PANEL SESSION I
Implementation Experience and Research Outlook on Applications of Synchronized Phasor Measurements and Supporting Infrastructures: (Monday. 14:00h to 17:30h. Room EL5)
Chair: Luigi Vanfretti (KTH, Sweden) Co-chair: Kjetil Uhlen (NTNU, Norway)

Theme: Implementation Experience and Industrial Applications (14:00-15:20)

281 Application of PMU Measurements in Europe TSO Approach and Experience
Walter Sattinger ~ Swissgrid (Switzerland)

576 Application of Phasor Measurement Units and Wide-Area Measurement Systems in Finland
Tuomas Rauhala, Katariina Saarinen, Mika Latvala, Maarit Uusitalo, Minna Laasonen ~ Fingrid Oyj (Finland)

182 Black Start Test of the Swedish Power System
Hans Fendin Svenska ~ Kraftnät (Sweden), Torbjörn Hansén ~ Vattenfall Services Nordic AB (Sweden), Morten Hemmingsson, Daniel Karlsson ~ Gothia Power AB (Sweden)

Theme: Research Outlook (15:50-17:30)

194 Recent Developments in Modal Estimation of Power System Electromechanical Oscillations
Jukka Turunen ~ Aalto University (Finland), Mats Larsson ~ ABB Corporate Research (Switzerland), Jerry Thambirajah ~ Imperial College London (United Kingdom), Liisa Haarla ~ Aalto University (Finland), Tuomas Rauhala ~ Fingrid Oyj (Finland)

185 Selective Damping of Inter Area Oscillations Using PMU Signals
Istvan Erlich, Ashfaque Ahmed Hashmani, Fekadu Shewarega ~ University of Duisburg (Germany)

125 Investigating State Reconstruction from Scarce Synchronized Phasor Measurements
Mevludin Glavic ~ University of Liège (Belgium), Thierry Van Cutsem ~ University of Liège and FNRS (Belgium)

256 Real-Time Stability Assessment based on Synchrophasors
Hjörtur Jóhannsson, Rodrigo Garcia Valle, Johannes Tilman Gabriel Weckesser, Arne Hejde Nielsen, Jacob Østergaard ~ Technical University of Denmark (Denmark)

1   TRANSMISSION PLANNING (Monday. 14:00h to 15:30h. Room EL3)
Chair: Aydogan Ozdemir ~ Istanbul Technical University (Turkey)

149 Transmission Expansion Plan: Ordinal and Metaheuristic Multiobjective Optimization
Juan Molina Castro, Hugh Rudnick Van de Wyngard ~ Pontificia Universidad Católica de Chile (Chile)

255 Study and Design of Half-Wavelength Lines as an Option for Long Distance Power Transmission
Milana Lima dos Santos ~ University of Sao Paulo (Brazil), Mario Masuda ~ Fundacao para o Desenvolvimento Tecnologico da Engenharia (Brazil), Geraldo Luiz Costa Nicola ~ Eletrobras Eletronorte (Brazil)

288 Improved Cost-Benefit Analysis for Reliable Long-Term Transmission Planning
Antonios Papaemmanouil ~ ETH Zurich (Switzerland), Lina Bertling, Le Ahn Tuan ~ Chalmers University of Technology (Sweden), Göran Andersson ~ ETH Zurich (Switzerland)

388 Multistage Transmission Expansion Planning Alleviating the Level of Transmission Congestion
Shahab Dehghan, Ahad Kazemi, Nilufar Neyestani ~ Iran University of Science and Technology (Iran)

2   WIND FARM GRID CONNECTION (Monday. 14:00h to 15:30h. Room EL6)
Chair: Shoji Nishikata ~ Tokyo Denki University (Japan)

220 Dynamic Thermal Rating Application to Facilitate Wind Energy Integration
Ali Khajeh kazerooni, Joseph Mutale ~ The University of Manchester (UK), Mark Perry, Venkatesan Sreerangachetty, Daniel Morrice ~ National Grid (UK)

64 Grid Integration of Off-Shore Wind Farms by Means of Hybrid SVC
Pasi Vuorenpaa, Pertti Jarventausta ~ Tampere University of Technology (Finland)

397 Integration of Off-shore Wind Farm with Multiple Oil and Gas Platforms *Harald G Svendsen, Eirik Veirod Øyslebo ~ SINTEF Energy Research (Norway), Maheshkumar Hadiya, Kjetil Uhlen ~ NTNU (Norway)*

446   Protection for a Wind Turbine Generator Considering the Fault Ride-Through Requirement in a Wind Farm
       *Tai Ying Zheng, Yeon, Hee Kim ~ Chonbuk National Universit (Rep. Korea) Peter A. Crossley ~ The
       University of Manchester (UK), Yong Cheol Kang ~ Chonbuk National Universit (Rep. Korea)*

3   **HARMONICS ANALYSIS AND NON ACTIVE POWER COMPENSATION**
         (Monday. 14:00h to 15:30h . Room EL2)
         Chair: Muhammad Jafar ~ Norwegian University of Science and Technology (Norway)

99   Application of Conservative Power Theory for Active Power Filtering of Line-Commutated
       HVDC for Off-shore Wind Power
       Muhammad Jafar, Marta Molinas ~ NTNU (Norway), Paolo Tenti ~University of Padova (Italy)

237   A Flexible and Optimal Power Theory for Reactive Power Compensation in ABC Frame
       Alejandro Garces Ruiz, Marta Molinas ~ Norwegian University of Science and Technology (Norway)

468   Harmonic Mitigation in Distribution Networks with High Penetration of Converter-Connected DG
       *Piyadanai Pachanapan, Adam Dysko, Olimpo Anaya Lara, Kwok L. Lo ~ University of Strathclyde
       (United Kingdom)*

581   A New Method for Measurement of Harmonic Groups Using Wavelet-Packet-Transform
       Abdullah Mahmoudi, Hossein Hosseinian, Reza Eslami ~ Amirkabir University of Technology (Iran)

4   **ENERGY MANAGEMENT OF ELECTRICAL VEHICLES (Monday. 14:00h to 15:30h. Room EL1)**
         Chair: Salvatore D'Arco ~ Norwegian Universityof Science and Technology(Norway)

96   Requirements for an Interface Between a Plug-in Vehicle and an Energy System
       *Antti Rautiainen ~ Tampere University of Technology (Finland), Corentin Evens VTT ~ Technical Research
       Centre of Finland (Finland), Sami Repo, Pertti Järventausta ~ Tampere University of Technology (Finland)*

121   Potentiality of Variable-rate PEVs Charging Strategies for Smart Grids
       Francesco Antonio Amoroso, Gregorio Cappuccino ~ University of Calabria DEIS (Italy)

174   Optimal Management of Battery Charging of Electric Vehicles: A New Microgrid Feature
       Ahmad Karnama, Fernanda Resende, João Abel Peças Lopes ~ INESC Porto (Portugal)

268   Economic Benchmark of Charging Strategies for Battery Electric Vehicles *Benjamin Dietz, Klaus
       Henning Ahlert, Alexander Schuller, Christof Weinhardt ~ Karlsruhe Institute of Technology (Germany)*

534   Optimal Electric Vehicles Consumption Management at Parking Garages
       Pedro Sánchez, Martín Guillermo Sánchez ~ Universidad Pontificia Comillas (Spain)

5   **SYSTEM PROTECTION SCHEMES (Monday. 14:00h to 15:30h. Room EL4)**
         Chair: Terje Gjengedal ~ Statnett SF (Norway)

167   A load Shedding Scheme Against both Short and Long-Term Voltage Instabilities in the Presence of
       Induction Motors *Bogdan Otomega ~ Politehnica University of Bucharest (Romania), Thierry Van
       Cutsem ~ University of Liège (Belgium)*

169   Forecast of the System Frequency Response for Underfrequency Load Shedding
       Urban Rudez, Rafael Mihalic ~ University of Ljubljana (Slovenia)

399   Optimal Load Shedding to Enhance Voltage Stability and Voltage Profile Based on a Multiobjective
       Optimization Technique *Shahab Dehgha, Mehdi Darafshian Maram ~ Iran Grid Management Company
       (Iran), Heidarali Shayanfar, Ahad Kazemi ~ Iran University of Science and Technology (Iran)*

453   Operation of an Integrated Autonomous Protection System Against Voltage Instability in the Presence of
       Self-Restoring Loads *Panagiotis Mandoulidis, Charalambos Lambrou, Costas Vournas ~ National
       Technical University of Athens (Greece)*

596   Dynamic Network and Protection Security of Transmission Systems
       Rainer Krebs, Chris Oliver Heyde, Edwin Lerch, Olaf Ruhle ~ Siemens AG (Germany)

6   **INTEGRATION OF DISTRIBUTED GENERATION - OPTIMIZATION APPROACHES   (Monday.
         16:00h to 17:30h. Room EL3)**
         Chair: Wil Kling~ Eindhoven University of Technology (Netherland)

131   Optimal Allocation of Distributed Generators Providing Reactive Power Support Ancillary Service
       *Augusto César Rueda Medina, Antonio Padilha Feltrin ~ Universidade Estadual Paulista Júlio de
       Mesquita Filho (Brazil)*

305   Optimizing Grid Contribution and Economic Returns from Solar Generators by Managing the Output Uncertainty Risk *Soumyo Chakraborty, Sandeep Shukla, James Thorp ~ Virginia Polytechnic Institute and State University (United States)*

352   CHP Optimized Selection Methodology for a Multi-Carrier Energy System *Aras Sheikhi, Babak Mozafari, Ali Mohammad Ranjbar ~ Sharif university of technology (Iran)*

354   Optimization of Operating and Investment Costs of Active Management Deployment in Distribution Networks *Dimitrios Papadaskalopoulos, Efthymios Manitsas, Pierluigi Mancarella, Goran Strbac ~ Imperial College London (United Kingdom)*

7   WIND FARM LAYOUT AND OPERATION (Monday. 16:00h to 17:30h. Room EL6)
        Chair: Madeleine Gibescu ~Delft University of Technology (Netherland)

246   Application of Neural Networks for Failure Detection on Wind Turbines *Roque Brandão, José Carvalho ~ ISEP Instituto Superior de Engenharia do Porto (Portugal), Fernando Barbosa ~ FEUP&INESC Porto Universidade do Porto (Portugal)*

469   Wind Farm Operation Planning Using Optimal Yaw Angle Pattern (OYAP) *Natalia Moskalenko, Guericke, Krzysztof Rudion, Zbigniew Styczynski ~ Otto Von Guericke University Magdeburg (Germany)*

488   An Improved Evolutive Algorithm for Large Offshore Wind Farm Optimum Turbines Layout *Javier Serrano Gonzalez, Manuel Burgos Payan, Jesus Manuel Riquelme ~ University of Sevilla (Spain)*

494   A Benders' Decomposition Approach for the Optimization of the Electric Layout of Offshore Windfarms *Sara Lumbreras, Andres Ramos ~ Universidad Pontificia Comillas (Spain)*

501   A Stochastic Model for Opportunistic Service Maintenance Planning of Offshore Wind Farms *Francois Besnard, Lina Bertling, Katharina Fischer, Michael Patriksson, Ann, Brith Strömberg ~ Chalmers University of Technology (Sweden)*

8   DYNAMIC MODELING, TRANSIENTS AND CONTROL
        (Monday. 16:00h to 17:30h. Room EL2)
        Chair: Rafael Mihalic ~ University of Ljubljana (Slovenia)

54   Power System Modeling in Modelica for Time-Domain Simulation *Angela S. Chieh, Patrick Panciatici ~ RTE (France), Jérôme Picard ~ Scilab Consortium (France)*

89   Modeling of a Number of Heat Pump Water Heaters as Control Equipment for Load Frequency Control in Power Systems *Taisuke Masuta, Akihiko Yokoyama ~ The University of Tokyo (Japan), Yasuyuki Tada ~ Tokyo Electric Power Co. (Japan)*

