

2015 Modern Electric Power Systems (MEPS 2015)

**Wroclaw, Poland
6-9 July 2015**



**IEEE Catalog Number: CFP1521K-POD
ISBN: 978-1-5090-2601-2**

**Copyright © 2015 by the Institute of Electrical and Electronic Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

******This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1521K-POD
ISBN (Print-On-Demand):	978-1-5090-2601-2
ISBN (Online):	978-1-5090-3101-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Technical Programme

Monday, July 6th, 12:00 – 14:00

Session 1: Power Systems Planning and Development Chair: Miroslaw Parol, Warsaw University of Technology, Poland Room: Aula D (10D/109)	Session 2: Energy Markets and RES Chair: Stefan Trueck, Macquarie University, Australia Room: Aula B (10B/108)
A novel Geo-spatial Clustering Tool applied to Power System Strategic Planning (ID 21) 1 Pablo Ezequiel Wiernes, Niklas Van Bracht, Albert Moser, Sebastian Bohlen - <i>RWTH Aachen University, Germany</i>	European Gas Markets: Are we Approaching a Single Market? N/A Rita Laura D'Ecclesia - <i>Sapienza University of Rome, Italy</i>
Selected Problems of Planning of Electric Power Network Infrastructure Development – the Case of Poland (ID 117) 7 Waldemar Dolega - <i>Wroclaw University of Technology, Poland</i>	Social Acceptance of Green Energy and Dynamic Electricity Tariffs – A Short Review (ID 92) 22 Anna Kowalska-Pyzalska - <i>Wroclaw University of Technology, Poland</i>
Efficiency and Cost Evaluation of Distribution Systems based on Multiple Time Points (ID 53) 11 Ahmet Onen - <i>Abdullah Gul University, Turkey</i>	Italian Wholesale Electricity Market: RES Effects Across Day-ahead and Balancing Markets (ID 155) 29 Angelica Gianfreda - <i>London Business School, United Kingdom</i> Lucia Parisio, Matteo Pelagatti - <i>University of Milano-Bicocca, Italy</i>
Genetic Algorithm for Optimal Sizing and Location of Multiple Distributed Generations in Electrical Network (ID 98) 15 Ahmed Al Ameri, Cristian Nichita - <i>University of Le Havre, France</i> Tariq Riouch, R. El-Bachtiri - <i>LESSI laboratory, University REEPER Group, Morocco</i>	Utilizing Forward Looking Capacity Constraints to Assess the Probability of an Electricity Price Spike N/A Pawel Maryniak - <i>Wroclaw University of Economics, Poland</i>
Distributed Power System Topology Verification with Use of Multi-agent Systems (ID 86) N/A Tomasz Okon, Kazimierz Wilkosz - <i>Wroclaw University of Technology, Poland</i>	

Technical Programme

Monday, July 6th, 15:30 – 17:00

<p>Session 3: HV Transmission Systems Chair: Marian Sobierajski, Wroclaw University of Technology, Poland Room: Aula D (10D/109)</p>	<p>Session 4: Structural Modeling in Energy Markets Chair: Rita D'Ecclesia Sapienza University of Rome, Italy Room: Aula B (10B/108)</p>
<p>Elektroenerqeticeskiy sektor Azerbajjana (Azerbaijan's power sector) N/A Arif Gashimov - <i>Azerbaijan Scientific – Research and Design- Prospecting Institute of Power Engineering LTD, Azerbaijan</i></p>	<p>Structural Price Modelling and Hourly Resolution Forward Curves for the Germany Power Market N/A Michael Coulon - <i>University of Sussex, United Kingdom</i></p>
<p>Selected Issues of Cable Link Designing in HVAC and HVDC Submarine Power Grids (ID 108) 35 Mirosław Parol, Sylwester Robak, Lukasz Rokicki - <i>Warsaw University of Technology, Poland</i> Jacek Wasilewski - <i>PSE Innowacje Sp. z o.o. Konstancin-Jeziorna, Poland</i></p>	<p>Estimating the Price-effects of Germany's Nuclear Phase-out: A Longitudinal/functional Data Perspective N/A Dominic Liebl - <i>University Bonn, Germany</i></p>
<p>HVDC Interconnection Models for Consider its Impact in Real-Time Voltage Stability Assessment (ID 40) 43 Angel Perez, Hjörtur Jóhannsson, Jacob Østegaard - <i>Technical University of Denmark, Denmark</i> Per Lund - <i>Energinet.dk, Denmark</i></p>	<p>Energy Portfolios, Stochastic LCOE and Deviation Measures N/A Carlo Lucheroni - <i>University of Camerino, Italy</i> Carlo Mari - <i>University of Chieti-Pescara, Italy</i></p>
<p>A New Design of Double Input Power System Stabilizers Using SQP for 49 Interconnected Power Systems (ID 58) Mohamad Reza Tavakoli, Vahid Rasouli - <i>University of Isfahan, Iran</i> Sahar Allahkaram - <i>Islamic Azad University, Iran</i></p>	<p>Influence of Energy Mix on the Future Grid Integration of PV and Wind in Europe (ID 84) 60 Dominic Hewes, Rolf Witzmann, Pablo Espinosa - <i>Technical University of Munich, Germany</i></p>
<p>Application of DSTATCOM on Distribution Networks with Small Hydropower injected (ID 63) 55 Yan Chen, Yongjun Zhang - <i>South China University of Technology, China</i></p>	

