

# Oral sessions

## Session 1 – Applications of storage technologies I

Chair: Prof. Johanna Myrzik, TU Dortmund

Paper ID	Tuesday, 30 June, 9:00 – 10:30
<a href="#">461900</a>	Determining reserve requirements in systems with significant stochastic generation capacity using copulas <i>Jiang Y., Chen X., Yu K., Liao Y.</i>
<a href="#">461588</a>	Performance of Hybrid Energy Storage System within Wind Power Hourly Operation Plan <i>Forte N., Dicorato M., Forte G., Trovato M.</i>
151 <sup>1</sup>	Near-Optimal Method for Siting and Sizing of Distributed Storage in a Transmission Network <i>Pandzic H., Wang Y., Qiu T., Dvorkin Y., Kirschen D.S.</i>
<a href="#">462891</a>	Energy Storage Control with Aging Limitation <i>Haessig P., Ben Ahmed H., Multon B.</i>
<a href="#">460692</a>	Control of a Battery Energy Storage System connected to a Low Voltage Grid <i>van Dun J.J.C.M., de Groot R.J.W., Morren J., Slootweg J.G.</i>

## Session 2 - State estimation and situational awareness I

Chair: Prof. Liisa Haarla, Aalto University

Paper ID	Tuesday, 30 June, 9:00 – 10:30
<a href="#">455753</a>	Robust Fault location for Two and Three Terminal Lines Using Synchronized Phasor Measurements <i>Feng G., Abur A.</i>
<a href="#">469513</a>	Normalized Least Mean Squares Observer for Battery Parameter Estimation <i>Krüger E., Tran Q.T., Mamadou K.</i>
<a href="#">462539</a>	Experiences in Using Damping Estimation Methods in Real-Time Oscillation Monitoring <i>Seppänen J., Turunen J., Tuononen A., Nikkilä A.-J., Haarla L.</i>
<a href="#">462228</a>	Risk-based voltage stability monitoring and preventive control using wide area monitoring <i>Putranto L.M., Hara R., Kita H., Tanaka E.</i>
<a href="#">461599</a>	Fault Location for Medium Voltage Underground Cables using Bayesian Inference <i>Xiang Y., Cobben J.F.G.</i>

---

<sup>1</sup> Accepted for publication in IEEE Transactions on Power Systems

## Session 3 - Power System Dynamics & Stability I

Chair: Dr. Federico Silvestro, University of Genova

Paper ID

Tuesday, 30 June, 9:00 – 10:30

- [462905](#) Impedance Based Stability Analysis Of VSC-based HVDC System  
*Amin M., Molinas M.*
- [441317](#) A Synchrophasor Measurement Based Method for Assessing Damping Torque Contributions from Power System Stabilizers  
*Jiang X.T., Chow J.H., Wilches-Bernal F.*
- [462935](#) Experimental Validation of a Novel Approach to Stabilize Power System Frequency by Taking Advantage of Load Voltage Sensitivity  
*Delille G., Capely L., Souque D., Ferrouillat C.*
- [462803](#) Voltage Stability Margin Determination Using the Channel Components Transform  
*Castrillon J.A., Giraldo J.S., Castro C.A.*
- [462556](#) A dynamic simulation approach to identify additional reactive reserves against long-term voltage instability  
*Papangelis L., Panciatici P., Debry M.-S., Van Cutsem T.*

## Session 4 - ICT applications in smart energy systems I

Chair: Prof. René Kamphuis, Eindhoven University of Technology / TNO

Paper ID

Tuesday, 30 June, 9:00 – 10:30

- [444827](#) Convergence Acceleration of Gossip Protocols Applied for Decentralized Distribution Grid Management  
*Koukoura D.I., Hatziaegyriou N.D.*
- [466370](#) On the Impact of information access delays on remote control of a wind turbine  
*Madsen J.T., Barradas-Berglind J.J., Madsen T.K., Schwefel H.-P.*
- [458328](#) A Behavior-based Intrusion Detection Technique for Smart Grid Infrastructure  
*Kwon Y.J., Kim H.K., Lim Y.H., Lim J.I.*
- [455981](#) Applying Innovative IT Modelling Methods to Low-level Grid Information for DSO Operations  
*van der Veen J.S., Wijbenga J.P., Kamphuis I.G.*
- [462628](#) A Low Cost Open Source-based IEC 61850/61499 Automation Platform for Distributed Energy Resources  
*Zanabria C., Andr n F., Leimgruber F., Br ndlinger R., Strasser T.*

## Session 5 - Electric vehicle prospects and network interaction I

Chair: Prof. Zita Vale, Polytechnic of Porto

Paper ID

Tuesday, 30 June, 9:00 – 10:30

- [462431](#) Energy optimization in an Eco-district with Electric Vehicles smart charging  
*Dang X.-L., Codani P., Petit M.*
- [440019](#) Plug-in Electric Vehicle Charging Approaches: Centralized versus Decentralized and Strategic versus Cooperative  
*Gonzalez Vaya M., Andersson G.*
- [460617](#) Analysis of the Impacts of Plug-in Electric Vehicle Charging on the Part of a Real Low Voltage Distribution Network  
*Bosovic A., Sadovic S., Music M.*
- [462067<sup>2</sup>](#) Smart Household Operation Considering Bi-directional EV and ESS Utilization by Real-Time Pricing Based DR  
*Erinc O., Paterakis N.G., Mendes T.D.P., Bakirtzis A.G., Catalão J.P.S.*
- [462045](#) Day-Ahead Dispatch of Distribution Feeders Considering Temporal Uncertainties of PEVs  
*Mehboob N., Canizares C., Rosenberg C.*

## Session 6 - Applications of storage technologies II

Chair: Prof. Johanna Myrzik, TU Dortmund

Paper ID

Tuesday, 30 June, 11:00 – 12:30

- [474831](#) Stochastic Dual Dynamic Programming to Schedule Energy Storage Units Providing Multiple Services  
*Mégel O., Mathieu J.L., Andersson G.*
- [315<sup>3</sup>](#) Capacity Optimization of Renewable Energy Sources and Battery Storage in an Autonomous Telecommunication Facility  
*Dragicevic T., Pandzic H., Skrllec D., Kuzle I., Guerrero J.M., Kirschen D.S.*
- [460523](#) Comparison of Flywheels and Batteries in Combination with Industrial Plants for the Provision of Primary Control Reserve  
*Wandelt F., Gamrad D., Deis W., Myrzik J.*
- [477498](#) Large-scale PV integration strategies in distribution grids  
*Fuchs A., Demiray T.*
- [476038](#) Impact of HP, CHP, PV and EVs on Households' Electric Load Profiles  
*Fischer D., Scherer J., Flunk A., Kreifels N., Byskov-Lindberg K., Wille-Haussmann B.*

---

<sup>2</sup> IEEE Transactions on Smart Grid, Vol. 6, No. 3, May 2015, pp. 1281-1291

<sup>3</sup> IEEE Transactions on Sustainable Energy, Vol. 5, No. 4, October 2014, pp. 1367-1378

## Session 7 - Smart energy systems in the built environment

Chair: Prof. Antonello Monti, RWTH Aachen University

Paper ID

Tuesday, 30 June, 11:00 – 12:30

[458304](#)

House thermal model parameter estimation method for Model Predictive Control applications

*van Leeuwen R.P., de Wit J.B., Fink J., Smit G.J.M.*

[462739](#)

A Tool for Integrated Analysis of Multi-Vector District Energy Networks

*Liu X., Mancarella P., Wu J.*

[476533](#)

Impact of Control Approaches for Building Energy Systems on Distribution Grid State

*Schlösser T., Stinner S., Ponci F., Streblov R., Monti A., Müller D.*

[474573](#)

Multi-agent based electric vehicle charging method for smart grid-smart building energy management

*Hurtado L.A., Syed A., Nguyen P.H., Kling W.L.*

[460512](#)

An Equivalent Electric Circuit for the Thermal Network of the Savona Campus Smart Polygeneration Microgrid

*Barillari L., Bracco S., Brignone M., Delfino F., Nilberto A., Pampararo F., Pacciani C., Procopio R., Rossi M.*

