Wind Power to the Grid

EPE Wind Energy Chapter – 2nd Seminar
23-24 April 2009, The Royal Institute of Technology
Stockholm
Sweden

Draft Programme

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General information: http://etec.vub.ac.be/EPE/EPE-WECS-2009/01_Frameset.htm

Wednesday 22 April 2009: Study visit at ABB workshop

Departure will be at 9:00 exactly at KTH Stockholm. The visit will start with a lunch, followed by a lecture, and the visit of the HVDC Light and transformer workshops.
At 16:00 the bus leaves from Ludvika to Stockholm. Arrival in Stockholm will be around 19:00.

Thursday 23 April 2009

8h30 – 9h30: Registration (Room V32)
Upload of presentation and full papers

9h30 – 9h50: **Opening session (Room V2)**
Chair: Prof. Hans-Peter Nee, The Royal Institute of Technology, Sweden
Co-Chair: Prof. Tore Undeland, Norwegian University of Science & Technology, Norway

9h50 – 10h30: **Lecture session 1: Keynote 1(Room V2):**
Chair: Hans-Peter Nee, The Royal Institute of Technology, Sweden
The future of wind mills design (title to be confirmed), Dr. Philip C. Kjær, Chief Specialist Technology R&D, Electrical Systems, Vestas, Denmark

10h30 – 11h00: **Coffee break in dialogue session / exhibition area (Room V32)**

11h00 – 12h40: **Lecture session 2: Perspectives for Wind power systems (Room V2)**
Chair: Dr. Philip C. Kjær, Vestas, Denmark
Co-Chair: Prof. Benoit Robyns, Ecole des Hautes Etudes d'Ingénieur (HEI), Lille, France

43 - Reliability issues for wind turbines, with a focus on the electric parts, Peter Tavner, Durham University, UK

12 - Protection issues associated with the installation of a wind farm into a power system with the loss of mains condition, Christopher Ellis, Anthony Perks, Brendan Smith, Areva Automation & Information Systems; Sarath Tennakoon, Staffordshire University, UK

29 - Need for Standardization of Wind Power Models for Stability Studies, Jonas Persson and Urban Axelsson, Vattenfall Research and Development, Department of Power Technology, Stockholm, Sweden

32 - Low Voltage Ride Through of Wind Farms Using a Series Compensator Called MERS, O. J. Fønstelien, Norwegian University of Science and Technology, Department of Electric Power Engineering, Trondheim, Norway; J. A. Wiik, R. Shimada, Tokyo Institute of Technology, Japan

18 - Real Time Grid Congestion Management in Presence of High Penetration of Wind Energy, Arnaud Vergnol, Jonathan Sprooten, Benoît Robyns, L2EP, HEI, France; Vincent Rious, SUPELEC, France; Jacques Deuse, SUEZ-Tractebel, Belgium

12h40 – 14h00: Lunch (canteen)

14h00 – 15h30: Dialogue session and Exhibition (Room V32)

6 - Control of a Doubly Fed Induction Generator System to Reduce Dynamical Power Train Loads, C. Mehler, T. Völker, B. Orlik, University of Bremen, IALB, Bremen, Germany

9 - Control of Active Front-End inverter of Wind Energy Plants During Asymmetrical Grid Faults, T. Völker, C. Mehler, B. Orlik, University of Bremen, Institute for Electrical Drives, Power Electronics and Devices, Germany

10 - Wind Power Series Stochastic Modelling Based on Markov Chains, P. Souto Perez*, J. Driesen, R. Belmans, Katholieke Universiteit Leuven, Belgium

13 - A new approach to model small wind turbines with permanent magnets generator (PMG) and diode bridge (DB) rectifier, Luis Arribas, Ignacio Cruz, Departamento de Energías Renovables, CIEMAT, Madrid; Fernando Yeves, Departamento de de Ingeniería Eléctrica, Electrónica y de Control, E.T.S.I. Industriales-UNED, Madrid; Oscar López, Álvaro Cuerva, IDR E.T.S.I.Aeronáuticos – UPM, Madrid, Spain.