150   Frequency Deviations and Generation Scheduling in the Nordic System *Zhongwei Li ~ Lund University and Harbin Institute of Technology (Sweden), Olof Samuelsson ~ Lund University (Sweden), Rodrigo Garcia Valle ~ Technical University of Denmark (Denmark)*

172   Modeling and Simulation of Capacitor Voltage Transformer Transients using PSCAD/EMTDC *Jayachandra Sakamuri, John Yesuraj D. ~ Crompton Greaves Ltd (India)*

239   Subsynchronous Resonance on Series Compensated Transmission Lines with Quadrature Boosters *Carlos E Ugalde Loo, Janaka B. Ekanayake, Nicholas Jenkins ~ Cardiff University (United Kingdom)*

333   Ground Faults Overvoltage Analysis in MV Networks: Transient and TOV Studies *Alberto Cerretti ~ Enel International (Romania), Alberto Geri, Fabio M Gatta, Stefano Lauria, Marco Maccioni ~ Sapienza University of Rome (Italy)*

9   IMPACT OF ELECTRICAL VEHICLES IN POWER SYSTEMS
        (Monday. 16:00h to 17:30h. Room EL1)
        Chair: Magnus Korpås ~ SINTEF Energy Research (Norway)

71   Recharging of Electric Vehicles in a Typical Italian Urban Area: Evaluation of the Hosting Capacity *Giuseppe Mauri ~ RSE SpA (Italy), Enrico Fasciolo, Stefano Fratti ~ A2A SpA (Italy), Gramatica Paolo ~ RSE SpA (Italy)*

475   Q-Learning for Optimal Deployment Strategies of Frequency Controllers using the Aggregated Storage of PHEV Fleets *Spyros Chatzivasileiadis, Matthias Galus, Yves Reckinger, Göran Andersson ~ ETH (Switzerland)*

505   Probabilistic Load Flow Methods with High Integration of Renewable Energy Sources and Electrical Vehicles-Case Study of Greece *Anestis Anastasiadis, Elisavet Voreadi, Nikos Hatziargyriou ~ National Technical University of Athens (Greece)*

521   Reliability Impact on Power System Considering High Penetration of Electric Vehicles *Mauro Augusto da Rosa, Miguel Luis Delgado Heleno, Vladimiro Miranda, Manuel Matos, Ricardo Ferreira ~ INESC Porto (Portugal)*

577   Electric Vehicles Participating in Frequency Control: Operating Islanded Systems with Large Penetration of Renewable Power Sources *Pedro Miguel Rocha Almeida, Joao Abel Pecas Lopes, Filipe Joel Soares, Luis Seca ~ INESC Porto (Portugal)*

10   **LOAD FORECASTING AND MODELLING (Monday. 16:00h to 17:30h. Room EL4)**
        Chair : Mahmud Fotuhi-Firuzabad ~ Islamic Azad University (Iran)

60   Short-Term Multinodal Load Forecasting in Distribution Systems Using General Regression Neural Networks *Kenji Nose, Filho, Anna Diva Plasencia Lotufo, Carlos Roberto Minussi ~ UNESP São Paulo State University (Brazil).*

280   Climate Change Effect to Very Short-Term Electric Load Forecasting *Mario Orlando Oliveira, Denise Pivatto Marzec, Gladis Bordin, Arturo Suman Bretas ~ Federal University of Rio Grande do Sul (Brazil), Daniel Pinheiro Bernardon ~ Federal University of Pampa UNIPAMPA (Brazil)*

436   Time Series Method for Short, Term Load Forecasting using Smart Metering in Distribution Systems *Ni Ding, Yvon Bésanger ~ GIE IDEA (France), Frédéric Wurtz ~ Grenoble INPG2Elab (France), Guillaume Antoine ~ EDF (France), Philippe Deschamps ~ Schneider Electric (France)*

484   A Time Series Probabilistic Load Model for Residential Customers *Joerg Dickert, Peter Schegner ~ Dresden University of Technology (Germany)*

524   Discussion of the Use of Information Theoretic Mean Shift for Electricity Load Patterns Clustering *Jean Sumaili, Hrvoje Keko, Vladimiro Miranda ~ INESC Porto (Portugal), Gianfranco Chicco ~ Politecnico di Torino (Italy)*

PANEL SESSION II
Smart Grids as Seen from Power Electronics Field.
(Tuesday. 9:00h to 12:30h. Room EL5)
Chairs: Paolo Tenti (Univ. of Padova, Italy), Jian Sun (Rensselaer Polytechnic Institute (USA), Marta Molinas (NTNU, Norway)

Theme: Hardware Advances and Challenges (09:00-10:15)
621   Modern Power Systems and the Importance of Power Electronics *Georgios Demetriades ~ ABB Corporate research*

623   Renewable Energy Resources via Power Electronics *Stefan Schroeder ~ General Electric Global Research*

Theme: Control Technologies (10:30-12:30)
618   Multi-Agent Control of PEBB Based Power Electronic Systems *Herb L. Ginn ~ University of South Carolina (United States), Ferdinanda Ponci, Antonello Monti ~ RWTH Aachen University (Germany)*

622   Impedance-based Approaches to Stability Analysis and Design of Smart Grid *Jian Sun ~ Rensselaer Polytechnic Institute (USA).*

620   Optimum Control of Distributed Energy Resources in Residential Micro-Grids *Paolo Tenti ~ University of Padova (Italy)*

POSTER SESSION I: RENEWABLE ENERGY, POWER QUALITY AND SMART GRIDS
   (Tuesday. 9:00h to 11:00h. Hall G100) ***Posters may be left in place until 12:30)***
47   Energy Fluxes Optimization for PV Integrated Buildings *Rim Missaoui, Ghaith Warkozek ~ Grenoble Electrical Engineering Laboratory G2ELAB CNRS INPG / UJF (France), Seddik Bacha, Stéphane Ploix ~ GSCOP Laboratoire des Sciences pour la Conception, l'Optimisation et la Production (France)*

50   Bacterial Foraging, Based PI Controller of Inverter-Based Distributed Generators. *Ahmed Agamy, Hossam Mostafa, Ali Kasem Alaboudy, Mahmud Fekry ~ Suez Canal University (Egypt)*

496 Voltage Sensorless Predictive Current Controller with Interfacing Parameters Estimation for Grid Connected Operation *Khaled Ahmed, Grian Adam, Steve Finney, Barry Williams ~ Strathclyde University (UK)*

522 Synergy of Photovoltaic Generators and Electric Vehicles in a Low Voltage Distribution Grid. *Juan Luis Calero L, Juan Manuel Roldan F, Manuel Burgos P, Jesus Manuel Riquelme S ~ University of Sevilla (Spain)*

566 Verification of Flickermeters under new edition of IEC 61000, 4, 15. *Jan Slezingr, Jiri Drapela ~ Brno University of Technology (Czech Republic).*

573 Control of Full-Scale Converter Based Wind Power Plants for Damping of Low Frequency System Oscillations. *Andrzej Adamczyk, Remus Teodorescu, Pedro Rodriguez ~ Aalborg University (Denmark)*

614 Regulated DC Link Voltage with Smaller DC Link Capacitor in Peng's Generalize Theory of Instantaneous Reactive Power *Chuel .Lin ~ NTNU (Norway)*

11   DISTRIBUTION SYSTEM PLANNING AND OPERATION
  (Tuesday. 9:00h to 10:30h. Room EL3)
  Chair: Nicolai Voropai ~ Energy Systems Institute (Russian Federation)

39 Applications of Evolution Programming for Power Distribution System Loss Minimization Under Load Variations *Men, Shen Tsai, Chieh, Cheng Chu ~ National Taipei University of Technology*

302 An Evolutionary Algorithm and Acceleration Approach for Topological Design of Distributed Resource Islands *Julieta Giraldez ~ Colorado School of Mines CSM (USA), Abhishek Jaiantital, Johnathan Walz ~ University of Colorado at Boulder (USA), Siddharth Suryanarayanan ~ Colorado State University (USA), Sririam Sankaranarayanan ~ University of Colorado at Boulder (USA)*

319 Methodology for Planning of Distributed Generation in Weak Grids *Dag Eirik Nordgård, Maren K. Istad, Maria Daniela Catrinu, Tarjei Solvang, Luis Aleixo, Gerd Kjølle ~ SINTEF Energy Research (Norway)*

353 Increasing the Hosting Capacity of Distribution Networks by Curtailment of the Production from Renewable Production *Nicholas Etherden, Math Bollen ~ Lulea University of Technology (Sweden)*

414 Customer-Perspective Approach to Reliability Evaluation of Distributed Generation *Cedomir Zeljkovic, Nikola Rajakovic, Sinisa Zubic ~ University of Banja Luka (Bosnia And Herzegovina)*

551 Fuzzy Multiobjective Approach for Distribution System Reinforcement with Conventional and Renewable DG Placement *Mahmoud Reza Haghifam ~ Tarbiat Modares University (Iran), Arezoo Hadian Tehran ~ Raymand Consulting Engineers (Iran)*

12   WIND ENERGY INTEGRATION (Tuesday. 9:00h to 10:30h. Room EL6)
  Chair: Steve Völler ~ NTNU-SINTEF (Norway)

117 Balancing Wind Power Fluctuations with a Domestic Virtual Power Plant in Europe's First Smart Grid *Bart Roossien ~ Energy research Centre of the Netherlands ECN (Netherlands), Albert Van den Noort ~ Kema (Netherlands), Rene Kamphuis ~ Energy research Centre of the Netherlands ECN (Netherlands), Frits Bliek ~ Kema (Netherlands), Marcel Eijgelaar Essent (Netherlands)*

160 Quantile, Copula Density Forecast for Wind Power Uncertainty Modeling *Ricardo Bessa, Joana Mendes, Vladimiro Miranda ~ Instituto de Engenharia de Sistemas e Computadores do Porto (Portugal), Audun Botterud, Jianhui Wang ~ Argonne National Laboratory (United States)*

307 Unit Commitment and Operating Reserves with Probabilistic Wind Power Forecasts *Audun Botterud, Zhi Zhou, Jianhui Wang ~ Argonne National Laboratory (United States), Jorge Valenzuela ~ Auburn University (United States), Jean Sumaili ~ INESC Porto (Portugal)*

326 Impact of Large Scale Wind Integration on Power System Balancing *Stefan Jaehnert, Tobias Aigner, Gerard Doorman ~ NTNU (Norway), Terje Gjengedal ~ Statnett SF (Norway)*

338 Comparing the Impact of Wind Speed Pattern Variation on Reliability Indices of Power System Containing Different Size of Wind Farms *Mazaher Hagibashi, Akbar Ebrahimi ~ Isfahan University of Tech. (Iran)*

586 Wind capacity credit: should we change the underlying adequacy metric?
Laurent Gilotte ~ EDF R&D (France)

13   **MARKET INTEGRATION OF ELECTRICAL VEHICLES**
(Tuesday. 9:00h to 10:30h. Room EL2)
Chair: Gianluigi Migliavacca ~ RSE S.p.A. (Itlay)

229   Models for the EV Aggregation Agent Business *Ricardo Bessa, Filipe Soares, João Peças Lopes, Manuel Matos ~ Instituto de Engenharia de Sistemas e Computadores do Porto (Portugal)*

224   Optimal Operation of Electric Vehicles in Competitive Electricity Markets and Its Impact on Distribution Power Systems *Weihao Hu, Zhe Chen Aalborg, Birgitte Bak, Jensen ~ Aalborg University (Denmark)*

510   EV integration projects – A comparison of ICT Architectures *Peter Bach Andersen, Rodrigo Garcia Valle ~ Technical University of Denmark (Denmark), Willett Kempton ~ University of Delaware (United States)*