## Session 8 - Power System Dynamics & Stability II

Chair: Prof. Thierry Van Cutsem, FNRS and University of Liege

Paper ID

Tuesday, 30 June, 11:00 – 12:30

[462190](#)

Controllable Shunt Reactor Deployment Effect on Power Station Stability Indices

*Lyamov A., Makarova M., Smolovik S.*

[460319](#)

Isolines of Characteristic Polynomial for Power System Static Stability Analysis

*Kovalenko S., Zicmane I., Sauhats A.*

[461936](#)

About the Relationship of Line Overload Cascading and Loss of Synchronism in Electric Power Systems

*Kubis A., Rehtanz C., Xu J., Li Y.*

[462822](#)

Evaluating the Performance of Decentralized Analyses of Voltage Stability and Power Flows

*Robitzky L., Müller S.C., Häger U., Rehtanz C.*

[460943](#)

Tractable and Scalable Algorithm for Dynamic Voltage Stability Assessment in Large-Scale Power Systems

*Sarić A.T., Stanković A.M.*

## Session 9 - ICT applications in smart energy systems II

Chair: Prof. René Kamphuis, Eindhoven University of Technology / TNO

Paper ID

Tuesday, 30 June, 11:00 – 12:30

[436437](#)

**Smart Meters using the Architecture of Future Internet**

*Simonov M., Daltoè G., Zanetto G., Conti R.*

[438289](#)

**Visualization Approach for analytical energy metering**

*Simonov M.*

[462751](#)

**Energy Management with TRIANA on FPAI**

*Toersche H.A., Hurink J.L., Konsman M.J.*

[456245](#)

**A Step-by-Step Data Processing Guideline for Load Model Development Based on Field Measurements**

*Hasan K.N., Milanovic J.V., Turner P., Turnham V.*

[443596](#)

**Optimal Resource Allocation and Load Scheduling for a Multi-Commodity Smart Energy System**

*Blaauwbroek N., Nguyen P.H., Shi H., Kamphuis I.G., Kling W.L., Konsman M.J.*

## Session 10 - Electric vehicle prospects and network interaction II

Chair: Prof. Zita Vale, Polytechnic of Porto

Paper ID

Tuesday, 30 June, 11:00 – 12:30

[462922](#)

**Component-Based Modelling of EV Battery Chargers**

*Xiao X., Molin H., Kourtza P., Collin A., Harrison G., Djokic S., Meyer J., Müller S., Möller F.*

[462413](#)

**Multiterminal electrical charging station for LV networks**

*García-López F.P., Barragán-Villarejo M., Maza-Ortega J.M., Gómez-Expósito A.*

[462730](#)

**Economic operational scheduling of a Smart distribution network considering demand response, Electric vehicles and Network reconfiguration**

*Anand M.P., Ongsakul W., Singh J.G., Golshannavaz S.*

[462072](#)

**MicroGrid DER control including EVs in a Residential Area**

*Soares J., Silva M., Canizes B., Vale Z.,*

423<sup>4</sup>

**Optimal Bidding Strategy of a Plug-In Electric Vehicle Aggregator in Day-Ahead Electricity Markets Under Uncertainty**

*Vayá G., Andersson G.*

---

<sup>4</sup> Accepted for publication in IEEE Transactions on Power Systems

## Session 11 - Power system modeling, simulation and analysis I

Chair: Prof. Math Bollen, Luleå University of Technology

Paper ID

Tuesday, 30 June, 13:30 – 15:00

- [456825](#) **Resonant Overvoltages in Wind Turbine Transformers**  
*Banda C.A., van Coller J.M.*
- 254<sup>5</sup>** **Temperature Dependent Signal Propagation Velocity: Possible Indicator for MV Cable Dynamic Rating**  
*Li Y., Wouters P.A.A.F., Wagenaars P., van der Wielen P.C.J.M., Steennis E.F.*
- [462909](#) **Statistical Top-Down Approach for Energy Loss Estimation in Distribution Systems**  
*Armaulia Sanchez V., Lima D.A., Ochoa L.F., Oliveira M.E.*
- [461685](#) **Contemplation of Transformer Loss Evaluation Methods in Vertically Integrated and Decentralized Energy Systems**  
*Lazari A.L., Charalambous C.A.*
- [476666](#) **Applicability of Nonlinear Reluctance Model to a Closed Core Fault Current Limiter**  
*Gunawardana S.M., Commins P.A., Moscrop J.W., Perera S.*

## Session 12 - Power system interoperability, standards and codes

Chair: Prof. Mario Paolone, EPFL DESL

Paper ID

Tuesday, 30 June, 13:30 – 15:00

- [474136](#) **Modern Voltage Regulation Methods For Network Planning And Operation In Low Voltage Grids**  
*Eilenberger S., Groß D., Rudion K., Tenbohlen S., Berber I.*
- [435800](#) **IEC61850 GOOSE Performance in Real Time and Challenges Faced by Power Utilities**  
*Amjadi S., Kalam A.*
- [476543](#) **Architecture and Characterization of a Calibrator for PMUs Operating in Power Distribution Systems**  
*Colangelo D., Zanni L., Pignati M., Romano P., Paolone M., Braun J.P., Bernier L.-G.*
- [462853](#) **Frequency control using thermal loads under the proposed ENTSO-E Demand Connection Code**  
*Tindemans S.H., Trovato V., Strbac G.*
- [455241](#) **Requirement to enlarge interface protections frequency ranges for generators connected to distribution networks : study of alternatives and solution proposal**  
*Gabrion V., Klaja D., Emelin S., Grenard S., Minaud A.*

## Session 13 - Demand side management and Demand response I

Chair: Prof. Sid Suryanarayanan, Colorado State University

Paper ID

Tuesday, 30 June, 13:30 – 15:00

[462814](#)

**Impact of Large-Scale Demand Side Response on System Frequency– A Case Study**

*Qazi H.W., Rather Z.H., Flynn D.*

[443365](#)

**A Multi-Agent Model and Strategy for Residential Demand Response Coordination**

*Roche R., Suryanarayanan S., Hansen T.M., Kiliccote S., Miraoui A.*

[464325](#)

**Voltage Dependent Demand Response with Dynamic Hysteresis Thresholds in DC Microgrids**

*Mackay L., Kolios P., Ramirez-Elizondo L., Bauer P.*

[460915](#)

**Distribution System Operation Enhancement through Household Consumption Coordination in a Dynamic Pricing Environment**

*Paterakis N.G., Medeiros M.F., Catalão J.P.S., Erdinc O.*

[433344](#)

**PV Integration in Low-Voltage Feeders with Demand Response**

*Li X., Borsche T., Andersson G.*

## Session 14 - RES integration I

Chair: Prof. Ian Hiskens, University of Michigan

Paper ID

Tuesday, 30 June, 13:30 – 15:00

[458461](#)

**Frequency Control of Energy Storage System based on Hierarchical Cluster Structure**

*Lee S.J., Choi J.Y., Won D.J., Choi I.S., An G.H., Choi Y.J.*

[462916](#)

**Economic Impact of Wind Integration on Primary Frequency Response**

*Farrokhseresht N., Chávez H., Hesamzadeh M.R.*

[477024](#)

**Reactive Power Limitation due to Wind-Farm Collector Networks**

*Martin J.A., Hiskens I.A.*

[471847](#)

**Evaluation of a very large scale PV power system with energy storage for capacity firming**

*Marinopoulos A., Bakas P.*

[459703](#)

**Integration of Renewable Energy into Grid System – The Sabah Green Grid**

*Hashim A.H., Khairuddin A.K., Ibrahim J.B.*

## Session 15 - Network protection and distribution automation I

Chair: Dr. Edward Coster, Eindhoven University of Technology / STEDIN

Paper ID	Tuesday, 30 June, 13:30 – 15:00
<a href="#">458030</a>	<b>Modified algorithm for directional earth-fault protection without voltage inputs</b> <i>Žarkovic M.D, Stojanovic Z.N.</i>
<a href="#">456398</a>	<b>An Adaptive Overcurrent Protection in Smart Distribution Grid</b> <i>Bhattarai B.P., Bak-Jensen B., Chaudhary S., Pillai J.R.</i>
<a href="#">463725</a>	<b>Signal extraction from inrush current for inter-winding fault protection of power transformers</b> <i>Dolgicers A., Kozadajevs J.</i>
<a href="#">460458</a>	<b>Fundamentals of Detectability and Detection Methods of Unintentional Electrical Islands</b> <i>Palm S., Schegner P.</i>
<a href="#">430695</a>	<b>An Enhanced Adaptive Data Processing Technique for Computing Synchrophasor Measurements under Power System Frequency Variation</b> <i>Almasalma H., Albuquerque R.J., Caire R., Hadjsaid N.</i>