Technical Programme

Tuesday, July 7th, 11:00 – 13:00

<p>Session 5: Relay Protection Algorithms Chair: Murari Mohan Saha ABB AB, Västerås, Sweden Room: Aula D (10D/109)</p>	<p>Session 6: Modeling and Forecasting Prices Chair: Michael Coulon University of Sussex, United Kingdom Room: Aula B (10B/108)</p>
<p>Detection of High Impedance Faults in M.V. Mesh Distribution Network (ID 152) 66 Muhammad M.A.S. Mahmoud - <i>Al Hosn Gas, United Arab Emirates</i></p>	<p>Component Estimation for Electricity Market Data: Deterministic or Stochastic? (ID 99) 99 Francesco Lisi - <i>University of Padua, Italy</i> Matteo Pelagatti - <i>University of Milano-Bicocca, Italy</i></p>
<p>Research of Wave-head Characteristics of Fault-generated Travelling Wave on Transmission Line in Different Frequency Bands (ID 20) 74 Aoyu Lei, Xinzhou Dong, Shenxing Shi, Bin Wang - <i>State Key Laboratory of Power System, Tsinghua University, China</i></p>	<p>Is it Possible to Successfully Forecast Short-term Prices of Oil? N/A Monika Papiez, Slawomir Smiech - <i>Cracow University of Economics, Poland</i></p>
<p>Field Tests of the Traveling Wave Based Protection for Ungrounded Distribution Network (ID 55) 80 Yujun Wang, Xinzhou Dong, Shenxing Shi, Jun Wang, Jianzhao Geng - <i>Tsinghua University, China</i></p>	<p>Energy Price Modeling and Forecasting by Means of a Seasonal Fractional Exponential Model N/A Niels Haldrup, Oskar Knapik - <i>Aarhus University, Denmark</i> Tommaso Proietti - <i>University of Rome Tor Vergata, Italy</i></p>
<p>An Integral Engineering Process for Centralised Protection & Control Systems According to IEC 61850-6 (ID 27) 86 Bjoern Bauernschmitt, Michael Kaliwoda, Bjoern Martin Keune, Dominik Hilbrich, Christian Rehtazn - <i>TU Dortmund University, Germany</i></p>	<p>Application of the Principal Components Method to Combining Electricity Spot Price Forecasts N/A Katarzyna Maciejowska, Jakub Nowotarski - <i>Wroclaw University of Technology, Poland</i></p>
<p>Analysis of Protection Criterion Values Algorithms in Case of Distorted Signals (ID 122) 92 Bartosz Brusilowicz, Janusz Szafran, Grzegorz Wisniewski - <i>Wroclaw University of Technology, Poland</i></p>	

Technical Programme

Tuesday, July 7th, 14:30 – 16:30

<p>Session 7: Protection and Instrument Transformers Chair: Bogdan Kasztenny, Schweitzer Engineering Laboratories, Canada Room: Aula D (10D/109)</p>	<p>Session 8: Forecasting Loads and Renewables Chair: Carlo Lucheroni University of Camerino, Italy Room: Aula B (10B/108)</p>
<p>Development of a Hybrid Platform for Automated Type and Online Application Testing of Protection & Control Schemes (ID 14) 105 Dominik Hilbrich, Björn Keune, Christian Rehtanz - <i>TU Dortmund University, Germany</i></p>	<p>Recent Advances and Challenges in Probabilistic Renewable Energy Forecasting N/A Emil Iversen - <i>Technical University of Denmark, Denmark</i></p>
<p>A Measuring System to Identify the Frequency Response of High Current Instrument Transformers (ID 33) 111 Christian Jäschke, Peter Schegner - <i>Technische Universität Dresden, Germany</i></p>	<p>Multilayer Perception for Short-term Load Forecasting: from Global to Local Approach N/A Grzegorz Dudek - <i>Czestochowa University of Technology, Poland</i></p>
<p>Accuracy of Current Transformer with Current Errors at Harmonics Equal to the Limiting Values Defined in IEC 60044-8 Standard for Transformation of Distorted Primary Current (ID 115) 117 Michal Kaczmarek - <i>Lodz University of Technology, Poland</i></p>	<p>Modelling and Forecasting Electricity Load Using LASSO Methods (ID 150) Florian Ziel - <i>Europa-Universität Viadrina Frankfurt (Oder), Germany 129</i></p>
<p>Operation of Inductive Protective Current Transformer in Condition of Distorted Current Transformation (ID 116) 121 Michal Kaczmarek - <i>Lodz University of Technology, Poland</i></p>	<p>Improving Short-term Load Forecast Accuracy via Combining Sister Forecasts N/A Rafal Weron - <i>Wroclaw University of Technology, Poland</i></p>
<p>Applicability of Rogowski Coil Made in PCB HDI Technology in Power System Protection (ID 123) 125 Marcin Habrych, Grzegorz Wisniewski - <i>Wroclaw University of Technology, Poland</i> Bogdan Miedzinski - <i>Institute of Innovative Technologies EMAG, Poland</i> Aleksander Lisowiec - <i>Tele and Radio Research Institute ITR, Poland</i></p>	