543   Estimation of the Availability of Grid-Connected Electric Vehicles by Non-Homogeneous Semi-Markov Processes *Johannes Rolink, Christian Rehtanz ~ TU Dortmund University (Germany)*

14   **STATE ESTIMATION (Tuesday. 9:00h to 10:30h. Room EL1)**
Chair: Irina Kolosok ~ Energy Systems Institute (Russian Federation)

32   Masked Errors in Power Systems State Estimation and Measurement Gross Errors detection and Identification *Newton Bretas ~ University of São Paulo (Brazil), Arturo Bretas ~ Federal University of Rio Grande do Sul (Brazil), Saulo A. Piereti ~ University of São Paulo (Brazil)*

91   Bad Data Detection at Decomposition of State Estimation Problem *Irina Kolosok, Elena Korkina, Alexei Paltsev Energy Systems Institute (Russian Federation)*

115   Analysis of the Results of On-line Electric Power System State Estimation *Anna Glazunova, Irina Kolosok ~ Energy System Innstitute (Russian Federation)*

124   An Integer-Arithmetic Approach to Observability Analysis in State Estimation *George Korres ~ National Technical University of Athens (Greece)*

210   Influence of UPFC Device on Power System State Estimation *Kazimierz Wilkosz, Tomasz Okon ~ Wroclaw University of Technology (Poland)*

406   Network Configuration and Bus Connectivity Based Iterative Search Method for Optimal Placement of Phasor Measurement Unit *Biman Saha Roy, Avinash Sinha, Ashok Pradhan ~ Indian Institute of Technology Kharagpur (India)*

15   **MODELING OF HYDROPOWER (Tuesday. 9:00h to 10:30h. Room EL4)**
Chair: Gerard Doorman ~ NTNU (Norway)

412   Handling Balancing Power in a Power Market with a Large Share of Hydropower *Geir Warland, Birger Mo, Arild Helseth ~ SINTEF Energy Research (Norway)*

457   On the Gains of Stochastic Bidding Optimization for the Day-Ahead Market for a Hydro Power Producer *Gro Klaeboe ~ NTNU (Norway)*

504   Deterministic Versus Stochastic Dynamic Programming for Long Term Hydropower Scheduling *Monica Zambelli, Secundino Soares ~ University of Campinas (Brazil), Donato da Silva ~ EDP (Brazil)*

568   Unified Modeling of Short, and Long-Term Effects in Hydropower Systems *Hans Ivar Skjelbred ~ NTNU (Norway)*

16   **USE OF EVOLUTIONARY ALGORITHMS IN TRANSMISSION PLANNING**
(Tuesday. 11:00h to 12:30h. Room EL3)
Chair : Christian Rehtanz ~ TU Dortmund University (Germany)

215   Private Investor-Based Transmission Expansion Planning in Deregulated Environment *Amirsaman Arabali, Seyed Hamid Hosseini, Moein Moeini, Aghtaie ~ Sharif University of Technology (Iran)*

266   An application of a Modified Constructive Heuristic Algorithm to Transmission Expansion Planning *Majid Zeinaddini Maymand, Masoud Rashidinejad, Mohsen Mohammadian, Hamid Khorasani ~ Shahid Bahonar Uniersity (Iran), Mohsen Rahmani ~ Paulista State University (Brazil)*

339   An Application of CHA to Concurrent Short-Term Transmission Expansion and Reactive Power Planning *Amin Mahmoudabadi, Masoud Rashidinejad, Mohsen Mohammadian ~ Shahid Bahonar University of Kerman (Iran), Mohsen Ramani ~ Universidade Estadual Paulista (Brazil), Hamid Khorasani ~ Shahid Bahonar University of Kerman (Iran)*

493   Ant Colony based Transmission Expansion Developed for the Nordic Area and Great Britain *Ida Fuchs, Steve Völler ~ NTNU SINTEF (Norway), Terje Gjengedal ~ NTNU Statnett (Norway)*

526   Scenario-Based Analysis of Investment Needs for the German Transmission Grid *Marc Osthues, Johannes Schwippe, Christian Rehtanz, Sebastian Ruthe ~ TU Dortmund University (Germany)*

17   ANCILLARY SERVICES (Tuesday. 11:00h to 12:30h. Room EL6)
       Chair : Thilo Krause ~ ETH Zürich (Switzerland)

79   Ancillary Services – The Current Situation in the Iberian Electricity Market and Future Possible Developments *Joao Saraiva ~ FEUP & INESC Porto (Portugal), Helder Heitor, Nuno Correia, Rui Araujo ~ FEUP (Portugal)*

165   Optimizing the Costs of Reactive Power for the Coordinated Voltage Control Service *Lucian Toma, Mircea Eremia, Constantin Bulac, Ion Tristiu ~ University Politehnica of Bucharest (Romania)*

303   Decentralized Model Predictive Load-Frequency Control for Deregulated Power Systems in a Tough Situation *Arvin Morattab, Qobad Shafiee, Hasan Bevrani ~ University Of Kurdistan (Iran)*

372   Pricing of Reactive Power Support Provided by Distributed Generators in Transmission Systems *Augusto César Rueda Medina, Antonio Padilha Feltrin ~ Universidad Estadual Paulista UNESP (Brazil)*

459   Systematic Design of Market-Based Balancing Arrangements for Deregulated Power Systems: An Asynchronous Solution *Joost Verberk, Ralph Hermans, Paul Van den Bosch, Andrej Joki, Jasper Frunt ~ Eindhoven University of Technology (Netherlands)*

474   An Agent-based Analysis of Main Cross-border Balancing Arrangements *Reinier van der Veen, Alireza Abbasy, Rudi Hakvoort ~ Delft University of Technology (Netherlands)*

18   LOAD FLOW (Tuesday. 11:00h to 12:30h. Room EL2)
       Chair : Manuel Matos ~ INESC Porto (Portugal)

82   Network Reduction Schemes for Transmission Cost Allocation in Multi-Area Systems *Delberis Lima ~ Pontifícia Universidade Católica do Rio de Janeiro (Brazil), Natalia Alguacil ~ Universidad de Castilla (Spain), Omar Yauri, Erica Carlos ~ Pontifícia Universidade Católica do Rio de Janeiro (Brazil)*

195   Research on Nodal Power Injection Mode in ATC Determination *Ming Zhou, Zhongjie Chen, Gengyin Li ~ North China Electric Power University (China)*

341   Power Flow Using Thread Programming *Hasan Da ~ Kadir Has University (Turkey), Gürkan Soykan ~ Istanbul Technical University (Turkey)*

346   Enhancement of Load Flow Computation Methods to Improve the Convergence with Automated Measures Based on Stability Analyses *Johannes Schwippe, Anton Shapovalov, Christian Rehtanz ~ TU Dortmund University (Germany)*

546   Critical Comparison of Robust Load Flow Methods for Ill-conditioned Systems *Jorge F. Gutiérrez ~ Universidad Nacional de Colombia (Colombia), Manfred F, Carlos A. Castro ~ Universidade Estadual de Campinas (Brazil)*

585   Parallel Computing of Sparse Linear Systems using Chio's Condensation Algorithm *Robert Armistead, Fangxing Li ~ The University of Tennessee (United States)*

19   LOAD FORECASTING (Tuesday. 11:00h to 12:30h. Room EL1)
       Chair : Roberto Napoli ~ Politecnico di Torino (Italy)

59   Preprocessing Data for Short-Term Load Forecasting with a General Regression Neural Network and a Moving Average Filter *Kenji Nose, Filho, Anna Diva Plasencia Lotufo, Carlos Roberto Minussi ~ São Paulo State University (Brazil)*

86   Holidays Short Term Load Forecasting using Fuzzy Improved Similar Day Method *Amir Moshari, Akbar Ebrahimi ~ Isfahan University of Technology (Iran)*

116   Residuals Modeling with Wind Data to Improve Short-Term Load Forecast *Saulo Trento, Bruno Delenne, Christophe Crocombette ~ RTE (France)*

178   Quarter-hourly Ahead Load Forecasting for Microgrid Energy Management Systems *Peng Huat Cheah, Hoay Beng Gooi, Fui Lan Soo ~ Nanyang Technological University (Singapore)*

20   SUBSTATIONS (Tuesday. 11:00h to 12:30h. Room EL4)
       Chair : Arne Nysveen ~ NTNU (Norway)

106   Measurement of High Voltage Substation Generated Electromagnetic Field *Yan Ma, George Karady ~ Arizona State University (United States), James Hunt ~ Salt River Project (United States)*

171   Estimation of Physical Transformer Parameters from Frequency Response Analysis *Steven Mitchell, James Welsh ~ University of New Castell (Australia)*

189   On-site Voltage Measurement with Capacitive Sensors on High Voltage Systems *Lei Wu, Peter Wouters, Bert van Heesch, Fred Steennis ~ Eindhoven University of Technology (Netherlands)*

227   Development of IEC 61850 based IED integration engineering tools (IEDIETs) with IEC 61850 Schema Library for Intelligent Electronic Device *Yong, Hak Kim ~ Kepco Research Institute (Republic of Korea)*

320   Long-term Impact Evaluation of Maintenance Activities on MV/LV Substations *Jochen Bühler, Gerd Balzer ~ Technische Universität Darmstadt (Germany)*

PANEL SESSION III
The Future Electricity Grid of Europe (Tuesday. 14:00h to 17:30h. Room EL5)
Chair: Bjørn H. Bakken (SINTEF Energy Research, Norway)

Theme: Scenarios and Roadmaps for Renewable Energy in Europe (14:00-15:20)
186   Scenarios for Integration of Large Shares of Renewable Energy in Europe up to 2050
        Ingeborg Graabak, Bjorn Bakken ~ SINTEF Energy Research (Norway)
295   The impact of Large-scale Renewable Integration on Europe's Energy Corridors
        Ozge Ozdemir, Karina Veum, Jeroen de Joode ~ Energy Research Center of the Netherlands (Netherlands), Gianluigi Migliavacca, Andrea Grassi ~ Ricerca Sistema Energetico (Italy)
170   Advanced Transmission Technologies in Europe: a Roadmap Towards the Smart Grid Evolution *Angelo L'abbate, Gianluigi Migliavacca ~ RSE (Italy), Tiziana Pagano, Athanase Vaféas ~ TECHNOFI (France)*
Theme: Advanced Transmission Planning Methodologies (15:50-17:30)
102   The REALISEGRID Cost-Benefit Methodology to Rank Pan-European Infrastructure Investments
        Gianluigi Migliavacca, Angelo L'Abbate, Ilaria Losa ~ RSE SpA (Italy), Enrico Maria Carlini, Alessio Sallati ~ TERNA S.p.A. (Italy)
297   Methodology for Assessing Transmission Investments in Deregulated Electricity Markets *Iraklis Skoteinos, George Orfanos, Pavlos Georgilakis, Nikos Hatziargyriou ~ National Technical University of Athens (Greece)*
402   Modeling Interconnected National Energy Systems Using an Energy Hub
        Approach *Thilo Krause, Florian Kienzle, Göran Andersson ~ ETH Zürich (Switzerland), Yang Liu ~ Bombardier Transportation Switzerland (Switzerland)*
516   Identification of Environmentally Relevant Network Hotspots *Hendrik Natemeyer, Martin Scheufen, Sebastian Winter, Thomas Dederichs, Armin Schnettler ~ RWTH (Germany)*

21   INTEGRATION OF DISTRIBUTED GENERATION
        (Tuesday. 14:00h to 15:30h. Room EL3)
        Chair: Luigi Piegari ~ Politechnico di Milano (Italy)