## Session 16 - Active distribution network

Chair: Prof. Mario Paolone, EPFL DESL

Paper ID	Tuesday, 30 June, 15:30 – 17:40
<a href="#">461731</a>	<b>Switching State Optimization Influences on Active Distribution Systems Operation</b> <i>Hemdan N.G.A., Deppe B., Pielke M., Kurrat M., Schmedes T., Wieben E.</i>
<a href="#">469061</a>	<b>Control strategies for a decentralized, real-time operation of distribution grids</b> <i>Drayer E., Meyer F., Hegemann J., Braun M.</i>
<a href="#">460685</a>	<b>Rules based voltage control for distribution networks combined with TSO- DSO reactive power exchanges limitations</b> <i>Morin J., Colas F., Guillaud X., Grenard S., Dieulot J.Y.</i>
<a href="#">461633</a>	<b>Uncontrolled islanding operations of MV/LV active distribution networks</b> <i>Cerretti A., D'Orazio L., Pezzato C., Sapienza G., Valvo G., Cammalleri N, Mattavelli P., Sgarbossa R., Turri R., De Berardinis E.</i>
<a href="#">459194</a>	<b>Dynamic Virtual Reactive Power Plant in Active Distribution Networks</b> <i>Muuß F., Hemdan N.G.A., Kurrat M., Unger D., Engel B.</i>
<a href="#">476627</a>	<b>A Hardware-in-the-Loop Test Platform for the Performance Assessment of a PMU-based Real-Time State Estimator for Active Distribution Networks</b> <i>Sarri S., Pignati M., Romano P., Zanni L., Paolone M.</i>
<a href="#">462604</a>	<b>Security Constrained Optimal Power Flow for Mixed AC and Multi-Terminal HVDC Grids</b> <i>Saplamidis V., Wiget R., Andersson G.</i>

## Session 17 - Electricity markets design and regulatory issues

Chair: Prof. Andrej Gubina, University of Ljubljana

Paper ID	Tuesday, 30 June, 15:30 – 17:20
<a href="#">476884</a>	<b>Economic Cost-Benefit Analysis for Power System Operations with Environmental Considerations</b> <i>Lamadrid A.J., Shawhan D.L., Murillo-Sanchez C.E., Zimmerman R.D., Zhu Y., Tylavsky D.J., Kindle A., Dar Z.</i>
<a href="#">462373</a>	<b>European Market Coupling Algorithm incorporating clearing conditions of block and complex orders</b> <i>Dourbois G.A., Biskas P.N.</i>
<a href="#">463203</a>	<b>An Innovative Probabilistic Methodology for Net Transfer Capacity Evaluation</b> <i>Adinolfi F., Massucco S., Saviozzi M., Silvestro F., Ciapessoni E., Cirio D., Pitto A.</i>
<a href="#">462267</a>	<b>Strategic Bidding by a Risk-Averse Firm with a Portfolio of Renewable Resources</b> <i>Moiseeva E., Hesamzadeh M.R.</i>
<a href="#">462976</a>	<b>Policy Framework Conditions for Provision of Ancillary Services in a Distribution Network by Distributed RES Generation</b> <i>Gubina A.F., Tuerk A., Pucker J., Taljan G.</i>
<a href="#">462065<sup>6</sup></a>	<b>A Stochastic Multi-Layer Agent-Based Model to Study Electricity Market Participants Behavior</b> <i>Shafie-Khah M., Catalão J.P.S.</i>

## Session 18 - Demand side management and Demand response II

Chair: Prof. João Abel Peças Lopes, INESC PORTO

Paper ID	Tuesday, 30 June, 15:30 – 17:20
<a href="#">457402</a>	<b>OS4ES: Increasing awareness of DG-RES and demand response processes by registry enabled services</b> <i>Venekamp G.M., Kamphuis I.G., Laarakkers J.A.W., van den Berge L.J.M.</i>
<a href="#">475973</a>	<b>Assessment of an Algorithm to Utilize Heat Pump Flexibility - Theory and Practice</b> <i>Klaassen E.A.M., Asare-Bediako B., de Koning C.P., Frunt J., Slootweg J.G.</i>
<a href="#">461727</a>	<b>A Valuation Method for Demand Side Management with Heat Supply Systems and the Influence of Optimization Strategies</b> <i>Haase B., Rehtanz C.</i>
<a href="#">1028<sup>7</sup></a>	<b>Decentralised control of thermostatic loads for flexible demand response</b> <i>Tindemans S.H., Trovato V., Strbac G.</i>
<a href="#">462965</a>	<b>Integrating Large Shares of Heterogeneous Thermal Loads in Power System Frequency Control</b> <i>Vrettos E., Ziras C., Andersson G.</i>
<a href="#">462926</a>	<b>EHP in Low Voltage Networks: Understanding the Effects of Heat Emitters and Room Temperatures</b> <i>Navarro-Espinosa A., Good N., Zhang L., Mancarella P., Ochoa L.F.</i>

<sup>6</sup> IEEE Transactions on Power Systems, Vol. 30, No. 2, March 2015, pp. 867-881

<sup>7</sup> Accepted for publication in IEEE Transactions on Control Systems Technology

## Session 19 - RES integration II

Chair: Dr. Raphael Caire, Institut Polytechnique de Grenoble

Paper ID

Tuesday, 30 June, 15:30 – 17:20

- [462537](#) Flexible Resource Optimization to Mitigate Operational Problems from Variable Generation  
*Sakis Meliopoulos A.P., Polymeneas E., Huang R.*
- [462401](#) Inertia Considerations within Unit Commitment and Economic Dispatch for Systems with High Non-Synchronous Penetrations  
*Daly P., Cunniffe N., Flynn D.*
- [462531](#) Investigation of Different Fault Ride Through Strategies for Renewable Energy Sources  
*Hadjidemetriou L., Demetriou P., Kyriakides E.*
- [462840](#) Inverse time overcurrent protection scheme for fault location in multi-terminal HVDC  
*Torres-Olguin R.E., Høidalen H.K.*
- [461371](#) Impact of Increased Penetration of Wind Power on Damping of Low Frequency Oscillations in Different Network Topologies  
*Garmroodi M., Hill D.J., Ma J., Verbic G.*
- [461908](#) Assessment of the Resilience of Transmission Networks to Extreme Wind Events  
*Panteli M., Mancarella P., Wilkinson S., Dawson R., Pickering C.*

## Session 20 - Network protection and distribution automation II

Chair: Dr. Johan Morren, Eindhoven University of Technology / Enexis

Paper ID

Tuesday, 30 June, 15:30 – 17:40

- [462871](#) Recloser application possibilities and the related benefits at a Hungarian MV network  
*Andras D., Hartmann B., Kiss J., Vokony I.*
- [462771](#) Protection System Studies for ENEL Distribuzione's MV Loop Lines  
*Lauria S., Codino A., Calone R.*
- [476523](#) Volt/VAR Optimization Function with Load Uncertainty for Planning of MV Distribution Networks  
*Rahimi S., Massucco S., Silvestro F., Hesamzadeh M.R., Tohidi Y.*
- [462296](#) Protection Coordination in Modern Distribution Grids Integrating Optimization Techniques with Adaptive Relay Setting  
*Papaspiliotopoulos V.A., Korres G.N., Hatzigiargyriou N.D.*
- [462955](#) Service Restoration in Large-Scale Distribution Systems Considering Three Levels of Priority Customers  
*Marques L.T., Delbem A.C.B., Camillo M.H.M., London Junior J.B.A.*
- [460847](#) Hybrid and Pi-Circuit Approaches for Grounding System Lightning Response  
*Araneo R., Maccioni M., Lauria S., Geri A., Gatta F., Celozzi S.*
- 143<sup>8</sup> Coordinated Control for an Offshore Wind Power Plant to Provide Fault Ride Through Capability  
*Aragues Penalba M., Gomis-Bellmunt O., Martins M.*

