

1. OPENING SESSION

Wednesday, 29th July
(15.00 - 17.00)

rapporteur : M. Rashwan

- 001** Grid integration of wind generation
H. Weber, M. Kleimaier
- 002** Worldwide experience, expectations and plans for coping with different technical and economic limits for very high penetration of renewable energy
K. Staschus, L. Bryans, M. Kleimaier
- 003** Spanish experience in the integration of wind and solar energy into the electric power system
F. Soto, E. Prieto
- 004** General Economics of renewable integration
C.W. Gellings
- 005** 21st century interstate transmission planning: the intersection of engineering, economics and environment
E. R. Wilcox, R. Gutman

1.1. NATIONAL EXPERIENCES

Thursday, 30th July
(8.30 - 10.30)

rapporteur : Tom Key

- 111** Case study for the integration of 12 GW wind power in the Dutch power system by 2020
M. Gibescu, B.C. Ummels, W. L. Kling, E. Pelgrum, R. A. Van Offeren
- 112** Estimation of capacity credit in Finland - Different methods for different use
J. Matilainen, L. Haarla
- 113** The wind power integration and the main grid usage in Brazil
F.C. Medeiros, D.O.C. Brasil, L.F.M. Guedes, P.A.C. Rosas, J.A. Peças Lopes, A.L. Pereira, C.M.V. Tahan
- 114** Integration of DG in MV-grids: Challenges encountered by the grid operator
E.J. Coster, D. van Houwelingen
- 115** Integration of wind farms into the Romanian power system
D. Ilisiu
- 116** Study on integration and transmission of large scale wind power in JiuQuan Area Gansu Province China
H. Shen, H.W. Li, B. Huang, J. Li
- 117** Optimal network congestion management using wind farms
A. Vergnol, J. Sprooten, B. Robyns, V. Rioux

1.2. IMPACT OF WIND GENERATION ON PLANNING

Thursday, 30th July
(11.00 - 13.00)

rapporteur : K. Staschus

- 121** Report from US Task Force on Integration of Variable Generation
P. Pourbeik, D. Brooks, W. Frost
- 122** System Development Issues Concerning Integration of Wind Generation in Great Britain
K. Bell
- 123** Impact of interconnectors on risk of interruptions in systems with wind generation
M. Castro, A. A. Shakoar, P. Djapic, G. Strbac
- 124** Risk-based dynamic TTC calculation in a deregulated power system with a Large penetration of wind power generation
P. Nattawut, Y. Akihiko
- 125** Power regulation resources required by wind power in Finland and regulation characteristics of power plants
M. Holmgren, L. Haarla, J. Matilainen, H. Holtinen

1.3. STABILITY AND CONTROL

Thursday, 30th July
(15.00 - 17.00)

rapporteur : D. Jacobson

- 131** Impact of high wind penetration on transient and oscillatory stability aspects
B. Weise, M. Pöller
- 132** Wind energy converters with FACTS capabilities for optimized integration of wind power into transmission and distribution systems
S. Wachtel, M. Kruse, J. Marques, E. Quitmann
- 133** EHV AC and HVDC - Working together to integrate renewable energy delivery
J.A. Fleeman, R. Gutman, M. Heyeck, M. Bahrman, B. Normark
- 134** Using innovative technologies to ease wind resource penetration into power grid
D. Tholomier, J. Rola
- 135** Voltage stabilization for wind generation integration in western texas grid
R. Grünbaum, A. Boström, M. Halonen, P. Hassink, M. Thesing
- 136** Effective voltage and frequency control strategy for a stand-alone system with induction generator/fuel cell/ultracapacitor
N. Gyawali, Y. Ohsawa

1.4. ENERGY MANAGEMENT -CONTROL

Friday, 31st July
(8.30 - 10.30)

rapporteur : M. Armstrong

- 141** Synchronous island control with significant contribution from wind power generation
R. J. Best, C. F. Ten, D. J. Morrow, P. A. Crossley
- 142** The impact of wind turbine controller strategy on deloaded operation
P. Venne, X. Guillaud, R. Teodorescu, J. Mahseredjian
- 143** Ancillary service for renewable integration
A. Chuang, C. Schwaegerl
- 144** Congestion Management in Transmission Systems with Large Scale Integration of Wind Energy
A.F. Kaptue Kanga, S. Völler, J.F. Verstege
- 145** An On-line Energy Storage Control Strategy for Integration of Wind Energy in a Wind-Diesel System
C. Abbey, G. Joos
- 146** Control centre based wind power control applications
P. Espinosa, V. Bielza, J. Ontanon, E. Castans

1.5. ECONOMICS ON INTEGRATING RENEWABLES

Friday, 31st July
(11.00 - 13.00)

rapporteur : W. Kling

- 151** Balancing availability, reliability and future regulatory impact against overall project capex for offshore wind farms
I. Jami, R. Pound, T. Sulawa
- 152** Effects of increasing wind power penetration on the physical operation of large electricity market systems
B. Klöckl, P. Pinson
- 153** Incorporating distributed generation in the energy contracting strategy in a regulated environment
P. Gama, E. Flores, G. Alvarez, J. Mak, N. Guaraldo, D. Filho, A. Messora, B. Soares, A. Barbosa, S. Sanzoni

- 154 Assessing the benefits of wind power curtailment in a hydro-dominated power system**
J. Evans, Z. Shawwash, D. Smith
- 155 Insertion of distributed generation into rural feeders**
R. Mohr, R. Moreno, H. Rudnick
- 156 Incorporation of wind power over the next 20 years and the associated wind integration costs**
T. Molinski