66   A Hybrid Approach to Balance the Variability and Intermittency of Renewable Generation *Gabriela Hug ~ Carnegie Mellon University (United States)*
345   Integration of Distributed Energy Resources in the Grid by Applying International Standards to the Inverter as a Multifunctional Grid Interface *Samer Jaloudi, Egon Ortjohann, Andreas Schmelter, Worpong Sinsukthavorn, Paramit Wirasanti ~ South Westphalia University of Applied Sciences (Germany)*
369   A Study on Voltage Fluctuations Induced by Eletromechanical Oscillations in Distributed Generation Systems with Power Factor Control *Tatiane Cristina da Costa Fernandes, Rodrigo Hartstein Salim, Rodrigo Andrade Ramos ~ University of Sao Paulo at Sao Carlos (Brazil)*
386   A Fuzzy Logic Pitch Angle Controller for Enhanced Control Performances *M. A. Chowdhury, N. Hosseinzadeh, W. Shen ~ Swinburne University of Technolog (Australia)*
441   Possibilities for Temporary Autonomous Operation of a MV grid with CHP-plants *Panagiotis Karaliolios, Yin Sun, Johanes G. Slootweg, Wil L. Kling ~ Technical University of Eindhoven (Netherlands)*
550   Energy and Carbon Audit on Micro Combined Heat and Power Generators *Evangelos Gazis, Gareth Harrison ~ University of Edinburgh (United Kingdom)*

22   WIND TURBINE CONTROL (Tuesday. 14:00h to 15:30h. Room EL6)
        Chair: Francisco Gonzalez-longatt ~ The University of Manchester (UK)

97   Control of a Grid-Connected Double-Fed Induction Generator Wind Turbine *Rabah zaimeddine, Tore Undeland ~ Norwegian University of Science and Technology (Norway)*

232   Control of Direct Driven Wind Turbines Connected to a DC-Collection Grid within the Wind Farms *Sverre Skalleberg Gjerde, Tore Marvin Undealnd ~ Norwegian University of Science and Technology (Norway)*

236   Optimal Control of a Reduced Matrix Converter for Off-Shore Wind Parks *Alejandro Garces Ruiz, Marta Molinas ~ Norwegian University of Science and Technology (Norway)*

317   Dynamic Control of Series Connected Wind Turbine Generating System *Shoji Nishikata, Fujio Tatsuta ~ Tokyo Denki University (Japan)*

578   A Simplified Model for Dynamic Behavior of Permanent Magnet Synchronous Generator for Direct Drive Wind Turbines *Francisco Gonzalez-Longatt, Peter Wall, Vladimir Terzija ~ The University of Manchester (UK)*

23   **HVDC (Tuesday. 14:00h to 15:30h. Room EL2)**
        Chair: Sebastien Mariethoz ~ ETH Zurich (Switzerland)

43   Influence of Inductive Filtering Method on Harmonic Transfer Characteristic of HVDC Transmission System *Yong Li, Longfu Luo ~ Hunan University (China), Rehtanz Christian, Rüberg Sven, Dechang Yang ~ TU Dortmund University (Germany)*

65   Further Development of HVDC Control *Pakorn Thepparat ~ Siemens AG (Germany), Dusan Povh ~ Consultant (Germany), Dirk Westermann ~ Ilmenau University of Technology (Germany)*

147   Damping of Electromechanical Oscillations Using WAMS Based Supplementary LQG Controller Installed at VSC based HVDC Line *Robin Preece, A.M. Almutairi, J.v. Milanovic ~ The University of Manchester (UK)*

417   A Direct Power Control for a Hybrid HVDC transmission systems *Raymundo E. Torres Olguin, Marta Molinas, Tore Undeland ~ NTNU (Norway)*

607   VSC MTDC Systems with a Distributed DC Voltage Control - A Power Flow Approach *Jef Beerten, Dirk Van Hertem, Ronnie Belmans ~ Katholieke Universiteit Leuven (Belgium)*

611   Grid stabilization through VSC-HVDC using wide area measurements
        Alexander Fuchs, Sebastien Mariethoz ~ ETH (Switzerland), Mats Larsson ~ ABB Corp.Research (Switzerland), Manfred Morari ~ ETH (Switzerland)

24   **PROTECTION SYSTEMS I (Tuesday. 14:00h to 15:30h. Room EL1)**
        Chair: Istvan Erlich ~ University of Duisburg-Essen (Germany)

92   Transient Overvoltage Protection for UPS Applications *Lorenzo Giuntini ~ GE Consumer & Industrial SA (Switzerland)*

132   Overloading and Inadequate Protection in Future Low Voltage Distribution Networks *Petr Kadurek, J. F. G. Cobben, W.L. Kling ~ Eindhoven University of Technology (Netherlands)*

144   Optimization of Distance Protection Algorithm for Series-Compensated Transmission Line *Eugeniusz Rosolowski, Jan Izykowski, Piotr Pierz ~ Wroclaw University of Technology (Poland), Murari Saha ~ ABB AB (Sweden), Przemyslaw Balcerek ~ ABB Corporate Research Center Krakow (Poland)*

157   Fuzzy Adaptive Transmission Line Differential Protection with Improved Stabilization for Near-by Transformer Inrush Cases *Waldemar Rebizant, Krzysztof Solak ~ Wroclaw University of Technology (Poland), Andrew Klimek ~ Powertech Labs Inc. (Canada)*

222   Ultra Fast Pilot Protection of a Looped Distribution System *Arvind Thirumalai, Xing Liu, George Karady ~ Arizona State University (United States)*

25   **ENERGY STORAGE (Tuesday. 14:00h to 15:30h. Room EL4)**
        Chair: Bruno Meyer ~ RTE (France)

100   Multicriteria Decision Aid for Planning Energy Storage and Sustainable Mobility *Miguel Moreira da Silva ~ INESC (Portugal), João Abel Peças Lopes, Manuel António Matos ~ University of Porto (Portugal)*

142   Efficiency Analysis of Incentive Mechanisms for Energy Storage Integration into Electrical Power Systems *Andrei Nekrassov, Valerie Floridia T, Bruno Prestat ~ EDF R&D (France)*

238   Energy Efficiency Analysis of Industrial Compressed Air Systems *Alin Amaral Martins, Ciciane Chiovatto, Marcos Vínicius Silva, Décio Bispo, Sérgio Ferreira de Paula e Silva ~ Federal University of Uberlândia (Brazil)*

321   Renewable Hybrid System with Battery Storage for Safe Loads Supply *Luminita Barote, Corneliu Marinescu ~ Transilvania University of Brasov (Romania)*

452   A Control Strategy for Optimizing the Power Flows Supplied by Two Different Storage Units *Samuele Grillo, Vincenzo Musolino, Luigi Piegari, Enrico Tironi ~ Politecnico di Milano (Italy)*

533   Compressed Air Energy Storage Multi-Stream Value Assessment on the French Energy Market *Xian He, Raphael Lecomte, Andrei Nekrassov ~ Electricité de France (France), Erik Delarue ~ Univesity of Leuven (Belgium), Eric Mercier Electricité de France (France)*

26   **WIND ENERGY STABILITY (Tuesday. 16:00h to 17:30h. Room EL3)**
       Chair: Thierry Van Cutsem ~ University of Liege and FNRS (Belgium)

87   Transient Stability Enhancement of Variable Speed Permanent Magnet Wind Generator using Adaptive PI, Fuzzy Controller *Marwan Rosyadi ~ Kitami Institute of Technology (Japan), Muyeen S. M. ~ The Petroleum Institute Abu Dhabi (United Arab Emirates), Rion Takahashi, Junji Tamura ~ Kitami Institute of Technology (Japan)*

180   Impact of Grid-Connected Doubly-Fed Induction Wind Generators on Voltage Stability *Ce Zheng, Mladen Kezunovic ~ Texas A&M University (United States)*

316   Full Converter Wind Generator Modelling for Transient Stability Studies *Sotirios Nanou, Georgios Tsourakis, Costas Vournas ~ NTUA (Greece)*

460   Grid Frequency Control Strategies For HVDC Connected Windfarms With Variable Speed Wind Turbines *Temesgen M. Haileselassie, Raymundo E. Torres, Til Kristian Vrana, Kjetil Uhlen, Tore Undeland ~ NTNU (Norway)*

472   Frequency Domain Investigation of Switching Transients in Offshore Wind Farms *Amir Hayati Soloot, Hans Kristian Hoidalen ~ NTNU (Norway), Bjorn Gustavsen ~ SINTEF Energy Research (Norway),*

575   Centralized Coordinated Control of VSC-HVDC Link and DFIGs in Very Large Wind Power Plants *Camillo Genesi, Francesco Careri, Paolo Marannino, Mario Montagna, Stefano Rossi ~ University of Pavia (Italy)*

27   **FACTS I (Tuesday. 16:00h to 17:30h. Room EL6)**
       Chair: Junichi Itoh ~ Nagaoka University of Technology (Japan)

44   Coordinated Wide-Area Damping Control of HVDC and FACTS for Stability Enhancement of Interconnected Systems *Yong Li, Rehtanz Christian, Dechang Yang, Sven Rüberg ~ TU Dortmund University (Germany), Longfu Luo ~ Hunan University (China)*

247   A High Energy Saving Interface System Using a Matrix Converter between a Power Grid and an Engine Generator for BDF *Jun, ichi Itoh, Hiroki Takahashi, Junnosuke Haruna ~ Nagaoka University of Technology (Japan),*

272   SVC PLUS: A MMC STATCOM for Network and Grid Access Applications *Marcos Pereira, Dietmar Retzmann, Juergen Lottes, Markus Wiesinger, Gordon Wong ~ Siemens (Germany)*

476   Reactive Power Compensation Capability of a Matrix Converter-based FACTS Device *Nathalie Holtsmark, Marta Molinas ~ NTNU (Norway),*

535   Hardware Model of a Dynamic Power Flow Controller *Ulf Häger, Kay Görner, Christian Rehtanz ~ TU Dortmund University (Germany)*

28   **MICRO-GRIDS I (Tuesday. 16:00h to 17:30h. Room EL2)**
       Chair: Julija Matevosyan ~ Sinclair Knight Merz (UK)

294   Control of a Micro Grid Supplied by Renewable Energy Sources and Storage Batteries *Emmanouil Bakirtzis, Charis Demoulias ~ Aristotle University of Thessaloniki (Greece)*

276   Robust Frequency Control for a Wind/Hydro/Cogeneration Autonomous Microgrid *Corneliu Marinescu, Ioan Serban ~ Transilvania University of Brasov (Romania),*

443   Neural Network Based Modeling of Metal-hydride Bed Storages for Small Self-Sustaining Energy Supply Systems *Maike Stark, Gerhard Krost ~ University of Duisburg Essen (Germany), Dorothee Lemken, Bernd Oberschachtsiek ~ Centre for Fuel Cell Technology (Germany)*

555   Optimal Unit-Sizing of a Wind-Hydrogen-Diesel Microgrid System for a Remote Community *Mehdi Vafaei, Mehrdad Kazerani ~ University of Waterloo (Canada)*

29   **PROTECTION SYSTEMS II (Tuesday. 16:00h to 17:30h. Room EL1)**
Chair: Gerd Kjølle ~ SINTEF Energy Research (Norway)

270   Test and Evaluation System For Multi-Protocol Sampled Value Protection Schemes *David Ingram, Duncan Campbell, Pascal Schaub Powerlink, Gerard Ledwich ~ Queensland University of Technology (Australia)*

286   Climate Conditions Impact on the Permissible Load Current of Transmission Line *Antans Sauhats, Edvins Vanzovichs, Svetlana Berjozkina ~ Riga Technical University (Latvia)*

300   Lightning Protection Design Using Information Visualization and Virtual Reality *Gerson Flavio Mendes de Lima ~ PROENGTELECOM (Brazil), Decio Bispo, Marcos Vinicuis Silva, Edgard Afonso Lamounier Junior, Alexandre Cardoso ~ Federal University of Uberlândia (Brazil)*

363   A Circuit Breaker Reliability Model for Restoration Planning Considering Risk of Communication Outage *Fredrik Edström, Lennart Söder ~ Royal Institute of Technology KTH (Sweden)*