<sup>8</sup> IEEE Transactions on Sustainable Energy, Vol. 5, No. 4, October 2014, pp. 1253-1261

## Session 21 - Power system modeling, simulation and analysis II

Chair: Prof. Sonja Berlijn, Statnett

Paper ID

Wednesday, 1 July, 9:00 – 10:30

- [460494](#)    **The role of spatial correlations in Monte Carlo studies on power system**  
*Seguinot B., Zani A.*
- [461034](#)    **Defensive Islanding Using Self-Organizing Maps Neural Networks and Hierarchical Clustering**  
*Mahdi M., Genc I.*
- [462636](#)    **Novel Crowbar System in Doubly Fed Induction Generators**  
*Lafferte D., Dias M., Zacharias P.*
- [462374](#)    **New Operation Scheme and Control of Smart Grids using Fuzzy Cognitive Networks**  
*Kottas T., Stimoniaris D., Tsiamitros D., Kikis V., Boutalis Y., Dialynas E.*
- 145<sup>9</sup>**    **Reliability Analysis of Substation Monitoring Systems Based on Branch PMUs**  
*Gómez O., Portilla C., Rios M.*

## Session 22 - Advanced diagnostics and asset management I

Chair: Prof. Johan Smit, Delft University of Technology

Paper ID

Wednesday, 1 July, 9:00 – 10:30

- [462156](#)    **Modelling for On-Line Partial Discharge Monitoring on MV Cables by Using a Modified Universal Line Model**  
*Milioudis A.N., Labridis D.P.*
- [464124](#)    **Insulation Condition Assessment of Power Transformer Bushings by Utilizing High Voltage Lightning Impulses**  
*Nikjoo R., Taylor N., Edin H.*
- [464114](#)    **Surface Discharge Analysis at Trapezoidal Testing Voltage Waveforms**  
*Wang X., Taylor N., Edin H.*
- [462186](#)    **Remote Diagnosis of Insulator Strings using Radiated Emission**  
*Leonida T., Baran I., Costea M.*
- [462356](#)    **Weather-Based Assessment of the OHL Thermal State**  
*Sidea D., Baran I., Leonida T.*

## Session 23 - Voltage control I

Chair: Prof. Alberto Borghetti, University of Bologna

Paper ID	Wednesday, 1 July, 9:00 – 10:30
<a href="#">462587</a>	<b>An Affine Arithmetic Method to Identify Voltage Control Areas for Secondary Voltage Control</b> <i>La Gatta P.O., Passos Filho J.A., Pereira J.L.R., Henriques R.M.</i>
<a href="#">460460</a>	<b>Voltage control in MV distribution networks through coordinated control of tap changers and renewable energy sources</b> <i>Jakus D., Vasilj J., Sarajčev P.</i>
<a href="#">457318</a>	<b>Investigation of voltage level control in electric power systems</b> <i>Belyaev N.A., Korovkin N.V., Chudny V.S., Frolov O.V.</i>
<a href="#">472441</a>	<b>Optimal Real-Time Control of Multiple Battery Sets for Power System Applications</b> <i>Fortenbacher P., Mathieu J.L., Andersson G.</i>
<a href="#">458887</a>	<b>Frequency Dependent Voltage Control by DER Units to Improve Power System Frequency Stability</b> <i>Korai A.W., Erlich I.</i>

## Session 24 - Power system operation I

Chair: Prof. Istvan Erlich, University Duisburg-Essen

Paper ID	Wednesday, 1 July, 9:00 – 10:30
<a href="#">462801</a>	<b>Innovative methodology for observability improvement of distribution networks</b> <i>Bovo C., Ilea V., Subasic M., Rochira I., Arrigoni C.</i>
<a href="#">462864</a>	<b>Optimal energy management for an island microgrid by using Dynamic programming method</b> <i>Luu N.A., Tran Q.-T., Bacha S.</i>
<a href="#">462625</a>	<b>Performance Assessment of Evolutionary Algorithms in Power System Optimization Problems</b> <i>Rueda J.L., Erlich I., González-Longatt F.</i>
<a href="#">469095</a>	<b>Real-Time Control of Microgrids with Explicit Power Setpoints: Unintentional Islanding</b> <i>Bernstein A., Reyes-Chamorro L., Le Boudec J.-Y., Paolone M.</i>
<a href="#">461315</a>	<b>A Novel Measure to Characterize the Bus Type Assignments of Realistic Power Grids</b> <i>Wang Z., Elyas S.H., Thomas R.J.</i>

## Session 25 - Smart energy markets I

Chair: Prof. Gerard Smit, University of Twente

Paper ID

Wednesday, 1 July, 9:00 – 10:30

- [462666](#) **Techno-Economic Assessment of Demand Response Aggregation under Different Market Price Conditions**  
*Schachter J.A., Mancarella P.*
- [461037](#) **Optimized Demand Response Bidding in the Wholesale Market under Scenarios of Prices and Temperatures**  
*Iria J.P., Soares F.J., Bessa R.J.*
- [476385](#) **The Development of Demand Elasticity Model for Demand Response in the Retail Market Environment**  
*Babar M., Nguyen P.H., Cuk V., Kamphuis I.G.*
- [457759](#) **Demand Side Management using Profile Steering**  
*Gerards M.E.T., Toersche H.A., Hoogsteen G., van der Klauw T., Hurink J.L., Smit G.J.M.*
- [461381](#) **The Influence of the Consumer Modelling Approach in Demand Response Programs Implementation**  
*Pereira F., Faria P., Vale Z.*

## Session 26 - Power system modeling, simulation and analysis III

Chair: Prof. Costas Vournas, ICCS/NTUA

Paper ID

Wednesday, 1 July, 11:00 – 12:30

- [469948](#) **The Role of Aggregation in Power System Simulation**  
*Deml S., Ulbig A., Borsche T., Andersson G.*
- [459722](#) **Application of the Adomian Decomposition Method for Semi-Analytic Solutions of Power System Differential Algebraic Equations**  
*Duan N., Sun K.*
- [459148](#) **Power Flow Method Using a Dedicated Mixed-Signal Hardware Platform**  
*Lanz G., Kyriakidis T., Cherkaoui R., Kayal M.*
- [462262](#) **Performance Assessment of IMF-Based Passive Islanding Detection Method in Various Islanding and Non-Islanding Events**  
*Mohammadzadeh Niaki A.H., Afsharnia S.*
- 644<sup>10</sup>** **Advanced Network Management Systems: A Risk-Based AC OPF Approach**  
*Alnaser S.W., Ochoa L.F.*

<sup>10</sup> IEEE Transactions on Power Systems, Vol. 30, No. 1, January 2015, pp. 409-418

## Session 27 - Advanced diagnostics and asset management II

Chair: Dr. Peter Wouter, Eindhoven University of Technology / DNV GL

Paper ID

Wednesday, 1 July, 11:00 – 12:30

- [438623](#) **Dynamic Line Rating of Overhead Transmission Lines under Natural Convective Cooling**  
*Rodriguez J., Franck C.M.*
- [462876](#) **Estimation of the Influence of Direct strokes on the Lightning Performance of Overhead Distribution Lines**  
*Tossani F., Napolitano F., Borghetti A., Nucci C.A., Lopes G.P., Martinez M.L.B., Dos Santos G.J.G.*
- [450675](#) **Transformer Incipient Inter-turn Fault detection based on No-load Current Harmonic Analysis**  
*Venikar P.A., Ballal M.S., Umre B.S., Suryawanshi H.M.*
- [461602](#) **Optimal Geometric Configurations for Mitigation of Magnetic Fields of Underground Power Lines**  
*Hernández Jiménez V.J., Castronuovo E.D.*
- [462419](#) **Lightning Performance of Overhead Hybrid Transmission Line**  
*Mackow A., Kizilcay M., Malicki P.*