2.1. EXPERIENCES -FIELDS AND LABS

Thursday, 30th July
(8.30 - 10.30)

rapporteur : R. Dugan

- 211 CERTS microgrid laboratory Test Bed**
J. H. Eto, R. Lasseter, B. Schenkman, John Stevens, D. Klapp, H. Volkommer, E. Linton, H. Hurtado, J. Roy
- 212 Analysis of data obtained in demonstration test about battery energy storage system to mitigate output fluctuation of wind farm**
K. Yoshimoto, T. Nanahara, G. Koshimizu
- 213 Infrastructures for the integration and control of small distributed energy resources into power grids**
O. Gehrke, H. Bindmer
- 214 Field experience of power frequency overvoltages in wide-scale photovoltaic systems**
E. Navarro, F. J. Pazos
- 215 Integration of DER into power system operation through Virtual Power Plant concept applied for voltage regulation**
J. Oyarzabal, J. Marti, A. Ilo, M. Sebastian, D. Alvira, K. Johansen
- 216 Improving Smart Grid Interoperability through Collaborative Demonstrations**
M. Wakefield

2.2. PROTECTION -FAULT RIDE-THROUGH

Thursday, 30th July
(11.00 - 13.00)

rapporteur : S. Salem

- 221 Differential ROCOF relay for Loss-of-Mains Protection of Renewable Generation using Phasor Measurement over Internet Protocol**
D.M. Laverty, D.J. Morrow, R. Best, P.A. Crossley
- 222 The impacts and countermeasures of distribution relay protection with wind power connected**
Yang guosheng, Li xin, Zhou zexin
- 223 Analysis of advanced distribution protection approaches and their compatibility with distributed generation**
C. Abbey
- 224 Dynamic line rating protection for wind farm connections**
H. T. Yip, C. An, G. Lloyd, R. Ferris, M. Aten
- 225 On the assessment of voltage ride-through - needs of the power transmission grid**
L. de Souza, I. Visconti, T. de Assis, R. Moss
- 226 Grid integration of wind energy converter - experiences of low voltage fault ride through (LVFRT) measurements and certification procedures**
T. Smolka, W. Schwardt, M. Dang, D. Henriod
- 227 Effect of grid disturbances on fault ride through behavior of MV-connected DG-units, in especially CHP-plants**
E.J. Coster, J.M.A. Myrziak, W.L. Kling

2.3. MODELLING AND SIMULATION

Thursday, 30th July
(15.00- 17.00)

rapporteur : R. Iravani

- 231 Aggregated modelling of wind farms - model verification**
K. Rudion, A. G. Orths
- 232 A P-Q capability chart approach to characterise grid connected photo voltaic units**
F. Delfino, G. B. Denegri, M. Invernizzi, R. Procopio, G. Ronda
- 233 Probabilistic methods for renewable energy sources and associated electrical loads for Southern African distribution systems**
C. T. Gaunt, R. Herman, B. Becker

- 234 Method for studying and mitigating the effects of wind variability on frequency regulation**

U.D. Annakkage, D.A. Jacobson, D. Muthumuni

- 235 Optimized autonomous power system**

P. Lombardi, Z. A. Styczynski

- 236 System operation using heat load management to facilitate wind power integration**

J. Kennedy, D. Flynn, B. Fox

2.4. MICROGRIDS

Friday, 31st July
(8.30 - 10.30)

rapporteur : R. Wakefield

- 241 The added value of reliability to a microgrid**
C. Marnay
- 242 Protection of microgrids with a high penetration of inverter-coupled energy sources**
T. Wijnhoven, T. Loix, G. Deconinck, J. Driesen
- 243 Optimal control and management of distributed generation units in an islanded microgrid**
A. A. Ghadimi, H. Rastegar
- 244 Operation of dispersed power systems including wind farm in micro grid**
T. SHINJI
- 245 A methodology for economic analysis and design of microgrids**
C. Abbey, G. Joos
- 246 BC hydro perspective on distribution islanding for customer reliability improvement**
J. Peralta, H. Iosfin, S. (Xiaosu) Tang
- 247 Life cycle cost, efficiency and environmental impact**
R. Wies

2.5. FORECASTING AND STORAGE

Friday, 31st July
(11.00 - 13.00)

rapporteur : J. Oglevie

- 251 Forecasting For Utility-Scale Wind Farms, The Power Model Challenge**
J. Parkes
- 252 Modeling the solar radiation of PV in the UAE using neural networks**
L. Chaar, L. A. Lamont, M. Karkoub
- 253 Wind power and photo voltaic prediction tools for balancing and grid operation**
B. Ernst, F. Reyer, J. Vanzetta
- 254 SAGIPE : A real-time data acquisition system for the massive integration of wind generation in Hydro-Québec's power system**
V. Balvet, J. Bourret, J.-E. Maubois
- 255 Wind Farms with Energy Storages integrated at the Control Power Market**
S. Völler, A.-R. Al-Awaad, J.F. Verstege
- 256 Electric energy storage and its tasks in the integration of wide-scale renewable resources**
Z. Styczynski on behalf of WG C6.15

3. GENERAL ISSUES - CONCLUSIONS

Friday, 31st July
(15.00- 17.00)

rapporteur : N. Hatzigiargyriou

- 301 Connection requirements and grid codes for distributed generation**
P. Gomes, A. C. Barbosa Martins, C. Ribeiro Zani, S. L. A. Sardinha
- 302 Experience with grid code development for wind generation in Europe and North America**
P. Gardner, M. Tremblay, D. Price
- 303 How New Technology Developments will Lower Wind Energy Costs**
D.L. Hoffman, T.S. Molinski