467   MV Distribution Protection Schemes to Reduce Customers and DGs Interruptions *Cristian Jecu, Bertrand Raison, Raphael Caire ~ Grenoble Electrical Engineering Laboratory (France), Olivier Chilard, Sebastien Grenard ~ Électricité de France Recherche et Développement (France)*

30   **SYSTEM RELIABLITY (Tuesday. 16:00h to 17:30h. Room EL4)**
Chair: Liisa Haarla ~ Aalto University (Finland)

403   A New Probabilistic Load Flow Method For Systems with Wind Penetration *Oluwabukola A. Oke, David W.P. Thomas, Greg M. Asher ~ University of Nottingham (United Kingdom)*

455   Modeling Framework for Analysis of Control System Reliability in Active Distribution Networks *Johan König, Per Närman, Ulrik Franke, Lars Nordström ~ Royal Institute of Technology (Sweden)*

564   An Approach to Measure Criticality of Generation Buses from Perspective of Load Points *Mahmud Fotuhi, Firuzabad, Ali Akhavein ~ Islamic Azad university (Iran)*

567   Active Distribution Network Reliability Assessment with a Pseudo Sequential Monte Carlo Method *Gianni Celli, Emilio Ghiani, Gian Giuseppe Soma, Fabrizio Pilo ~ University of Cagliari (Italy)*

PANEL SESSION IV
North Sea Grid (Wednesday. 9:00h to 12:30h. Room EL5)
Chair: Olimpo Anaya-Lara (Strathclyde University, UK/NTNU, Norway)
Theme: Scenarios and roadmaps for renewable energy in Europe (09:00-10:35)
Keynote Speaker – Vision for Offshore Networks Development
Kjell Eriksson, Director for the Energy Program at DNV Research and Innovation

609   Voltage and Reactive Power Control in WPPs: Lessons Learned Towards the Development of Offshore Grid Codes. *Gustavo QuiñonezVarela ~ Acciona Energia (Spain)*

458   Impact of System Power Losses on The Value of an Offshore Grid for North Sea Offshore Wind *Hossein Farahmand ~ NTNU (Norway), Daniel Huertas, Hernando, Leif Warland, Magnus Korpas, Harald G. Svendsen ~ SINTEF Energy Research (Norway)*

Theme: DC Connections (10:55-12:30)

451   Availability Evaluation of Multi-Terminal DC Networks with DC Circuit Breakers *Christopher Johan Greiner, Tore Langeland, Johan Solvik ~ Det Norske Veritas (Norway), Øyvind August Rui ~ Statnett (Norway)*

465   Connection Scheme for North Sea Offshore Wind Integration to UK and Norway: Power Balancing and Transient Stability Analysis *Temesgen M. Haileselassie, Kjetil Uhlen ~ NTNU (Norway), John Olav Tande ~ SINTEF Energy Research (Norway), Olimpo Anaya Lara ~ University of Strathclyde (United Kingdom)*

181   Design Operation and Availability Analysis of a Multi-Terminal HVDC Grid – a Case Study of a Possible Offshore Grid in the Norwegian Sea *Øyvind Rui ~ Statnett SF (Norway), Carl Öhlén ~ STRI (Sweden), Johan Solvik ~ Det Norske Veritas (Norway), Jorgen Thon, Knut Karijord ~ Statnett SF (Norway)*

POSTER SESSION II
POWER SYSTEM PLANNING AND OPERATION, FACTS, HVDC, TRANSIENTS, INSULATION, PROTECTION AND STATE ESTIMATION
 (Wednesday. 9:00h to 11:00h. Hall G100) *Posters may be left in place until 12:30*

30   Energy Loss Reduction by an Improved Reconfiguration Method with Considering Different Load Patterns *Vahid Farahani, Seyed Hossein Hesamdin Sadeghi, Hossein Askarian ~ Amirkabir University of Technology (Iran)*

31   Buck-Boost Converter with High Voltage Gain Based on a Switched Coupled-inductor Cell *Yefim Berkovich, Boris Axelrod ~ Holon Institute of Technology (Israel)*

38   Monitoring System for Hydroelectric Reservoir Using High Resolution Images-Remote sensing *Mauricio Jardini ~ Fundação para o desenvolvimento tecnológico da engenharia (Brazil), José Jardini ~ University of São Paulo (Brazil) Luiz Silva, Julio Pinfare ~ Companhia Energética de São Paulo (Brazil) José Quintanilha ~ University of São Paulo (Brazil)*

42   Optimal Operation of Biomass Combined Heat and Power in Spot Market *Marouf Pirouti, Jianzhong Wu, Audrius Bagdanavicius, Janaka Ekanayake, Nick Jenkins ~ Cardiff University (United Kingdom)*

62   Generation & Transmission Adequacy of Large Interconnected Power Systems: a Contribution to the Renewal of Monte-Carlo Approaches *Michel Doque, Claire F., Jean, Marc R ~ RTE (France)*

101   Overhead conductor monitoring system for the evaluation of the low sag behavior. *Igor Albizu, Elvira Fernandez, A. Javier Mazon, Miren Bedialauneta, Koldo Sagastabeitia ~ University of the Basque Country UPV/EHU (Spain)*

103   Hardware and Software Architecture for Overhead Line Rating Monitoring *Igor Albizu, Elvira Fernandez, A. Javier Mazon, Janire Bengoechea, Esther Torres ~ University of the Basque Country UPV/EHU (Spain)*

135   An efficient Method for Distribution Systems Reconfiguration and Capacitor Placement Using a Chu-Beasley Based Genetic Algorithm *Marcos Antonio Nascimento Guimaraes, Carlos Alberto Castro ~ University of Campinas (Brazil)*

137   Parameter Estimation in Degradation Modelling: A Case Study Using Condition Monitoring Data from Wood Pole Inspections *Thomas Welte, Håkon Kile ~ SINTEF Energy Research (Norway)*

161   Real Time System to Monitor SF6 Leakage and Quality of Gas in GIS Substation *Luciano Ogiboski, José Guilherme Rodrigues Filho ~ ITAIPU Hydroelectric Power Station (Brazil), Anderson Cunha ~ AES Eletropaulo (Brazil), Carlos Ossamu Kajikawa, Luiz Carlos Magrini ~ Foundation for the Technological Development of Engineering (Brazil)*

173   The Measurement of the Angular Distribution Pattern of the Tri-Axial Magnetic Probe for the Partial Discharge detection System by Using ADC and FPGA *Ahmad Basri A. Ghani ~ TNB Research Sdn. Bhd. (Malaysia) Agileswari K. Ramasamy, Chandan K. Chakrabarty ~ Universiti Tenaga Nasional (Malaysia)*

188   Optimum Design of PID Controller in AVR System Using Intelligent Methods *Nazli Madinehi, Kiarash Shaloudegi, Mehrdad Abedi, Hossein Askarian Abyaneh ~ Amirkabir University of Technology (Iran)*

190   A Phasor Estimation Algorithm During CT Saturation *Dong, Gyu LeeMyongji ~ Sang Hee Kang Myongji University (Republic of Korea)*

199   Profit-Based Head, Dependent Short, Term Hydro Scheduling considering Risk Constraints *Hugo Pousinho, Victor Mendes ~ Instituto Superior de Engenharia de Lisboa (Portugal) João Catalão ~ University of Beira Interior (Portugal)*

231   The Method of the Additional Earthing of the Affected Phase During an Earth Fault and Its Influence on MV Network Safety *David Topolánek, Jaroslava Orságová, Jaromír Dvořák, Petr Toman ~ Brno University of Technology (Czech Republic).*

241   Dynamic Simulation of a SSSC for Power Flow Control During Transmission Network Contingencies *Aitor Hernandez ~ Ingeteam T&D (Spain) Pablo Eguia, Esther Torres ~ University of the Basque Country (Spain) Miguel Angel Rodriguez ~ Ingeteam T&D (Spain)*

285   Risk and Vulnerability Analysis of Power Systems Including Extraordinary Events *Oddbjørn Gjerde Gerd Hovin Kjølle ~ SINTEF Energy Research (Norway) Nina Detlefsen, Geir Brønmo ~ Energinet.dk (Denmark)*

292   Fault Location in Combined Transmission Lines Using PMUs for Recloser Control *Pablo Eguia, Iñigo Martin, Inmaculada Zamora ~ University of the Basque Country (Spain) Roberto Cimadevilla ~ ZIV PC (Spain)*

308   Design of Damping Controllers of FACTS Devices with considering Time-delay of Wide-area Signals *Fang Liu, Ryuichi Yokoyama ~ Waseda University (Japan) Yicheng Zhou ~ Tepco Systems Corporation (Japan) Min Wu ~ Central South University (China)*

318   Enhanced Differential Protection Algorithm for Tapped Transmission Lines *Daniel Bejmert, Waldemar Rebizant, Andrzej Wiszniewski ~ Wroclaw University of Technology (Poland)*

343   Evaluation of Dielectric Strength of Interfaces using Statistical Analysis of Contact between Surfaces *Majid Hasheminezhad, Arne Nysveen, Erling Ildstad ~ Norwegian University of Science and Technology (Norway)*

344   Integrating Relevant Aspects of MOEAs to Solve Loss Reduction Problem in Large-scale Distribution Systems *Danilo Sipoli Sanches, Moussa Reda Mansour, João Bosco Augusto London Jr., Alexandre Cláudio Botazzo Delbem, Augusto Cesar dos Santos ~ Sao Pablo University (Brazil) ~ Federal Institute of Education, Science and Technology of Tocantins (Brazil)*

370   Intelligent Distributed Temperature Monitoring System for Underground Distribution Cables *Juyong kim, Jintae cho, wookyu chae, Ikeun song ~ KEPCO Research Institute (Republic of Korea)*

426   Discussion on Cascade-Connected Multi-Terminal UHVDC System And Its Application *Xiaojiang Guo ~ China Electric Powre Research Institute (China)*

439   Game Theoretical Approach for Maintenance Planning *Ingo Jeromin, Gerd Balzer ~ Technische Universität Darmstadt (Germany)*

445   Determination of Scheduled Maintenance Interval in the Protection of Transmission Lines Considering the Penalties Associated to Transmission Equipment Unavailability *Felipe Pereira, Ricardo Prada ~ Pontifical Catholic University of Rio de Janeiro (Brazil), Albert de Melo ~ Brazilian Electric Energy Research Center (Brazil), Anselmo Rodrigues, Maria da Guia da Silva ~ Federal University of Maranhão (Brazil)*

462   Power Flow Analysis of Multiterminal HVDC Networks. *Temesgen M. Haileselassie, Kjetil Uhlen ~ Norwegian University of Science and Technology (Norway)*

464   Iterative Load Re-Allocation for Distribution State Estimation *Gustavo Valverde, Andrija Saric ~ Cacak College of Engineering (Serbia) Vladimir Terzija ~ The University of Manchester (UK)*

511   Application of a D-STATCOM to Mitigate Arc Furnaces Power Quality Problems *Alfonso Alzate, Andres Escobar, James Marulanda ~ Universidad Tecnologica de Pereira (Colombia).*

539   Probabilistic Risk Assessment using Modal Analysis *Victoria Matsunaga, Carolina Affonso, Rodrigo Oliveira ~ Federal University of Pará (Brazil)*

593   A Comparison of Losses in 3-phase Dry Transformer Under Linear and Non-linear Loads using Finite Element Method with Experimental Results *Reza Karimpour Moziraji, Iman Ahmadi Joneidi, Amir Abas Shayegani Akmal, Hossein Mohseni, Mehdi Khanali ~ University of Tehran (Iran)*

605   Comparison between the Cross-Entropy for and Genetic Algorithm for PSS Location and Tuning *Karim Sebaa ~ University of Medea (Algeria) Yong Li, Christian Rehtanz ~ University Dortmund (Germany)*