## Session 28 - Voltage control II

Chair: Prof. Grigoris Papagiannis, Aristotle University of Thessaloniki

Paper ID

Wednesday, 1 July, 11:00 – 12:30

- [461413](#) **Reactive power control of photovoltaic units over wireless cellular networks**  
*Bottura R., Borghetti A., Barbiroli M., Nucci C.A.*
- [462622](#) **Dynamic Voltage Regulator Operation with Demand Side Management for Voltage Control**  
*Mufaris A.L.M., Baba J., Yoshizawa S., Hayashi Y.*
- [460717](#) **Optimised Voltage Control for Distributed Generation**  
*Murphy C., Keane A.*
- [461634](#) **A Random Forest-Based Approach for Voltage Security Monitoring in a Power System**  
*Negnevitsky M., Tomin N., Panasetky D., Rehtanz C., Kurbatsky V., Zhukov A.*
- 411<sup>11</sup>** **Volt-VAR Multiobjective Optimization to Peak Load Relief and Energy Efficiency in Distribution Networks**  
*Padihla-Feltrin A., Quijano Rodezno D.A., Mantovani J.R.S*

<sup>11</sup> IEEE Transactions on Power Delivery, Vol. 30, No. 2, April 2015, pp. 618-626

## Session 29 - Power system operation II

Chair: Prof. Istvan Erlich, University Duisburg-Essen

Paper ID

Wednesday, 1 July, 11:00 – 12:30

- [460413](#) Vulnerability Analysis related to Extraordinary Events in Power Systems  
*Kjølle G.H., Gjerde O.*
- [455436](#) Uncertainty Margins for Probabilistic AC Security Assessment  
*Qu H., Roald L., Andersson G.*
- [448558](#) Influence of Voltage Support by Converter Based Distributed Generation on the Short-Circuit Power  
*Wijnhoven T., Tant J., Neumann T., Erlich I., Deconinck G.*
- [460939](#) Irish Power System Primary Frequency Response Metrics during Different System Non Synchronous Penetration  
*Iswadi H.R., Best R.J., Morrow J.D.*
- [455770](#) Some Peculiarities of the Fault Current Contribution by Dispersed Generation  
*Janssen A., Steentjes N.*

## Session 30 - Smart energy markets II

Chair: Prof. Gerard Smit, University of Twente

Paper ID

Wednesday, 1 July, 11:00 – 12:30

- [462919](#) Adaptive Thermostat Control in Residential Buildings through Uniform Clearing Price Mechanism  
*Bhattacharya S., Kar K., Chow J.H.*
- [462606](#) Addressing Demand Response Concentration under Dynamic Pricing  
*Papadaskalopoulos D., Fatouros P., Strbac G.*
- [462068](#) Optimal Operational and Economical Coordination Strategy for a Smart Neighborhood  
*Paterakis N.G., Pappi I.N., Catalão J.P.S., Erdinc O.*
- [429024](#) Improving the efficiency of a hydro-thermal power system utilizing demand-side flexibility  
*Song M., Amelin M.*
- [461949](#) Demand Response Clustering – How do Dynamic Prices affect Household Electricity Consumption?  
*Waczowicz S., Reischl M., Klaiber S., Konotop I., Hagenmeyer V., Mikut R., Bretschneider P., Westermann D.*

## Session 31 - Developments in power system planning I

Chair: Dr. Gianluigi Migliavacca, Ricerca sul Sistema Energetico - RSE SpA

Paper ID

Wednesday, 1 July, 13:30 – 15:00

**1022<sup>12</sup>**

**An Adjustable Robust Optimization Approach for Contingency-Constrained Transmission Expansion Planning**

*Moreira A., Street A., Arroyo J.M.*

[461334](#)

**Optimal Location and Sizing of HVDC Converters for Same-Tower AC-DC Overhead Lines**

*Alizadeh-Mousavi O., Evrenosoglu C.Y., Zima-Bočkarjova M.*

[449224](#)

**Unit Commitment Model including Detailed Modeling of Combined Cycle Gas Turbine concerning Weather Impacts**

*Geng Z., Chen Q., Chen X., Xia Q., Li J., Wang Y., Chen Y.*

[446451](#)

**Hydrothermal scheduling in Norway using stochastic dual dynamic programming; a large-scale case study**

*Gjerden K.S., Helseth A., Mo B., Warland G.*

[469161](#)

**Optimal Reserve Grid Planning Considering Reliability**

*La Fauci R., Bader J., Andersson G.*

## Session 32 - Future power system infrastructure

Chair: Prof. Gerard Doorman, Statnett / NTNU

Paper ID

Wednesday, 1 July, 13:30 – 15:00

[464965](#)

**European Electricity Market Simulation for Future Scenarios with High Renewable Energy Production**

*Spieker C., Teuwsen J., Liebenau V., Müller S.C., Rehtanz C.*

[475890](#)

**Evaluation of interactions between multiple grid operators based on sparse grid knowledge in context of a smart grid co-simulation environment**

*Vogt M., Marten F., Löwer L., Horst D., Brauns K., Fetzer D., Menke J.-H., Troncia M., Hegemann J., Töbermann C., Braun M.*

[464501](#)

**Application of new grid-impacting technologies towards RES exploitation: the GridTech pan-European analysis**

*L'Abbate A., Calisti R., Careri F., Rossi S.*

[459750](#)

**Aggregated Effect of Demand Response on Performance of Future Grid Scenarios**

*Marzooghi H., Verbic G., Hill D.J.*

[461964](#)

**Monte Carlo Simulation Applied to Support Risk-based Decision Making in Electricity Distribution Networks**

*Goerdin S.A.V., Mehairjan R.P.Y., Smit J.J.*

## Session 33 - HVDC I

Chair: Prof. Mart van der Meijden, Delft University of Technology

Paper ID	Wednesday, 1 July, 13:30 – 15:00
<a href="#">475940</a>	<b>Dynamic Simulation of a Combined AC and MTDC Grid with Decentralized Controllers to Share Primary Frequency Control Reserves</b> <i>Wiget R., Andreasson M., Andersson G., Dimarogonas D.V., Johansson K.H.</i>
<a href="#">462139</a>	<b>On-line control of Multi-Terminal HVDC Systems Connected to Offshore Wind Farms using the OPF-based Multi-Agent Approach</b> <i>Nazari M., Baradar M., Hesamzadeh M.R., Ghandhari M.</i>
<a href="#">460581</a>	<b>Power Flow Analysis of Meshed AC-DC Super Grid</b> <i>Chowdhury N.U.A., Yanushkevich A.</i>
<a href="#">460686</a>	<b>Damping of Electromagnetic Transients in a Superconducting VSC Transmission System</b> <i>Doukas D.I., Blatsi Z.D., Milioudis A.N., Labridis D.P., Harnefors L., Velotto G.</i>
1055 <sup>13</sup>	<b>Advanced Hybrid Transient Stability and EMT Simulation for VSC-HVDC Systems</b> <i>van der Meer A.A., Gibescu M., van der Meijden M.A.M.M., Kling, W.L., Ferreira J.A.</i>

## Session 34 - State estimation and situational awareness II

Chair: Prof. Antonio Simões Costa, Federal University of Santa Catarina

Paper ID	Wednesday, 1 July, 13:30 – 15:00
<a href="#">462204</a>	<b>The Effect of Time-Delayed Measurements on a PMU-Based State Estimator</b> <i>Asprou M., Kyriakides E.</i>
<a href="#">448510</a>	<b>A Modified Chi-Squares Test for Improved Bad Data Detection</b> <i>Göl M., Abur A.</i>
<a href="#">448346</a>	<b>Modification of Boundary Zone Measurements to Avoid Spreading of Errors</b> <i>Ren P., Abur A.</i>
<a href="#">461762</a>	<b>A new formulation of state estimation in distribution systems including demand and generation states</b> <i>Rousseaux P., Toubeau J.-F., De Grève Z., Vallée F., Glavic M., Van Cutsem T.</i>
<a href="#">461558</a>	<b>Optimization based method to consolidate European Transmission Data</b> <i>Ruiz M., Gabay M., Maeght J., Lefevre M., Panciatici P.</i>

