

Final Program

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)

- 125 [Investigating State Reconstruction from Scarce Synchronized Phasor Measurements](#)
Mevludin Glavic ~ University of Liège (Belgium), Thierry Van Cutsem ~ University of Liège and FNRS (Belgium)
- 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)
- 185 [Selective Damping of Inter Area Oscillations Using PMU Signals](#)
Istvan Erlich, Ashfaqe Ahmed Hashmani, Fekadu Shewarega ~ University of Duisburg (Germany)
- 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)
- 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)
- 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)

1 TRANSMISSION PLANNING (Monday. 14:00h to 15:30h. Room EL3)

- 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 Tecnológico 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)

- 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 Vuorenmaa, 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 University (Rep. Korea) Peter A. Crossley ~ The University of Manchester (UK), Yong Cheol Kang ~ Chonbuk National University (Rep. Korea)*

3 HARMONICS ANALYSIS AND NON ACTIVE POWER COMPENSATION (Monday. 14:00h to 15:30h . Room EL2)

- 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)**
- 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 Diet, 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)**
- 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)**
- 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)**
- 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)**
- 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)

- 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 Hatzigiorgiou ~ 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)**

- 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 II

Smart Grids as Seen from Power Electronics Field. (Tuesday. 9:00h to 12:30h. Room EL5)

- 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)*
- 620 [Optimum Control of Distributed Energy Resources in Residential Micro-Grids](#) *Paolo Tenti ~ University of Padova (Italy)*
- 621 [Modern Power Systems and the Importance of Power Electronics](#) *Georgios Demetriades ~ ABB Corporate research*
- 622 [Impedance-based Approaches to Stability Analysis and Design of Smart Grid](#) *Jian Sun ~ Rensselaer Polytechnic Institute (USA).*
- 623 [Renewable Energy Resources via Power Electronics](#) *Stefan Schroeder ~ General Electric Global Research*