617   Determination of Dissipation Factor of the Model Transformer at 0.1 Hz *Emel Onal ~ Istanbul Technical University (Turkey)*

31   **PLANNING AND OPERATION (Wednesday. 9:00h to 10:30h . Room EL3)**
       Chair: Chair: Stefan Jaehnert ~ NTNU (Norway)

200   Evaluation of the New Zealand Electricity Generation Expansion in Meeting Dry Year Demands *Thahirah Syed Jalal, Pat Bodger ~ University of Canterbury (New Zealand)*

267   An Approach for Managing Switchings of Controllable Devices in the Benelux to Integrate More Renewable Sources *Priyanko Guha Thakurta, Dirk Van Hertem, Ronnie Belmans ~ Katholieke Universiteit Leuven (Belgium)*

385   Transmission Network Augmentation Planning Considering the Impact of Corona Power Loss *Ali Parizad ~ Mapna Electrical Control Company (Iran), Shahab Dehghan, Hedayat Saboori, Ahad Kazemi ~ Iran University of Science and Technology (Iran)*

447 Situation Adapted Display of Information for Operating Very Large Interconnected Grids *Robert Hoffmann ~ University Duisburg Essen (Germany), Florin Capitanescu ~ University of Liège (Belgium), Francois Promel ~ Tractebel Engineering GDF SUEZ (Belgium), Gerhard Krost ~ University Duisburg Essen (Germany), Louis Wehenkel ~ University of Liège (Belgium)*

495 Factorial Analysis for Modeling Large-Scale Grid Integration of Renewable Energy Sources *Doug Halamay, Ted Brekken ~ Oregon State University (United States)*

615 Generation Expansion Planning in the Age of Green Economy *Stefano Rossi, University of Pavia (Italy), Francesco Careri, Camillo Genesi, Paolo Marannino, Mario Montagna ~ University of Pavia (Italy)*

616 Modeling Optimal Redispatch for the European Transmission Grid *Christian Linnemann, David Echternacht, Christopher Breuer, Albert Moser ~ RWTH Aachen (Germany),*

32 PHOTOVOLTAICS I (Wednesday. 9:00h to 10:30h. Room EL6)
Chair: Fritz Schimpf ~ NTNU (Norway)

177 Silicon Carbide Power Transistors for Photovoltaic Applications *Subhadra Tiwari, Ibrahim Abuishmais, Tore M. Undeland ~ NTNU (Norway), Boysen Rostoft Kjetil ~ Eltek Valere Renewable Energy (Norway),*

315 Behaviour of Grid-Connected Photovoltaic Inverters in Islanding Operation *Tuan Tran, Quoc, Thi Minh Chau Le, Christophe Kieny ~ IDEA (France), Seddik Bacha ~ G2Elab (France),*

337 Classification Technique to Quantify the Significance of Partly Cloudy Conditions for Reserve Requirements Due to PV Plants *Michiel Nijhuis, Barry Rawn, Madeleine Gibescu ~ Delft University of Technology (Netherlands)*

421 Grid Integration Aspects of Large Solar PV Installations: LVRT Capability and Reactive power/Voltage support Requirements *Antonios Marinopoulos ~ ABB AB Corporate Research (Sweden), Fabio Papandrea ~ ISOFOTÓN S.A., Milan Italy (Spain), Muhamad Reza, Staffan Norrga ~ ABB AB Corporate Research (Sweden), Roberto Napoli ~ Politecnico di Torino (Italy)*

491 Implementation of a Novel Fuzzy-Logic Based MPPT for Grid-Connected Photovoltaic Generation System *Anna Pinnarelli, Daniele Menniti, Giovanni Brusco ~ University of Calabria (Italy)*

33 TRANSIENTS (Wednesday. 9:00h to 10:30h. Room EL2)
Chair: Alberto Borghetti ~ University of Bologna (Italy)

72 Rational Approximation for the Time Domain Implementation of Cooray-Rubinstein Formula *Federico Delfino, Paola Girdinio, Renato Procopio, Mansueto Rossi ~ University of Genoa (Italy), Farhad Rachidi ~ Swiss Federal Institute of Technology (Switzerland)*

244 Capacitances Calculation Using FEM for Transient Overvoltage and Common Mode Currents Prediction in Inverter-Driven Induction Motors *Camilla de Sousa Chaves, José Roberto Camacho, Hélder de Paula, Marcelo Lynce Ribeiro Chaves, Elise Saraiva ~ Universidade Federal de Uberlândia (Brazil)*

355 Comparative Study of the Effect of Various Shields on Lightning Electric Field in Power Transformer Windings *Mohammad Reza Meshkatodini, Ali Shahmohammadi, Mehrdad Majidi, Mehdi Karami ~ Power and Water University of Technology (Iran)*

382 Application of a Hybrid Electromagnetic Circuit Method to Lightning Surge Analysis *Peerawut Yutthagowith ~ King Mongkut's Institute of Technology Ladkrabang (Thailand)*

602 Mathematical Model of Steam Power Plant for Voltage and Reactive Power Control *Selma Awadallah. ~ The University of Manchester (UK), Jasna Dragosavac, Zarko Janda ~ Electrical Engineering Institute Nikola Tesla (Serbia), J.V. Milanovic ~ The University of Manchester (UK)*

612 Interaction Between Indirect Lightning and Grounding Systems for the Calculation of Overvoltages in Overhead Distribution Lines *Fabio Napolitano, Mario Paolone, Alberto Borghetti, Carlo Alberto Nucci ~ University of Bologna (Italy), Farhad Rachidi Swiss ~ Federal Institute of Technology (Switzerland)*

34 INTEGRATION OF DISTRIBUTED GENERATION - CASES AND EXPERIENCES (Wednesday. 9:00h to 10:30h. Room EL1)
Chair: Nikos Hatziargyriou ~ NTUA (Greece)

90 Regulation and Trends in Electric Power Industry: Renewable Generation in Germany and Switzerland *Mikhail Vasilyev ~ Energy Systems Institute (Russian Federation)*

228 Evaluation of the Impact of RES Integration on the Greek Electricity Market by Mid-term Simulation *Christos Simoglou, Pandelis Biskas, Christoforos Zoumas Hellenic ~ TSO (Greece), Anastasios Bakirtzis ~ Aristotle University of Thessaloniki (Greece)*

342 Impact of Intermittent Generation on the Expansion of the Spanish Power System Interconnection Capacity *Camila Fernandes, Pablo Frías ~ Universidad Pontificia Comillas (Spain)*

544 Methodology for Assessing the Feasibility of Interconnecting Distributed Generation in the Colombian Distribution Systems *Luis Ernesto Luna Ramírez, Estrella Esperanza Parra López ~ Universidad Nacional de Colombia (Colombia)*

35   FACTS II (Wednesday. 11:00h to 12:30h. Room EL3)
**   Chair: Sverre Gjerde ~ NTNU (Norway)**

226 A Non-linear control of BTB STATCOM system *Young Ok Lee, Hyun Jae Kang, Youngseong Han ~ Hyosung Cooperation (Rep. Korea), Chung Choo Chung ~ Hanyang University (Rep. Korea)*

383 Improvement of Power Systems Security Margins by Using FACTS Devices *Florin Ciausiu ~ Tractebel Engineering Romania (Romania), Mircea Eremia ~ University Politehnica Bucharest (Romania)*

409 Optimal Placement of FACTS to Mitigate Congestions and Inter-Area Oscillations *Alberto Berizzi, Cristian Bovo, Valentin Ilea ~ University Politecnico di Milano (Italy)*

424 Valuing the Dynamic Power Flow Control of FACTS Devices Under Uncertainties *Gerardo Blanco, ~ Universidad Nacional de Asunción (Paraguay), Ulf Häger ~ TU Dortmund (Germany), Fernando Olsina ~ Universidad Nacional de San Juan (Argentina), Christian Rehtanz ~ TU Dortmund (Germany)*

610 Transient Analysis of SVC Response in the South Region of the Libyan Transmission Network *Goran Vukojevic, Andrejs Svalovs ~ Parsons Brinckerhoff (UK), Abdelmonem Omar Dagrom Ali, Khairi Ali Salem Ghadem ~ General Electricity Company of Libya (Libyan Arab Jamahiriya)*

36   WIND ENERGY AND POWER SYSTEM PLANNING
**   (Wednesday. 11:00h to 12:30h. Room EL6)**
**   Chair: Lina Bertling ~ Chalmers University of Technology (Sweden)**

196 Assessing Wind Power and Electrical Power Systems Interdependency: a Methodological Approach *Claudia Battistelli, Marco Uccelletti ~ Federico II University of Naples (Italy)*

271 Generation Portfolio Analysis for Low-Carbon Future Electricity Industries with High Wind Power Penetrations *Peerapat Vithayasricharoen, Iain ~ MacGill University of New South Wales (Australia)*

364 Aggregated Models of Wind Farms and Active Distribution Network Cells for Power System Studies – Literature Overview *Julija Matevosyan ~ Sinclair Knight Merz (UK), Samila Mat Zali ~ The University of Manchester (UK), Sergio Martinez Villanueva ~ Red Eléctrica de España (Spain), Jovica Milanovic ~ The University of Manchester (UK), Sasa Djokic ~ University of Edinburgh (UK)*

411 Equivalent Power Curve Model of a Wind Farm Based on Field Measurement Data *Barry Hayes, Irinel, Sorin Ilie ~ University of Edinburgh (UK), Antonios Porpodas ~ Community Windpower Limited (UK), Sasa Djokic ~ University of Edinburgh (UK), Gianfranco Chicco ~ Politecnico di Torino (Italy)*

420 Investigating the Impact of Wake Effect on Wind Farm Aggregation *Antonios Marinopoulos, Jiuping Pan, Mahyar Zarghami, Muhamad Reza, Kalid Yunus ~ ABB Corporate Research (Sweden, USA)*

37   PHOTOVOLTAICS ANS MICROGRIDS (Wednesday. 11:00h to 12:30h. Room EL2)
**   Chair: Akihiko Yokoyama ~ University of Tokyo (Japan)**

120 Assessment of Demand Response Value in Photovoltaic Systems based on Real Options Theory *Eduardo Martinez Cesena, Joseph Mutale ~ The University of Manchester (United Kingdom)*

306 Real, Time Control of Energy Storage Devices in Future Electric Power Systems *Dinghuan Zhu, Gabriela Hug-Glanzmann ~ Carnegie Mellon University (United States)*

313 DSP-controlled Photovoltaic Inverter for Universal Application in Research and Education *Fredrick Ishengoma, Fritz Schimpf, Lars Norum ~ Norwegian University of Science and Technology (Norway)*

331 Optimal Operation Scheduling of Pumped Storage Hydro Power Plant in Power System with a Large Penetration of Photovoltaic Generation Using Genetic Algorithm *Ryota Aihara, Akihiko Yokoyama ~ The University of Tokyo (Japan), Fumitoshi Nomiyama, Narifumi Kosugi ~ Kyushu Electric Power Company, Inc. (Japan)*

562 Power Management of Grid-Connected PV Inverter with Storage Battery *Chee Lim Nge, Ole Morten Midtgard ~ University of Agder (Norway), Lars Norum NTNU (Norway)*

38 **PROTECTION SYSTEMS III (Wednesday. 11:00h to 12:30h. Room EL1)**
  Chair: Sonja Berlijn ~ Statnett (Norway)

129 Grounding Measurements in Urban Areas - Comparision of Low and High Voltage Measurements in Common Grounding Systems *Martin Lindinger, Lothar Fickert, Ernst Schmautzer, Christian Raunig ~ Graz University of Technology (Austria)*

248 High Impedance Fault Evaluation Using Narrowband Power Line Communication Techniques *Apostolos Milioudis, Georgios Andreou, Dimitrios Labridis ~ Aristotle University of Thessaloniki (Greece)*