## Session 35 - Power quality issues and mitigation techniques I

Chair: Prof. Sjef Cobben, Eindhoven University of Technology

Paper ID

Wednesday, 1 July, 13:30 – 15:00

[457259](#)

**Mitigation of Power Flow Congestion in a Meshed DC Grid with Controllable DC Series Voltage**

*Auddy S., Mukherjee S., Bopparaju G., Jonsson T.U., Callavik M.*

[460205](#)

**Harmonic Resonances in Wind Power Plants: Modeling, Analysis and Active Mitigation Methods**

*Freijedo F.D., Chaudhary S.K., Teodorescu R., Guerrero J.M., Bak C.L., Kocewiak L.H., Jensen C.F.*

[441921](#)

**Observability Reliability Evaluation in Power Systems Considering Data Uncertainty**

*Khalafi Z., Dehghani M., Goel L., Li W.*

[459071](#)

**Malfunction Operation of LVRT Capability of Wind Turbines under Islanding Conditions**

*Hoseinzadeh B., Faria da Silva F., Bak C.L., Mirehbaygi M.*

[459608](#)

**Global Assessment of Power Quality Performance of Networks using the Analytic Hierarchy Process Model**

*Abdelrahman S., Liao H., Guo T., Guo Y., Milanovic J.V.*

## Session 36 - Developments in power system planning II

Chair: Dr. Gianluigi Migliavacca, Ricerca sul Sistema Energetico - RSE SpA

Paper ID

Wednesday, 1 July, 15:30 – 17:00

[460497](#)

**Snapshot Selection based on statistical clustering for Transmission Expansion Planning**

*Agapoff S., Pache C., Paniatici P., Warland L., Lumbreras S.*

[440931](#)

**Development of grid security forecasting processes at TenneT TSO B.V.**

*van Waes J.B.M., van de Ploeg P.J., Fadriansyah T., Almeida de Graaff S.*

[469916](#)

**Multi-Stage Power Distribution Planning to Accommodate High Wind Generation Capacity**

*Koutsoukis N.C., Georgilakis P.S., Hatziaargyriou N.D.*

[462784](#)

**Planning open and closed-Loop feeders with efficiency analysis**

*Morillo J.L., Pérez J.F., Quijano N., Cadena A.*

[456708](#)

**Weather Data-based Load Profile Modeling for Grid Expansion Planning**

*Wiest P., Rudion K., Probst A.*

## Session 37 - Transient Stability & Control

Chair: Prof. Claudio Canizares, University of Waterloo

Paper ID

Wednesday, 1 July, 15:30 – 17:20

[459066](#)

**Transient Stability Analysis of Series Unbalanced Conditions using Dedicated Mixed-Signal Hardware**

*Lanz G., Kyriakidis T., Cherkaoui R., Kayal M.*

[458982](#)

**A Technique to Reduce Electric Power System Models for Dynamic Investigations using Generator Coherency**

*Zimmer H., Hanson J.*

[472230](#)

**Circulating current suppression control dynamics and impact on MMC converter dynamics**

*Jamshidi Far A.A., Jovcic D.*

[456593](#)

**Impact of high level penetration of Wind Turbines on Power System Transient Stability**

*Kalogiannis T., Müller Llano E., Hoseinzadeh B., Faria Da Silva F.*

[462808](#)

**Improving Transient Stability of Photovoltaic-Hydro Microgrids Using Virtual Synchronous Machines**

*Tamrakar U., Galipeau D., Tonkoski R., Tamrakar I.*

[459746](#)

**PSS Phase Shaping and Coordinated Gain Tuning in a Large Longitudinal Power System**

*De Marco F.J., Martins N., Libonati F., Castellanos J.M.*

## Session 38 - HVDC II

Chair: Dr. Dirk van Hertem, KU Leuven

Paper ID

Wednesday, 1 July, 15:30 – 17:20

[457355](#)

**Modular modelling of combined AC and DC systems in dynamic simulations**

*Aristidou P., Papangelis L., Guillaud X., Van Cutsem T.*

[462740](#)

**Comparison of PI and PR Current Controllers applied on Two-Level VSC-HVDC Transmission System**

*Manoloiu A., Pereira H.A., Teodorescu R., Bongiorno M., Eremia M., Silva S.R.*

[461918](#)

**Distributed Ancillary Service Support for Independent AC-Areas through HVDC Grid**

*Babazadeh D., Freizadeh F., Nordström L.*

[460386](#)

**A Comprehensive Methodology for Assessing Power Oscillation Damping Controllers for HVDC-based System Stabilization**

*Zhang Y., Preece R.*

[461835](#)

**A fundamental study on the impact of HVDC lines on transient stability of power systems**

*Sigrist L., Echavarren F., Rouco L., Panciatici P.*

[448581](#)

**Coupling between the Frequency Droop and the Voltage Droop of an AC/DC Converter in an MTDC System**

*Akkari S., Dai J., Petit M., Guillaud X.*

## Session 39 - State estimation and situational awareness III

Chair: Prof. Ali Abur, Northeastern University – Boston

Paper ID	Wednesday, 1 July, 15:30 – 17:40
<a href="#">458463</a>	<b>Linear State Estimation in Low Voltage Grids based on Smart Meter Data</b> <i>Waeresch D., Brandalik R., Wellssow W.H., Jordan J., Bischler R., Schneider N.</i>
<a href="#">462824</a>	<b>Two-Stage Hierarchical State Estimation Based on Local Substation Modeling</b> <i>Salame da Silva N., Simões Costa A.</i>
<a href="#">441904</a>	<b>Integrity Attack Detection in PMU Networks Using Static State Estimation Algorithm</b> <i>Dehghani M., Khalafi Z., Khalili A., Sami A.</i>
<a href="#">464171</a>	<b>A PMU-Based State Estimator for Networks Containing FACTS Devices</b> <i>Li W., Vanfretti L.</i>
<a href="#">458234</a>	<b>Enhancing the Observability of Traditional Distribution Grids by Strategic Meter Allocation</b> <i>Kouzelis K., De Cerio Mendaza I., Bak-Jensen B., Pillai J.R., Katsavounis K.</i>
<a href="#">443841</a>	<b>The Innovation Concept Applied to the Processing of Measurements and Parameters Errors in Power Systems State Estimation</b> <i>Bretas N.G., Carvalho B.E.B., Albertini M.R.C.</i>
<a href="#">461345</a>	<b>Integrated State &amp; Topology Estimation Based on A Priori Topology Information</b> <i>Freitas V., Costa A.S.</i>

## Session 40 - Applications of storage technologies III

Chair: Prof. Johann Hurink, University of Twente

Paper ID	Wednesday, 1 July, 15:30 – 17:20
<a href="#">462602</a>	<b>Optimal Siting and Sizing of Energy Storage System for Power Systems with Large-scale Wind Power Integration</b> <i>Zhao H., Wu Q., Huang S., Guo Q., Sun H., Xue Y.</i>
<a href="#">463367</a>	<b>Impact Analysis of Distributed PV and Energy Storage Systems in Unbalanced LV Networks</b> <i>Lamberti F., Calderaro V., Galdi V., Piccolo A., Graditi G.</i>
<a href="#">462486</a>	<b>Power-to-Gas Potential Assessment of Portugal Under Special Consideration of LCOE</b> <i>Heymann F., Bessa R.</i>
<a href="#">462000</a>	<b>Evaluation of Flexible Demand-Side Load-Following Reserves in Power Systems with High Wind Generation Penetration</b> <i>Paterakis N.G., Catalão J.P.S., Ntomaris A.V., Erdinc O.</i>
<a href="#">432206</a>	<b>An Aging-Aware Life Cycle Cost Comparison between Supercapacitors and Li-ion Batteries to Smooth Direct Wave Energy Converter Production</b> <i>Kovaltchouk T., Ben Ahmed H., Multon B., Aubry J., Venet P.</i>
<a href="#">460890</a>	<b>Storage units in active Distribution Networks: advanced Voltage Regulation with multi-objective optimization</b> <i>Viganò G., Moneta D., Stein D., Consiglio L.</i>