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)
- 57 [Analysis of the PV Panels Connections Using the Four-Terminal Parameters Equations.](#) Horia Andrei, Traian Ivanovici, Marius Robert Ghita ~ Valahia University of Targoviste (Romania), Costin Cepisca, Paul Andrei ~ Politehnica University of Bucharest (Romania)
- 83 [Simultaneous Estimation of Voltage Distortion in the Harmonic Range and above the Harmonic Range up to 9 kHz](#) Matilde de Apráiz, Julio Barros, Ramón I. Diego ~ University of Cantabria (Spain)
- 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)
- 107 [Evaluation of Low Frequency Transmission for Wind Farm Power.](#) Anupama Keeli, Meliopoulos Sakis A.P. ~ Georgia Institute of Technology (United States)
- 108 [Microgrid Voltage Level Management and Role as Part of Smart Grid Voltage Control.](#) Hannu Laaksonen, Kimmo Kauhaniemi, Sampo Voima ~ University of Vaasa (Finland).
- 207 [Droop Regulated VSCs for Island Operation of Future Offshore Systems.](#) Salvatore D'Arco ~ NTNU (Norway) Astrid Petterteig, Riccardo Pittini ~ Sintef Energi (Norway) Tore Undeland ~ NTNU (Norway)
- 209 [Optimal Switch Allocation for Automatic Load Transfer in Distribution Substations](#) Marcel Eduardo Viotto Romero ~ Companhia Paranaense de Energia (Brazil), Luiz Gustavo Wesz da Silva ~ Instituto Federal de Tecnologia – (Brazil) José Roberto Sanches Mantovani ~ São Paulo State University – UNESP (Brazil)
- 211 [A Study on Active Power and Frequency Response in Microgrid.](#) Khanh, Loc Nguyen, Dae, Geun Jin, Dong, Jun Won ~ INHA University (Republic of Korea)
- 212 [Preliminary Studies on First Outdoor Microgrid Test Bed in Taiwan.](#) Ying, Yi Hong C, Ding Sheng Su, Chun Hsiao Chung ~ Yuan Christian University (Taiwan), Yung, Ruei Chang, Yih, Der Lee ~ Institute of Nuclear Energy Research (Taiwan)
- 217 [Fault Behavior of Wind Farms with Fixed-Speed and Doubly-Fed Induction Generators](#) Francesco Sulla, Jörgen Svensson, Olof Samuelsson ~ Lund University (Sweden)
- 218 [Harmonic Behavior of Variable-Speed Wind Turbines During a Control Fault](#) Rui Melício, Victor Mendes, João Catalão ~ University of Beira Interior (Portugal)
- 251 [Physically-Consistent Parameterization in the Modeling of Solar Photovoltaic Devices.](#) Georgi Jordanov, Ole, Morten Midtgård ~ University of Agder (Norway) Lars Norum ~ NTNU (Norway)
- 311 [Credibility Theory Applied for Estimating Operating Reserve Considering Wind Power Uncertainty.](#) Zhiying Xue, Gengyin Li, Ming Zhou ~ North China Electric Power University (China)
- 312 [Coherency-Based Dynamic Equivalent for Power System Centralized Large Scale Wind Power](#) Li Lin, Juan Tan, Ying Chen, Wenying Liu ~ North China Electric Power University (China)
- 400 [Demand Side Management of Electrical Water Heaters and Evaluation of the Cold Load Pick-Up characteristics \(CLPU\)](#) Nathalie Sakersupelec ~ FranceMarc Petitsupelec (France), Jean Louis Coullon ~ ALSTOM Grid (France)
- 405 [Energy Storage for Improvement of Wind Power Characteristics.](#) Claus Rasmussen ~ Technical University of Denmark (Denmark)
- 438 [Loss Minimization in AC Distribution System with High Share of Power Electronic Loads Providing Ancillary Reactive Power.](#) Nadeem Jelani, Marta Molinas ~ NTNU (Norway)
- 470 [Novel Control of a Dual-Excited Synchronous Machine for Variable-Speed Wind Turbines.](#) Salvatore D'Arco ~ NTNU (Norway), Piegari Luigi ~ Politecnico Milano (Italy), Pietro Tricoli ~ Università di Napoli Federico II (Jamaica)
- 471 [Wind Integration in Small Scale Islanded Power Systems.](#) Mircea Scutariu ~ Mott MacDonald Ltd. (UK)
- 479 [Islanding Detection Methods for PV Generators with Single-Phase Inverter.](#) Emil Dvorsky, Pavla Hejtmanekova, Tomas Skocil ~ University of West Bohemia in Pilsen (Czech Republic)
- 478 [Wind Power Prediction, System Regulation Cost and CO2 Emission as Function of Energy Storage – Simulation Tool for Problem Solving](#) Bálint Hartmann, HungaryAndrás Dán ~ Budapest University of Technology and Economics (Hungary)
- 480 [Solar Tracking System Based on a Digital Heuristic Controller.](#) Daisy Kang, Eustaquio Alcides Martínez, Enrique Chaparro ~ Itaipú Binacional East National University (Paraguay)
- 483 [A Voltage Event Recorder for More Accurate Analyzing of Voltage Events in the Power Supply Systems.](#) Jaromir Bok, Jiri Drapela ~ Brno University of Technology (Czech Republic)
- 415 [Security and economic impacts of high wind power penetration.](#) Daniele Menniti, Nadia Scordino, Nicola Sorrentino, Giovanni Brusco ~ University of Calabria, (Italy)
- 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 Slezinger, 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)

- 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, 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)

- 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 Bliet ~ 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)

- 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)

- 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 Institute (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)**
- 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 Klæboe* ~ *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)**
- 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 University (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 Vøller* ~ *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)**
- 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 Tom, 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* ~ *Universidade 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)**
- 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)

- 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)

- 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 III

The future electricity grid of Europe (Tuesday. 14:00h to 17:30h. Room EL5)

- 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)*
- 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)*
- 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)*
- 297 Methodology for Assessing Transmission Investments in Deregulated Electricity Markets *Iraklis Skoteinos, George Orfanos, Pavlos Georgilakis, Nikos Hatzigaryriou ~ 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)

- 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 Jaloud, 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 Technology (Australia)*
- 441 [Possibilities for Temporary Autonomous Operation of a MV grid with CHP-plants](#) *Panagiotis Karaliolios, Yin Sun, Johannes G. Sloopweg, 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)

- 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 Undeland ~ 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)