15 - Simulation package for simulating wind power drives, Julius Luukko, Valtteri Haverinen, Vesa Ruuskanen, Tuomo Lindh, Riku Pöllänen, Vesa Kärkkäinen, Risto Tiainen, Lappeenranta University of Technology; Mikko Pääkkönen and Olli Pyrhönen; The Switch Ltd., Lappeenranta, Finland,

16 - Medium Voltage Multilevel Converters for a Multi-MW Wind Turbine Grid Connection, Osman S. Senturk, Stig Munk-Nielsen, Remus Teodorescu, Aalborg University, Department of Energy Technology, Denmark; Lars Helle, Vestas A/S, Denmark; Pedro Rodriguez, Universitat Politecnica de Catalunya, Spain

17 - Simulation of Dedicated HVDC for Wind power transmission, S. K. Chaudhary, R. Teodorescu, IET, AAU, Denmark; P. Rodriguéz, UPC, Spain.

19 - Comparative Analysis of Control Methods for Optimization Issues of Permanent Magnet Synchronous Generator in Wind Power Plants, Ralf Lohde, Friedrich W. Fuchs, Institute for Power Electronics and Electrical Drives, Faculty of Engineering, Christian-Albrechts-University of Kiel, Germany

24 - Medium Voltage Line Side Inverter for Windmill Applications, Dejan Schreiber, SEMIKRON Elektronik GmbH & Co.KG, Germany

26 - Wind Energy Conversion System Based on a Doubly Fed Induction Generator: Study and Simulation, Mohamed Kesraoui, S.Toutaoui, R.Azira, Département Automatisation et Electrification, Faculté des Hydrocarbures et de la Chimie, M'hamed Bougara University, Algérie

27 - Upgrading Wind farm connections with Tripole HVDC, Inigo Martinez de Alegria, Universidad del Pais Vasco, Spain

34 - Practical implementation of the brushless doubly-fed induction machine in a wind turbine, Richard McMahon, Electrical Engineering Division, Cambridge University, Engineering School, Durham University

35 - Control of Doubly-fed Induction Generators during Asymmetrical Voltage Dips, Marlies Richter, Technische Universität Ilmenau, Germany

37 - Comparison of the Low-Voltage Ride through Capability for Different Control modes of Reactive Power and Voltage, Isabelle Boulanger, Fredrik Carlsson, Vattenfall Research and Development, Department of Power Technology, Stockholm, Sweden

38 - Exact Predictive Direct Power Control of Three-Level NPC Converters for Wind Power Applications, Estanis Oyarbide, , A. Martínez-Iturbe, E. Laloya, Faculty of Engineering, University of Zaragoza; S. Aurtenechea, Técnica de Automatismo y Medida, TEAM S.A, Zamudio (Bizkaia); M.A. Rodríguez-Vidal, Faculty of Engineering, University of Mondragón, Arrasate, Spain

42 - Measurement and Analysis of PCC Voltage Variation in a Wind-Diesel Hybrid System - A Case Study in Sapsi-Island, Seung-Ho Song, Department of Electrical Engineering, Kwangwoon University, Seoul, Korea,

43 - The mixed pole machine, Vilmos Toeroek, Prof. em. of Electrical Power Conversion, Royal Institute of Technology, Stockholm

15h30 – 17h10: Lecture session 3: HVDC (Room V2)
Chair: Prof. Jean-Luc Thomas, Conservatoire National des Arts et Métiers Electrotechnique / SUPELEC, Paris, France
Co-Chair: Prof. Sarath B Tennakoon, University Beaconside Stafford, United Kingdom

11 - Transient Analysis of DC Grids with Different Voltage Levels for Offshore Wind Farms, Florian Mura, Alexander Helmedag, Rik W. De Doncker, Institute for Power Generation and Storage Systems (PGS), E.ON Energy Research Center, RWTH Aachen University, Germany

14 - A survey of fast power reduction methods for VSC connected wind power plants consisting of different turbine types, Arjen Van der Meer, Ralph L. Hendriks, Wil L. Kling, Delft University of Technology, Faculty of Electrical Engineering, Delft, The Netherlands

21 - Load-Frequency Control of Synchronous Areas Using a Wind Farm Connected via HVDC-VSC, Simon Jensen, Lehrstuhl für Leistungselektronik und elektrische Antriebe, Technische Fakultät der Christian-Albrechts-Universität zu Kiel, Germany

22 - Power electronic converter for series connection of wind turbines, Stefan Lundberg, Torbjörn Thiringer, Electric power engineering, Chalmers University of Technology, Gothenburg, Sweden

28 - VSC-HVDC based on Modular Multilevel Converters for Wind Power Transmission, Grain P. Adam, Olimpo Anaya-Lara, Graeme Burt and Jim McDonald, Institute for Energy and Environment, University of Strathclyde, Glasgow, UK

17h10 – 18h00: Panel discussion: The cost of integrating Wind Energy in the grid (Room V2)
Chair: Jean-Michel Glachant, Director, Florence School of Regulation, Loyola de Palacio Programme, European University Institute in Florence