## Session 41 - Development in power system planning III

Chair: Prof. Han Sloomweg, Eindhoven University of Technology

Paper ID

Thursday, 2 July, 9:00 – 10:30

- [459336](#) **A review of multi-energy system planning and optimization tools for sustainable urban development**  
*van Beuzekom I., Gibescu M., Sloomweg J.G.*
- [461923](#) **Flex-Grid: A Dynamic and Adaptive Configurable Power Distribution System**  
*Sun H., Wang Y., Nikovski D., Zhang J.*
- [462581](#) **Matching PV Array Output With Residential Load by Optimisation of Array Orientation**  
*Ashok V.V., Onwudinanti C., Mouli C., Ram G., Bauer P.*
- [462799](#) **System Level Cost and Environmental Performance of Integrated Energy Systems: An Assessment of Low-Carbon Scenarios for the UK**  
*Wang H., Saint-Pierre A., Mancarella P.*
- [462697](#) **Optimization of Transmission Technology and Routes for Pan-European Electricity Highways Considering Spatial Aspects**  
*Ergun H.E., Rawn B.G., Belmans R., Van Hertem D.*

## Session 42 - Risk assessment

Chair: Prof. Christian Rehtanz, TU Dortmund

Paper ID

Thursday, 2 July, 9:00 – 10:30

- [462288](#) **Risk Assessment Tool for Operation: from Threat Models to Risk Indicators**  
*Vefsnmo H., Kjølle G., Jakobsen S.H., Ciapessoni E., Cirio D., Pitto A.*
- [473725](#) **A Net Balance-Based Approach in Risk Assessment of Distributed Generation Curtailment**  
*Faghihi F., Labeau P.-E., Maun J.-C., Vergnol A., De Wilde V.*
- [457385](#) **Short-term Operational Reliability Evaluation for Power Systems under Extreme Weather Conditions**  
*Liu Y.*
- [457958](#) **Risk-Constrained AC OPF with Risk Limits on Individual System States**  
*Shchetinin D., Hug G.*
- [462724](#) **Validation of ICT-Based Protection and Control Applications in Electric Power Systems**  
*Kubis A., Robitzky L., Kuech M., Müller S.C., Jablkowski B., Georg H., Dorsch N., Krey S., Langesberg C., Surmann D., Mayorga D., Rehtanz C., Häger U., Spinczyk O., Wietfeld C., Weihs C., Ligges U., Myrzik J., Götze J.*

## Session 43 - Real time monitoring and PMUs

Chair: Prof. Carlo Alberto Nucci, University of Bologna - DEI

Paper ID

Thursday, 2 July, 9:00 – 10:30

- [459469](#) Comparison of Ensemble Decision Tree Methods for On-line Identification of Power System Dynamic Signature Considering Availability of PMU Measurements  
*Guo T., Papadopoulos P., Mohammed P., Milanovic J.V.*
- [456631](#) Real-Time Estimation of Transmission Losses from PMU Measurements  
*Tuttelberg K., Kilter J.*
- [460002](#) Real-Time Power System Oscillation Monitoring using Synchrophasor Measurements  
*van Rooyen T., Rens J.*
- [464272](#) Assessment of Time Synchronization Requirements for Phasor Measurement Units  
*Singh R.S., Hooshyar H., Vanfretti L.*
- [458768](#) Estimation of the Rotor Angle of a Synchronous Generator by using PMU Measurements  
*Jha M., Chakrabarti S., Kyriakides E.*

## Session 44 - Power quality issues and mitigation techniques II

Chair: Prof. Peter Schegner, Technische Universität Dresden

Paper ID

Thursday, 2 July, 9:00 – 10:30

- [456847](#) Experimental Investigation on the Sensitivity of an Industrial Process to Voltage Dips  
*Weldemariam L.E., Gärtner H.J., Cuk V., Cobben J.F.G., Kling W.L.*
- [431513](#) Distributed Underfrequency Load Shedding Using a Multi-Agent System  
*Xie J., Liu C.-C., Sforza M.*
- [494109](#) Study on Reactive Power Control of Large-Scale Photovoltaic System for Voltage Regulation with Long Distribution Line  
*Kouno K., Sogabe T., Itou K., Hojo M.*
- [461991](#) Mitigation of Cascading Failures by Selective Inter-subnetwork Power Shifts under Multi-objective Decision Making  
*Li B., Sansavini G.*
- [460604](#) Adaptive Threshold for Segmentation of Combined Power Quality Disturbances  
*de Andrade L.C.M., Oleskovicz M., Souza Fernandes R.A.*

## Session 45 - Power system scheduling I

Chair: Prof. Tran Quoc Tuan, CEA-INES

Paper ID

Thursday, 2 July, 9:00 – 10:30

[462731](#)

**Reinforcement Learning for the Unit Commitment Problem**

*Dalal G., Mannor S.*

[460900](#)

**A Framework for Analyzing and Optimizing Renewable Energy Portfolios**

*Chakraborty S.V., Shukla S.K., Thorp J.*

6<sup>14</sup>

**Nonlinear Medium-Term Hydro-Thermal Scheduling With Transmission Constraints**

*Martins L.S.A., Azevedo A.T., Soares S.*

[462671](#)

**Optimizing PV Self-Consumption through Electric Water Heater Modeling and Scheduling**

*Heleno M., Rua D., Gouveia C., Madureira A., Matos M.A., Peças Lopes J., Silva N., Salustio S.*

[434059](#)

**Co-Optimizing Sales of Energy and Capacity in a Hydropower Scheduling Model**

*Helseth A., Mo B., Fodstad M., Hjelmeland M.N.*

## Session 46 - Power system modeling, simulation and analysis IV

Chair: Prof. Grigoris Papagiannis, Aristotle University of Thessaloniki

Paper ID

Thursday, 2 July, 11:00 – 12:30

[462663](#)

**An Equivalent Circuit Formulation of the Power Flow Problem with Current and Voltage State Variables**

*Bromberg D.M., Jereminov M., Li X., Hug G., Pileggi L.*

[461888](#)

**Out-of-Step Protection for Multi-Machine Power Systems Using Local Measurements**

*Paudyal S., Gokaraju R.*

213<sup>15</sup>

**Optimal Allocation and Sizing of Dynamic Var Sources Using Heuristic Optimization**

*Wildenhues, S., Rueda, J.L., Erlich, I.*

[462660](#)

**Development of Steady State and Dynamic Energy Storage Models for DigSILENT PowerFactory**

*Hartmann B., Lipták S.*

[461891](#)

**A Scheme for Optimal Coordination of Reactive-Power Reserves in a Large Power System**

*Kalemba L., Uhlen K., Hovd M.*

---

<sup>14</sup> IEEE Transactions on Power Systems, Vol. 29, No. 4, July 2014, pp. 1623-1633

<sup>15</sup> Accepted for publication in IEEE Transactions on Power Systems

## Session 47 - Hybrid AC/DC distribution technologies

Chair: Prof. Math Bollen, Luleå University of Technology

Paper ID

Thursday, 2 July, 11:00 – 12:30

[476680](#)

**Frequency-Based Overload Control of Smart Transformers**

*De Carne G., Buticchi G., Liserre M., Vournas C.*

[462595](#)

**Stability of DC Voltage Droop Controllers in VSC HVDC Systems**

*Thams F., Suul J.A., D'Arco S., Molinas M., Fuchs F.W.*

[469706](#)

**Advanced Control of Inverter-interfaced Generation Behaving as a Virtual Synchronous Generator**

*Rubino S., Mazza A., Chicco G., Pastorelli M.*

[462977](#)

**Subsynchronous Oscillatory Stability Analysis of an AC/DC Transmission System**

*Joseph T., Ugalde-Loo C.E., Liang J.*

[460874](#)

**Low Frequency AC Transmission as an Alternative to VSC-HVDC for Grid Interconnection of Offshore Wind**

*Ruddy J., Meere R., O'Donnell T.*

## Session 48 - Power system control I

Chair: Prof. Jovica Milanovic, University of Manchester

Paper ID

Thursday, 2 July, 11:00 – 12:30

[449896](#)

**Control Strategy for Optimal Participation of Wind Farms in Primary Frequency Control**

*Ahmadyar A.S., Verbic G.*

[470162](#)