304 A Impedance-Based Fault Location Technique for Unbalanced Distributed Generation Systems *José Ubirajara Núñez de Nunes, Arturo Suman Bretas ~ Federal University of Rio Grande do Sul (Brazil)*

336 An Automatic System for Fault Location in Medium Voltage Cable Networks based on the Wavelet Analysis *Mario Paolone, Alberto Borghetti, Carlo Alberto Nucci ~ University of Bologna (Italy)*

39 **ELECTRICITY MARKETS ISSUES (Wednesday. 11:00h to 12:30h. Room EL4)**
  Chair: Ivar Wangensteen ~ NTNU (Norway)

549 A Recovery Mechanism with Loss-Related Profits in a Day-Ahead Electricity Market with Non-Convexities *Panagiotis Andrianesis, George Liberopoulos, George Kozanidis ~ University of Thessaly (Greece), Alex Papalexopoulos ~ ECCO International Inc. (United States)*

378 Generation Costs Evaluation in Centralized Systems: a Contrast over Market Mechanisms *Breno Wottrich ~ Pontificia Universidad Comillas (Spain), Rafael Bellido, Elena López ~ Iberdrola S.A (Spain)*

419 Integration of the European Electricity Markets *Miloslav Fialka, Jiri Tuma ~ CTU in Prague (Czech Republic), Igor Chemisinec ~ OTE (Czech Republic)*

284 Evaluation of Discos' Strategies: An Agent-Based Simulation of Electricity Market *Seyed Saeed Mohtavipour ~ Tarbiat Modares University (Iran), Gholamreza Yousefi ~ Isfahan University of Technology (Iran), Farhad Fallahi ~ Niroo Research Institute (Iran)*

293 Evaluation of Transmission Pricing Methodologies for Pool Based Electricity Markets *George Orfanos, Georgia Tziasiou, Pavlos Georgilakis, Nikos Hatziargyriou ~ National Technical University of Athens (Greece)*

40 **SMART GRIDS I (Wednesday. 14:00h to 15:30h. Room EL5)**
  Chair: Raphael Caire ~ Grenoble Electrical Engineering Laboratory (France)

515 Super Smart Grids for Improving System Stability at the Example of a Possible Interconnection of ENTSOE and IPS/UPS *Anna Arestova, Ulf Häger ~ TU Dortmund University (Germany), Andrey Grobovoy ~ Power System Emergency Control Lab (Russian Federation), Christian Rehtanz ~ TU Dortmund University (Germany)*

122 Smart Grid Emergency Control Strategy for Load Tap Changers *Johan Fredrik Baalbergen, Madeleine Gibescu, Lou van der Sluis ~ TU Delft (Netherlands)*

261 An Energy Efficient Protocol for Wireless Sensor Networks in Smart Grid Application *Behzad Abbasgholi, Mehdi Arian, Vahid Soleimani ~ MONENCO Iran Consulting Engineers MAPNA group (Australia), Ramtin Kazemi MacQuarie University (Australia)*

518 AAHPNES: A Hierarchical Petri Net Expert System Realization of Adaptive Autonomy in Smart Grid *Alireza Fereidunian, Mohammad Ali Zamani, Mohamad Amin Sharifi Kolarijani, Hamid Lesani ~ University of Tehran (Iran)*

118 Estimations of cost and CO2 Emission for Smart Grids Using a Linear Programming Approach *Yuichi Ikeda, Uwe Remme, David Elzinga, Steve Heinen, Peter Taylor ~ International Energy Agency (France)*

41 **POWER OSCILATION DAMPING CONTROL**
  (Wednesday. 14:00h to 15:30h. Room EL3)
  Chair: Kjetil Uhlen ~ NTNU (Norway)

33 Damping Power System Oscillations Using a Hybrid Series Capacitive Compensation Scheme *Sushan Pan, Dipendra Rai, Sherif Faried, Ramakrishna Gokaraju ~ University of Saskatchewan (Canada)*

45   Damping Power System Oscillations Using an SSSC-Based Hybrid Series Capacitive Compensation Scheme *Irfan Unal, Dipendra Rai, Sherif Faried ~ University of Saskatchewan (Canada)*

502   Power System Stabilizer Using Optimization and Pseudospectra *Gustavo Dill, Aguinaldo Silveira e Silva ~ Federal University of Santa Catarina (Brazil)*

176   A new MPC scheme for damping wide-area electromechanical oscillations in power systems *DaWang, Mevludin Glavic, Louis Wehenkel ~ University of Liege (Belgium)*

42   **DEMAND RESOURCES FOR GRID CONTROL**
        (Wednesday. 14:00h to 15:30h. Room EL26)
        Chair: Andrzej Adamczyk ~ Aalborg University (Denmark)

366   Evaluation of the impact of electric heat pumps and distributed CHP on LV networks *Pierluigi Mancarella, Chin Kim Gan, Goran Strbac ~ Imperial College London (United Kingdom)*

432   Load Profile Based Determination of Distribution Feeder Configuration by Dynamic Programming *Mohammad Hosein Shariatkhah, Mahmoud Reza Haghifam ~ Tarbiat Modares University (Iran)*

541   Impact of High Penetration of Heat Pumps on Low Voltage Networks *Muhammad Akmal, Brendan Fox, D. John Morrow, Tim Littler ~ The Queen's University of Belfast (United Kingdom)*

508   An 11kV Steady, State Residential Aggregate Load Model. Part 1: Aggregation Methodology *Adam Collin, Ignacio Hernando-Gil, Jorge Acosta, Sasa Djokic ~The University of Edinburgh (United Kingdom)*

514   An 11kV Steady, State Residential Aggregate Load Model. Part 2: Microgeneration and Demand-side Management *Adam Collin, Jorge Acosta, Ignacio Hernando-Gil, Sasa Djokic ~ The University of Edinburgh (UK)*

613   Economical aspects of building management systems implementation *Piotr Borkowski, Marek Pawlowski, Tomasz Makowiecki ~ Technical University of Lodz (Poland)*

43   **EVOLUTIONARY ALGORITHMS IN POWER SYSTEM MODELLING**
        (Wednesday. 14:00 to 15:30h. Room EL2)
        Chair: Vladimiro Miranda ~ INESC Porto (Portugal)

113   A Binary Adaptive Differential Evolution Algorithm for Dynamic Economic Dispatch Considering Significant Wind Power *Shu Xia, Ming Zhou, Gengyin Li ~ North China Electric Power University (China)*

139   Thermal Unit Commitment using Improved Ant Colony Optimization Algorithm via Lagrange Multipliers *Flávia Nascimento, Ivo Silva Junior, Edimar Oliveira, Bruno Dias, André Marcato ~ Federal University of Juiz de Fora (Brazil)*

340   Coordinated Tuning of a Set of Static Var Compensators using Evolutionary Algorithms *Enrique Ramón Chaparro Viveros ~ Itaipú Binacional, and Polytechnic of National University of Ciudad del Este (Paraguay), Manuel Leonardo Sosa Ríos ~ Polytechnic of National University of Ciudad del Este (Paraguay)*

429   Distribution Harmonic State Estimation Based on a Modified PSO Considering Parameters Uncertainty *Ali Arefi, Mahmood, Reza Haghifam ~ Tarbiat Modares University (Iran), Seyed Hamid Fathi ~ Amirkabir University of Technology (Iran)*

560   Implementation of Imperialist Competitive Algorithm to Solve Nonconvex Economic Dispatch Problem *Ehsan Bijami, Morteza Jadidoleslam Zeidabadi, Akbar Ebrahimi, Javad Askari ~ Isfahan University of Technology (Iran), Malihe Maghfoori Farsangi ~ Shahid Bahonar University of Kerman (Iran)*

44   **SYSTEM SECURITY (Wednesday. 14:00h to 15:30h. Room EL1)**
        Chair: Daniel Karlsson ~ Gothia Power AB (Sweden)

73   Power Transformer's Fault Prognosis *Gerards Gavrilovs, Sandra Vitolina, Olegs Borscevskis ~ Riga Technical University (Latvia)*

347   Decision Tree-Based Online Power System Static and Dynamic Security Assessment Tool Using PMU Measurements *Bernard Bernardes, Douglas Oliveira, João Paulo Abreu Vieira, Ivaldo Ohana, Ubiratan Holanda Bezerra ~ Federal University of Pará (Brazil)*

392   Power System Segmentation Using DC Links to Decrease the Risk of Cascading Blackouts *Omid Alizadeh Mousavi, Mohammad Javad Sanjari ~ Amirkabir University of Technology (Iran), Rachid Cherkaoui ~ Ecole Polytechnique Fédérale de Lausanne (Switzerland), Gevork B. Gharehpetian ~ Amirkabir University of Technology (Iran)*

499   A Framework to Study Critical Loadability Solutions *Roberto de Souza Salgado, Anesio Felipe Zeitune ~ Federal University of Santa Catarina (Brazil)*

490   Partial Least Squares Modelling for Dynamic Overhead Line Ratings *Jiao Fu, Sobhy Abdelkader, D John Morrow, Brendan Fox ~ Queen's Univeristy of Belfast (United Kingdom)*

45   DEMAND RESOURCES IN A MARKET CONTEXT
(Wednesday. 16:00h to 17:30h. Room EL5)
Chair: Ove Steinar Grande ~ Sinteff Energy Research (Norway)

46   Active Load Management in Intelligent Building Using Model Predictive Control Strategy *Yi Zong, Daniel Kullmann, Anders Thavlov, Oliver Gehrke Riso, Henrik Bindner ~ RISO National Laboratory for Sustainable Energy and Technical University of Denmark (Denmark)*

143   High Concentration of Heat pumps in Suburban Areas and Reduction of Their Impact on the Electricity Network *Olaf Van Pruissen, René Kamphuis ~ Energy Research Centre Netherlands (Netherlands)*

159   Impact of Electrification of Residential Heating on Loading of Distribution Networks *Else Veldman, Madeleine Gibescu ~ Delft University of Technology (Netherlands), Han Slootweg, Wil Kling ~ Eindhoven University of Technology (Netherlands)*

225   Modeling Demand Resources for ISO's Demand Response Scheduling *JIN, O Kim, Hyung, Geun Kwag ~ Hanyang University (Korea), Jun, Min Cha ~ Daejin University (Korea), Sung Hoon Lee ~ Hanyang University (Korea)*

461   Demand Side Management as a Means to Convert Intermittent Energy into a Constant Power Band *Peter Ahcin, Mario S ~ ETH Zurich (Switzerland)*

552   Economic Demand Dispatch of Controllable Building Electric Loads for Demand Response *Jonathan Berardino, Chika Nwankpa, Karen Miu ~ Drexel University (United States)*

46   POWER OSCILLATION MONITORING AND MODAL ANALYSIS
(Wednesday. 16:00h to 17:30h. Room EL3)
Chair: Kjetil Uhlen ~ NTNU (Norway)

27   Enhanced Wavelet-based Method for Modal Identification from Power System Ringdowns *José Rueda, István Erlich ~ University Duisburg, Essen (Germany)*

55   Event Patterns in Oscillation Monitoring Data *Katherine Rogers, Thomas Overbye ~ University of Illinois (USA)*

68   Comparison of Various Power System Electromechanical Mode Estimators *George Karady, Barrie Kokanos Arizona State University (United States)*

379   Comparison of Linear Model Development Techniques for Power System Modal Analysis *David Villarreal, Martínez, Daniel RuizVega ~ Instituto Politecnico Nacional (Mexico)*

410   Monitoring Oscillations Modes of Brazilian Interconnected Power System Using Ambient Data *Fernando Buzzulini Prioste, Aguinaldo Silveira e Silva, Ildemar Cassana Decker ~ Federal University of Santa Catarina (Brazil)*

47   STATE ESTIMATION AND PMUS (Wednesday. 16:00h to 17:30h. Room EL6)
Chair : Olof Samuelsson ~ Lund University (Sweden)