- 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 [Constrained Optimal Control of 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)

- 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)

- 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 ~ University of Leuven (Belgium), Eric Mercier Electricité de France (France)*
- 26 WIND ENERGY STABILITY (Tuesday. 16:00h to 17:30h. Room EL3)**
- 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, Tii 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)**
- 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)**
- 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](#) *Maik 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)**
- 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 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 Chillard, Sebastien Grenard ~ Électricité de France Recherche et Développement (France)*

30 SYSTEM RELIABILITY (Tuesday. 16:00h to 17:30h. Room EL4)

- 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)

- 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 Karjford ~ Statnett SF (Norway)*
- 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)*
- 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)*
- 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)*
- 609 [Voltage and Reactive Power Control in WPPs: Lessons Learned Towards the Development of Offshore Grid Codes.](#) *Gustavo QuiñonezVarela ~ Acciona Energia (Spain)*

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)*
- 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 Eguía, Esther Torres ~ University of the Basque Country (Spain) Miguel Angel Rodriguez ~ Ingeteam T&D (Spain)
- 257 [Distortion Responsibility Evaluation for Frequency Domain Power Measurement](#) Alfredo Ortiz, Mario Mañana, Carlos Javier Renedo, Severiano Perez, Fernando Delgado ~ University of Cantabria (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 Eguía, 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, woogyu 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)
- 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)
- 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)**
- 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 Echtermacht, Christopher Breuer, Albert Moser ~ RWTH Aachen (Germany),
- 32 PHOTOVOLTAICS I (Wednesday. 9:00h to 10:30h. Room EL6)**
- 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)**
- 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)**
- 37 [Operational Impact Evaluation of Wind Generation Integration in the Mexican Electrical System](#) Adrian Inda, Instituto de Investigaciones Electricas (Mexico), Gustavo Villa, Eduardo Meraz ~ Comision Federal de Electricidad (Mexico)
- 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)**
- 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)**
- 196 [Assessing Wind Power and Electrical Power Systems Interdependency: a Methodological Approach](#) *Claudia Battistelli ~ Federico II University of Naples (Italy)*
- 271 [Generation Portfolio Analysis for Low-Carbon Future Electricity Industries with High Wind Power Penetrations](#) *Peerapat Vithayasrichareon, 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 AND MICROGRIDS (Wednesday. 11:00h to 12:30h. Room EL2)**
- 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)**
- 129 [Grounding Measurements in Urban Areas - Comparison of Low and High Voltage Measurements in Common Grounding Systems](#) *Martin Lindinger, Lothar Fickert, Ernst Schmutzner, 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 Ubrajara 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)**
- 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 Tziassiou, Pavlos Georgilakis, Nikos Hatzigiorgiou ~ National Technical University of Athens (Greece)
- 40 SMART GRIDS I (Wednesday. 14:00h to 15:30h. Room EL5)**
- 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)**
- 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)**
- 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, Jorge Acosta, Ignacio Hernando, Gil, 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)**
- 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)**
- 73 [Power Transformer's Fault Prognosis](#) *Gerards Gavrilovs, Sandra Vitolina, Olegs Borsceviskis ~ 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. Ghahrepetian ~ 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)**
- 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)**
- 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)**
- 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)**
- 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 Science and Technology (NTNU) (Norway)*
- 507 [Hybrid Multilevel Converter for Medium and High Voltage Applications](#) *G.P Adam, K.H Ahemd ~ University of Strathclyde (UK), N.K Singh ~ Vestas Technology (Norway), 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)**
- 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)**
- 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)**
- 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 Stillingner, Ted Brekken ~ Oregon State University (United States)*

52 TRANSIENTS AND VOLTAGE STABILITY (Thursday. 9:00h to 10:30h. Room EL6)

- 53 [UQ Capability Diagram of Large Turbogenerators, Contractual Agreements, Operation and e-Monitoring Tools](#) Daniel Souque, Laurent Chaton, 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, Katholieke, Dirk Van Hertem Katholieke, 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)

- 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 Slezinger ~ Brno University of Technology (Czech Republic)

54 HIGH VOLTAGE INSULATION (Thursday. 11:00h to 12:30h. Room EL3)

- 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 Stasinou 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)

- 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)