**Quasi Generalized Hamiltonian Model of Power Systems Considering the Reference Node Under Stochastic Excitations**

*Li H., Ju P., Yu Y., Wu F., Liu Y.*

[459204](#)

**Controlled Islanding Using VSC-HVDC Links to Reduce Load Shedding**

*Imhof M., Valgaev O., Andersson G.*

[450157](#)

**Control of VSC-HVDC in offshore AC islands with wind power plants: comparison of two alternatives**

*Zeni L., Hesselbæk B., Sørensen P.E., Hansen A.D., Kjær P.C.*

[461872](#)

**Robust Fallback Scheme for the Danish Automatic Voltage Control System**

*Qin N., Dmitrova E., Lund T., Lund P., Abildgaard H., Bak C.L., Chen Z.*

## Session 49 - Power quality issues and mitigation techniques III

Chair: Prof. Sjef Cobben, Eindhoven University of Technology / Alliander

Paper ID

Thursday, 2 July, 11:00 – 12:30

[462089](#)

**Harmonic Emission of Household Devices in Presence of Typical Voltage Distortions**

*Yanchenko S.A., Meyer J.*

[426033](#)

**Voltage Sags Tolerance and Responsibility Curves**

*Dos Santos A., Correia de Barros M.T.*

[462669](#)

**Stochastic harmonic load model of residential users based on measurements**

*Blanco A.M., Greverer A., Müller S., Meyer J., Schegner P.*

[462093](#)

**A Shunt Active Compensation Strategy With Zero Neutral Current in Two-phase Three-wire Systems**

*Furtado P.C. de S., Rodrigues M. do C.B.P., Barbosa P.G.*

[456296](#)

**Microgrid Management in Emergency Scenarios for Smart Electrical Energy Usage**

*Oliveira D.Q., Zambroni de Souza A.C., Almeida A.B., Santos M.V., Lopes B.I.L., Marujo D.*

## Session 50 - Power system scheduling II

Chair: Prof. Tran Quoc Tuan, CEA-INES

Paper ID

Thursday, 2 July, 11:00 – 12:30

[458984](#)

**Hybrid Stochastic/Deterministic Unit Commitment with Wind Power Generation**

*Tan W.-S., Shaaban M.*

[462576](#)

**Optimum Scheduling of Non-utility Facility with Battery Storage Under a Price-taking Scheme**

*Nuchprayoon S.*

[462634](#)

**Coping with Wind Power Uncertainty in Unit Commitment: a Robust Approach using the New Hybrid Metaheuristic DEEPSO**

*Pinto R., Carvalho L.M., Sumaili J., Pinto M.S.S, Miranda V.*

[462410](#)

**Stochastic Optimization applied to Brazilian Hydroelectric Seasonalization of Assured Energy**

*Lorey L.F., Iha F.H., Hoffmann L., Ferreira Pereira I., Chaves da Silva Junior I., Henriques Dias B., Marques Marcato A.L.*

# Session 51 - Power system modeling, simulation and analysis V

Chair: Prof. Han Slootweg, Eindhoven University of Technology

Paper ID

Thursday, 2 July, 13:30 – 15:00

- [476701](#) **Development of Measurement-Based Generic Load Models for Dynamic Simulations**  
*Kontis E.O., Chrysochos A.I., Papadopoulos T.A., Papagiannis G.K.*
- [459943](#) **Modelling the Charging Probability of Electric Vehicles as a Gaussian Mixture Model for a Convolution Based Power Flow Analysis**  
*Gödde M., Findeisen T., Sowa T., Schnettler A., Nguyen P.H.*
- [444504](#) **Maximization of the feed-in of renewable energy into high-voltage grids by optimal switching**  
*Scheel J., Dib R., Westermann D., Wirtz F.*
- [462003](#) **Aspects of Power System modeling, Initialization and Simulation using the Modelica Language**  
*León G., Halat M., Sabaté M., Heyberger J.-B., Gómez F.J., Vanfretti L.*

# Session 52 - System Reliability

Chair: Prof. Christian Rehtanz, TU Dortmund

Paper ID

Thursday, 2 July, 13:30 – 15:00

- [462076](#) **On Quantification of Flexibility in Power Systems**  
*Bucher M.A., Delikaraoglou S., Heussen K., Pinson P., Andersson G.*
- [461916](#) **Contribution of Microgrids to Distribution Network Reliability**  
*Syrri A.L.A., Martínez Ceseña E.A., Mancarella P.*
- [467282](#) **Proposed Future Ancillary Services in Electric Reliability Council of Texas**  
*Matevosyan J., Sharma S., Huang S.-H., Woodfin D., Ragsdale K., Moorty S., Wattles P., Li W.*
- [462114](#) **Reliability Assessment of Microgrids with Renewable Generation by an Hybrid Model**  
*Borges C.L.T., Costa M.*
- [462276](#) **Development of Software for Modelling Decentralized Intelligent Systems for Security Monitoring and Control in Power Systems**  
*Panasetsky D., Tomin N., Zhukov A., Kurbatsky V., Voropai N., Sidorov D.*

## Session 53 - Power system control II

Chair: Prof. Jovica Milanovic, University of Manchester

Paper ID

Thursday, 2 July, 13:30 – 15:00

- [461107](#) Evaluation of Droop-Based Controls in an Islanded Microgrid with Electronically Interfaced Distributed Energy Resources  
*Farrokhbadi M., Canizares C.A., Bhattacharya K.*
- [462875](#) Frequency-Response Coupling between Synchronous Areas in Europe  
*Scherer M., Zolotarev P.*
- [462561](#) How Future-Proof Is the Continental European Frequency Control Structure?  
*Scherer M., Andersson G.*
- [462719](#) Parallel Operation of Two Adjacent Steam Power Plants Under Coordinated Q-V Control  
*Dragosavac J., Janda Ž., Gajic T., Arnautovic D., Milanovic J.V.*
- [459689](#) Actions Generation for Online Power System Control  
*Glazunova A.M., Aksaeva E.S.*

## Session 54 - Advanced methods in optimal power flow calculation

Chair: Dr. Dan Molzahn, University of Michigan

Paper ID

Thursday, 2 July, 13:30 – 15:00

- [461062](#) Mixed SDP/SOCP Moment Relaxations of the Optimal Power Flow Problem  
*Molzahn D.K., Hiskens I.A.*
- [476948](#) Analytical Reformulation of Chance-Constrained Optimal Power Flow with Uncertain Load Control  
*Li B., Mathieu J.L.*
- [462453](#) Implementation of Bus Bar Switching and Short Circuit Constraints in Optimal Power Flow Problems  
*van Acker T., van Hertem D., Bekaert D., Karoui K., Merckx C.*
- [462571](#) Asynchronous Distributed Approach for DC Optimal Power Flow  
*Mohammadi J., Hug G., Kar S.*
- [459997](#) On Efficient Computation of Time Constrained Optimal Power Flow in Rectangular Form  
*Meyer-Huebner N., Suriyah M., Leibfried T.*

## Session 55 - Forecasting Methods in Power System

Chair: Prof. Geert Verbong, Eindhoven University of Technology

Paper ID

Thursday, 2 July, 13:30 – 15:00

[462125](#)

**A Two-Stage Random Forest Method for Short-term Load Forecasting**

*Wu X., He J., Yip T., Zhang P.*

[434851](#)

**Local Learning-ARIMA Adaptive Hybrid Architecture for Hourly Electricity Price Forecasting**

*Vaccaro A., El-Fouly T.H.M., Canizares C.A., Bhattacharya K.*

[459224](#)

**Short-Term Load Forecasting at the Local Level using Smart Meter Data**

*Hayes B.P., Gruber J.K., Prodanovic M.*

[463286](#)

**Analyzing the Impact of Forecasting Errors on Redispatch and Control Reserve Activation in Congested Transmission Networks**

*Kloubert M.-L., Schwippe J., Müller S.C., Rehtanz C.*

[461088](#)

**Predictive Decision Support to Protect Power Systems against Wind Farm Drop Outs**

*Münz U., Sollacher R., Heyde C., Klein W., Pilgram P.T.*

**Note:** The IEEE Transaction papers are available through the IEEE Xplore Digital Library (including those accepted for inclusion in a future issue of an IEEE journal)