Tentative Panelists: Terje Gjengedal, Statkraft, Norway; Kema, UK representative, Svenska Kraftnät, Vattenfall, Vestas, TBC

19h30 – : Gala Evening

Friday 24 April 2009

9h00 – 9h40: Lecture session 4: Keynote 2 (Room V1):
Chair: Dr. Colin Oates, AREVA T&D, United Kingdom
Advances in VSC-Based HVDC Transmission for Wind-Power Applications, Lennart Harnefors, ABB

9h40 – 11h00: Lecture session 5 DC technology for wind power (Room V1):
Chair: Prof. Torbjörn Thiringer, Chalmers University of Technology, Sweden
Co-Chair: Prof. Sjoerd de Haan, Delft University of Technology, The Netherlands

7 - Multiterminal HVDC link for wind farms from North of Norway to load centers at south, Kamran Sharifabadi, Terje Gjengedal, Statkraft Development AS, Norway

33 - Multiterminal HVDC for Offshore Windfarms – Control Strategy, Temesgen Haileselassie, NTNU Dept. of Electric Power Engineering, Trondheim, Norway

4 - Comparative Study of Different HVDC Transmission Systems for Offshore Wind Farms, Stephan Meier, Yingbei Yu and Hans-Peter Nee, School of Electrical Engineering, Royal Institute of Technology, Stockholm, Sweden

36 - Design and Control Considerations for a 5 MW Fullbridge DC/DC Converter in a Wind Turbine, Lena Max, Department of Energy and Environment, Chalmers University of Technology, Göteborg, Sweden

11h00 – 11h30: Coffee break (Room 34)

11h30 – 12h30: Lecture session 6: Components (Room V1):
Chair: Prof. Dr. Ir. Rik De Doncker, ISEA, RWTH, Germany
Co-Chair:

Power Semiconductor Devices: History of the IGBT Technical Innovation and Future Trends, Noriyuki Iwamuro
Fuji Electric Device Technology Co

2 - Powerful energy storage with ultracapacitors, Gianni Sartorelli, Senior Sales Application Engineer, Maxwell Technologies SA, Rossens; Switzerland

23 - SKiiP® - An intelligent power module for wind turbine inverters, Ralf Herrmann, Semikron Elektronik GmBH und Co. KG, Nürnberg, Germany

12h30 – 14h00: Lunch (canteen)

14h00 – 15h40: Lecture session 7: DFIG under unbalanced operation (Room V1)
Chair: Dr. Jouko Niiranen, ABB Oy, Finland
Co-Chair:

5 - Standalone DFIG based energy conversion system under grid permanent faults conditions, Grzegorz Iwanski, W. Koczara, Warsaw University of Technology, Institute of Control and Industrial Electronics, Electrical Drive Division, Poland

8 - DFIG control under unsymmetrical conditions, Oriol Gomis, Adrià Junyent-Ferré, Centre d'Innovació Tecnològica en Convertidors Estàtics i Accionaments (CITCEA-UPC), Departament d'Enginyeria, Elèctrica, Universitat Politècnica de Catalunya. ETS d'Enginyeria Industrial de Barcelona; Andreas Sumper, CITCEA-EUETIB Universitat Politècnica de Catalunya and Antoni Sudrià-Andreu, CITCEA-UPC, CITCEA-EUETIB, IREC Institut de Recerca en Energia de Catalunya

20 - Grid Compliance of Wind Farms Based on Doubly Fed Induction Generator, Hadi El-helw, Sarath Tennakoon, Staffordshire University, UK

25 - LVRT – Modelling and Simulating Three-Phase Generator Terminal Short Circuit: a Comparison of DFIG and PM Genos regarding I2t-Loading and Peak Torque, Johannes Germishuizen, Bernhard Eichler, Gunther Elender, Arne Gruening, Andreas Joeckel, Franz Schwimmbeck, Loher GmbH (Winergy AG), Ruhstorf, Germany

41 - Study of doubly-fed WTGS behavior for grid perturbations using integrated model, Montserrat Mata Dumenjó, Ecotècnica, Alstom, Spain

15h40 – 15h50: Closing session (Room V1)
Chair: Prof. Hans-Peter Nee, The Royal Institute of Technology, Sweden
Co-Chair: Prof. Tore Undeland, Norwegian University of Science & Technology, Norway

15h50 – 16h30: Visit of KTH Laboratory

16h30 – 18h00: Closing drink