114   The Hybrid Model based on Hilbert, Huang Transform and Neural Networks for Forecasting of Short-Term Operation Conditions of Power System *Nikita Tomin, Victor Kurbatsky, Denis Sidorov, Vadim Spiryaev ~ Energy Systems Institute (Russian Federation)*

213   A Method to Evaluate Harmonic Model, Based Estimations under Non, White Measured Noise *Cuong Le, Math Bollen Lulea University of Technology (Sweden), Irene Gu Chalmers University of Technology (Sweden)*

269   Combining Conventional and Synchronized Phasor Measurements in a Hybrid State Estimator *George Korres, Nikolaos Manousakis ~ National Technical University of Athens (Greece)*

275   Optimal PMU placement for improving hybrid state estimator accuracy *Markos Asprou, Elias Kyriakides ~ University of Cyprus (Cyprus)*

548   Reduced Measurement, space Dynamic State Estimation (ReMeDySE) for Power Systems *Jinghe Zhang, Greg Welch, Gary Bishop ~ The University of North Carolina (United States)*

547 Estimation of Transmission Line Parameters Using Wide-Area Measurement Method *András Dán, Dávid Raisz ~ Budapest University of Technology and Economics (Hungary)*

48 POWER ELECTRONICS APPLICATIONS IN POWER SYSTEMS
   (Wednesday. 16:00h to 17:30h. Room EL2)
   Chair: Jon Are Suul ~ NTNU (Norway)

201 A Novel Dual Resonant Tank for ZVT DC/DC Converters with Synchronous Rectifier *Hong, Tzer Yang, Jian, Tang Liao, Xiang, Yu Cheng ~ National Cheng Kung University (Taiwan)*

375 Implementation of a Current-Fed High Step-Up DC/DC Converter *Hong, Tzer Yang, Zone, Ching Lee, Jian, Tang Liao ~ National Cheng Kung University (Taiwan, Province Of China)*

434 Vector Control of Direct Drive Six Phase Permanent Magnet Synchronous Generators *Nahome Alemayehu Ayehunie ~ Norwegian University of Sience and Technology (NTNU) (Norway)*

507 A Hybrid Multilevel Converter for Medium and High Voltage Applications *G.P Adam, K.H Ahemd ~ University of Strathclyde (UK), N.K Singh ~ Vestas Technology (India), S.J Finney, B.W Williams ~ University of Strathclyde (UK)*

590 Nonlinear Observer-based Capacitor Voltage Estimation for Sliding Mode Current Controller in NPC Multilevel Converters *Hamed Nademi, Anandarup Das, Lars Norum ~ NTNU (Norway)*

599 Flexible Reference Frame Orientation of Virtual Flux-based Dual Frame Current Controllers for Operation in Weak Grids *Jon Are Suul, Tore Undeland ~ Norwegian University of Science and Technology (Norway)*

49 MICROGRIDS II (Wednesday. 16:00h to 17:30h. Room EL1)
   Chair: Math Bollen ~ Lulea University of Technology (Sweden)

531 Multi-Converter Observability Issues Associated with Shipboard MVDC Power Systems *Juan Jimenez, Chris Dafis, Karen Miu, Chika Nwankpa ~ Drexel University (United States)*

538 Robust Multi-Objective Optimal dispatch of Distributed Energy Resources in Micro-Grids *Eleonora Riva Sanseverino, Gaetano Zizzo, Maria L. Di Silvestre, Giorgio Graditi, Mariano Giuseppe Ippolito ~ Università di Palermo (Italy)*

556 Application of the IEC 61850-7-420 Data Model on a Hybrid Renewable Energy System *Nicholas Honeth, Wu Yiming, Nicholas Etherden ~ STRI AB (Sweden), Lars Nordström ~ Royal Institute of Technology (Sweden)*

589 Determination of Islanding Performance of Industrial Plants
   Dirk Audring, Edwin Lerch ~ Siemens AG Energy EDSE PTI (Germany)

50 MODELING IMPERFECT MAKETS (Thursday. 9:00h to 10:30h. Room EL5)
   Chair: Alexandre Street ~ PUC-Rio (Brazil)

166 Modeling and Study of Russian Oligopolistic Electricity Market Considering Generating Capacity Expansion *Oleg Khamisov, Sergey Podkovalnikov ~ Energy Systems Institute Siberian Branch Russian Academy of Sciences (Russian Federation)*

192 Modelling Market Power Cost in the Assessment of Transmission Investment Policies *Mohammad Reza Hesamzadeh, Mikael Amelin, Lennart Söder ~ Royal Institute of Technology, KTH (Sweden)*

252 Sharing Quotas of a Renewable Energy Hedge Pool: A Cooperative Game Theory Approach *Alexandre Street, Delberis Lima, Lucas Freire ~ Pontifical Catholic University of Rio de Janeiro (Brazil), Javier Contreras ~ Universidad de Castilla – La Mancha (Spain)*

258 Simulating Equilibrium Prices in Oligopoly Power Markets *Michael Martin Belsnes, Geir Warland, Ove Wolfgang ~ SINTEF Energy Research (Norway)*

51 RENEWABLE ENERGY SYSTEMS CONTROL
   (Thursday. 9:00h to 10:30h. Room EL3)
   Chair: Joao Catalao ~ University of Beira Interior, Covilha (Portugal)

85 Probabilistic Assessment of Wind Generation Effects on Primary Frequency Response
   Emmanouil Loukarakis ~ National Technical University of Athens (Greece)

98 Dynamic Behavior of a Doubly-Fed Motor-Generator during and after the Fault
   Valentin Azbe, Rafael Mihalic ~ University of Ljubljana (Slovenia)

282 A Control Algorithm for the Coordination of Multiple Virtual Synchronous Generator Units
Vasileios Karapanos, Zhihui Yuan, Sjoerd de Haan ~ Delft University of Technology (Netherlands),
Klaas Visscher ~ Energy Research Centre of the Netherlands (Netherlands)

489 On Model Predictive Control for a Point Absorber Wave Energy Converter Model
Ted Brekken, Bret Bosma ~ Oregon State University (United States)

503 On the Study of WEC Control Algorithms with Consideration of Real-Time Damage Accumulation
Chad Stillinger, Ted Brekken ~ Oregon State University (United States)

52   TRANSIENTS AND VOLTAGE STABILITY
(Thursday. 9:00h to 10:30h. Room EL6)
Chair: Trond Toftevaag ~ SINTEF (Norway)

53 UQ Capability Diagram of Large Turbogenerators, Contractual Agreements, Operation and e-Monitoring
Tools *Daniel Souque, Laurent Chatonnet, Etienne Monnot, François Duffeau, Georges Morales ~*
EDF UNIE (France)

61 Effectiveness of TCSC Controllers Using Remote Input Signals for Transient Stability Enhancement
Tuan Anh Nguyen Dirk Van Hertem, Johan Driesen ~ Katholieke Universiteit Leuven (Belgium)

151 Effective Utilization of Large, Capacity Battery Systems for Transient Stability Improvement in Multi,
Machine Power System *Kenichi Kawabe, Akihiko Yokoyama ~ The University of Tokyo (Japan)*

323 Power and Voltage Control of a Synchronous Machine: a Comparison among Different Approaches
Andrea Bonfiglio, Federico Delfino, Fabio Pampararo, Renato Procopio ~ University of Genoa (Italy)

431 Upgraded Coordinated Voltage Control For Distribution Systems *Monica Biserica, Boris Berseneff ~ GIE*
IDEA (France), Yvon Bésanger ~ Grenoble INP G2Elab (France), Christophe Kiény ~ GIE IDEA (France)

536 Small Signal Security Index for Contingency Classification in Dynamic Security Assessment *Uros Kerin,*
Trinh Tuan, Edwin Lerch ~ Siemens AG (Germany), Grega Bizjak ~ University of Ljubljana (Slovenia)

53   POWER QUALITY (Thursday. 11:00h to 12:30h. Room EL5)
Chair: Alfredo Ortiz ~ Universidad de Cantabria (Spain)

206 EMC Disturbances on Track Circuits in the 2x25kV High Speed *AC Railways Systems Alberto Dolara,*
Moris Gualdoni, Sonia Leva ~ Politecnico di Milano (Italy)

327 Flicker Summation Factor in the Slovenian Transmission Network *Milos Maksic, Bostjan Blazic,*
Igor Papic ~ University of Ljubljana (Slovenia)

517 Application of FBD, Power Theory to the Analysis of Effective Lighting Devices Impact on Power Quality
and Efficiency of an Electric Grid *Andres Pavas, Ana Maria Blanco, Estrella Parra ~ Universidad*
Nacional de Colombia (Colombia)

557 Unscented Kalman Filter for Frequency and Amplitude Estimation *Happy Novanda, Pawel Regulski,*
Francisco M. González, Longatt, Vladimir Terzija ~ The University of Manchester (United Kingdom)

591 Flickering of Lamps Due to Ripple Control Signal *Jiri Drapela, Brno, Jan Slezingr ~ Brno University of*
Technology (Czech Republic)

54   HIGH VOLTAGE INSULATION (Thursday. 11:00h to 12:30h. Room EL3)
Chair: Frank Mauseth ~ NTNU (Norway)

40 Tap-off Power from Overhead Ground Wires: its Feasibility and Voltage Stabilization System
Ricardo Leon Vasquez, Arnez, Mario Masuda ~ Fundação para o Desenvolvimento Tecnológico da
Engenharia (Brazil), Jose Antonio Jardini ~ University of São Paulo (Brazil), Alexandre L. da Silva ~
ELETROSUL Centrais Elétricas S.A. (Brazil)

148 Voltage Upgrading an Insulation Coordination Challenge *Sonja Berlijn, Anders Olsen, Kjell Halsan ~*
Statnett (Norway), Michael Hinteregger, Thomas Judendorfer ~ TU Graz (Australia)

253 Sheath Voltage Calculations in Long Medium Voltage Power Cables *Kostas Gouramanis, Christos*
Kaloudas, Theofilos Papadopoulos, Grigoris Papagiannis ~ Aristotle University of Thessaloniki (Greece),
Kostas Stasinos Rokas Renewables ~ C. Rokas Group Halandri Athens, Greece (Greece)

350 Flashover Performance of 380 kV V-String with Uniform Surface Pollution
Suat Ilhan, Aydogan Ozdemir ~ Istanbul Technical University (Turkey)

527 Breakdown Strength of Solid-Solid Interfaces *Majid Hasheminezhad ~ NTNU (Norway)*

55   **SMART GRIDS II (Thursday. 11:00h to 12:30h. Room EL6)**
           Chair: Alejandro Garces ~ NTNU (Norway)

84   Smart-Grid Simulation Using Small-scale Pilot Installations Part I: Experimental Investigation of a
         Centrally-Controlled Microgrid. *Dimitrios Stimoniaris, Dimitrios Tsiamitros, Theodoros Kottas, Nikolaos
         Asimopoulos ~ Technological Institute of West Macedonia (Greece), Evangelos Dialynas ~ National
         Technical University of Athens (Greece)*

274   Coordination of Active and Reactive Distributed Resources in a Smart Grid
         Marco Bronzini, Sergio Bruno, Massimo La Scala, Roberto Sbrizzai ~ Politecnico di Bari (Italy)

512   Emerging Smart Grid Topics in Electrical Engineering Education
         Mihaela Albu, Valentin Boicea, Mihai Calin, Mihai Popa ~ Politehnica University of Bucharest (Romania)

542   An Intelligent Fuzzy Expert System Realization of Adaptive Autonomy Using Gradient Descent Algorithm
         *Mohammad Ali Zaman, Alireza Fereidunian, Mohammad Amin Ahmad Akhoundi, Hamid Lesani ~
         University of Tehran (Iran)*

572   Smart-Grid, green energy and responsive consumers: a "smart green" framework
         Leontina Pinto, Paula Leite ~ Engenho (Brazil)