, Switzerland
<i>WASP predictions of wind power potential upon arctic hills</i>	Tammelin, B. and Hyvönen, R., FMI, Finland
<i>Improved tools to predict wind energy production in mountains</i>	Tammelin, B., e.a.

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SESSION D: RESOURCE ASSESSMENT II

<i>The Influence of strong inversions on the wind field at Pyhäntunturi fell</i>	Frank, H.P. and Petersen, E.L., RISØ, Denmark
<i>Long-term changes in the storm climate of Northern Europe</i>	Tuomenvirta, H., FMI, Finland
<i>Energy Balance over a snow covered surface; First results from the WINTEX- Sodankylä campaign</i>	Heikinheimo, M. and Koivusalo, H. FMI, Finland

SESSION E: DE-ICING, ANTI-ICING SYSTEMS AND SPECIAL WIND TURBINES

<i>Blade heating element design and practical experiences</i>	Marjaniemi, VTT, Peltola, Kemijoki Oy, Finland
<i>A novel wind turbine with permanent magnet generator for wind energy exploitation in very cold climates</i>	Falchetta, M. ENEA, Italy, Caricchi, F. and Crescim-bini, F., University of Rome, Italy
<i>Analysis of thermal de-icing systems for HAWT blades</i>	Patreau, V., École Polytechnique de Montréal, Canada

SESSION F: INSTRUMENTATION

<i>Ice free anemometers</i>	Tammelin, Kimura, Peltomaa, FMI, Finland, Morgan, C., Garrad Hassan and Partners Ltd, UK
<i>Icing test for the Handar Ultrasonic anemometer</i>	Pinard, Boreal Alternate Energy Center, Canada
<i>Ice detector used for wind turbine operation and meteorological measurements</i>	Mäkinen, J. Labko Oy, Marjaniemi, M., VTT, Tammelin, B., FMI, Finland
<i>EUMETNET project on specification on severe weather sensors</i>	Tammelin, Leminen, FMI, Joss, SMI, Switzerland

SESSION G: AERODYNAMICS AND LOADS I

<i>Cold, Wet and Windy Standard - the effect of cold climate operation on the loading, performance and lifetime of a 600 kW stall-regulated turbine operating on a high Scottish hilltop</i>	Gilkes, S. and Morgan, C., Garrad Hassan and Partners Ltd, UK
<i>The effect of aerofoil motion on the shapes of ice accretion on an aerofoil</i>	Kimura, FMI, Finland, Tsuboi, Ibaraki University, Nishikawa, Sugihara, Kandenko Co. Ltd, Japan
<i>Aeroelastic predictions of ice induced wind turbine loads</i>	Vølund, P. RISØ National Laboratory, Denmark

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SESSION H: AERODYNAMICS AND LOADS II

<i>A recipe to estimate aerodynamics and loads on iced rotor blades</i>	Seifert, H., DEWI and Richert, F., TUB, Germany
<i>Loads on wind turbine due to ice</i>	Antikainen, P., VTT Energy, Finland
<i>Wind tunnel investigation of effect of ice deposit on the aerodynamic characteristics of two dimensional iced aerofoils</i>	Kimura, S., FMI, Finland, Kenichi, A., Nihon University, Tsuboi, K., Ibaraki Univ., Suzuki, K., Tokai Univ., Japan

CLOSING SESSION, DISCUSSION

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