Technical Programme

Tuesday, July 7th, 17:00 – 19:00

Session 9: Protection and Fault Location Chair: Janusz Szafran, Wroclaw University of Technology, Poland Room: Aula D (10D/109)	Session 10: Efficient Solutions in Power Systems Chair: Murat Gol, Middle East Technical University, Turkey Room: Aula B (10B/108)
Accurate Impedance Based Fault Location Algorithm Using Communication between Protective Relays (ID 64) 135 Cezary Dzienis, Yilmaz Yelgin - <i>Siemens AG, Germany</i> Marie Washer, Jean-Claude Maun - <i>Universite Libre de Bruxelles, Belgium</i>	An Integrated System Configuration for Electric Springs to Enhance the Stability in Future Smart Grid (ID 81) 164 Abdul Mannan Rauf, Vinod Khadkikar, Mohamed Shawky El Moursi - <i>Masdar Institute of Science and Technology, United Arab Emirates</i>
Location of Inter-Circuit Faults on Double-Circuit Transmission Line (ID 104) 141 Murari Mohan Saha - <i>ABB AB, Sweden</i> Gabriela Smetek, Jan Izykowski, Eugeniusz Rosolowski, Piotr Pierz - <i>Wroclaw University of Technology, Poland</i>	Appropriate Interaction of the Microgrid and Main Network by Using Unidirectional Fault Current Limiters (ID 112) 169 Ebrahim Farjah, Sadegh Mousavi, Teymoor Ghanbari - <i>Shiraz University, Iran</i>
Research on Performance Test of 148 Travelling Wave Fault Locators (ID 68) Teng Feng, Xinzhou Dong, Fei Xu - <i>Tsinghua University, China</i> Bingyu Li - <i>Beijing Scaling Sky Compass Co. Ltd, China</i>	Electric Arc Furnace's Active and Reactive Powers Measurement Based on Multi-Resolution Structure (ID 32) 175 Babak Abdolmaleki, Haidar Samet - <i>Shiraz University, Iran</i>
Security and Speed Assessment of a New Distance Protection Algorithm Based on the Wavelet Transform (ID 100) 154 Sinisa Zubic, Przemyslaw Balcerek - <i>ABB Corporate Research Center, Kraków, Poland</i>	Synchronized Profiles of Power Quality Parameters in Assessment of Disturbances in Power Systems with Distributed Generation (ID 107) 181 Adam Gubanski, Pawel Kostyla, Beata Kredenc, Zbigniew Leonowicz, Jacek Rezmer, Tomasz Sikorski - <i>Wroclaw University of Technology, Poland</i>
Avoiding blackouts with Dynamic Thermal Line Rating (ID 120) 159 Lukasz Staszewski, Waldemar Rebizant - <i>Wroclaw University of Technology, Poland</i>	Problems of Power Flow Computations for Power System with UPFC (ID 87) Tomasz Okon, Kazimierz Wilkosz - <i>Wroclaw University of Technology, Poland</i>

Technical Programme

Wednesday, July 8th, 09:45 – 10:45

Session 9: Poster Session Chair: Miroslaw Lukowicz, Wroclaw University of Technology, Poland Room: 115	
11.1 Analysis of Different Configuration for FC-TCR SVC: Simulation and Laboratory Study (ID 61) 186 Mohammad Hasanuzzaman Shawon, Zbigniew Hanzelka, Aleksander Dziadecki - <i>AGH University of Science & Technology, Poland</i>	11.2 Expert Evaluation Method of the SAIDI Normative Reliability Index (ID 76) 203 Adrian Halinka, Marcin Niedopytalski, Piotr Rzepka, Pawel Sowa, Mateusz Szablicki - <i>Silesian University of Technology, Poland</i>
11.3 Agent Model of Multi-Agent System of Area Power System Protection (ID 77) Adrian Halinka, Piotr Rzepka, Mateusz Szablicki - <i>Silesian University of Technology, Poland</i>	11.4 Forecasting Tools for the Electricity Production in Onshore Wind Farms (ID 83) 207 Mateusz Dutka, Boguslaw Swiatek - <i>AGH University of Science and Technology, Poland</i>
11.5 Modeling of Self-excitation of Induction Motors for Electric Networks Auxiliaries under Post-fault Conditions (ID 106) 195 Mykhaylo Sehedra, Nazar Ravlyk - <i>Lviv Polytechnic National University, Ukraine</i>	11.6 Transitional Processes at Switching-off Capacitor Banks by Circuit-Breakers with Pre-Insertion Resistors (ID 113) 213 Tahir Lazimov, Narmin Babayeva - <i>Azerbaijan Technical University, Azerbaijan</i> Esam Ali Saafan - <i>University of El-Mansoura, Egypt</i>
11.7 Aspects of Virtual Market of Electrical Energy (ID 140) 198 Tetyana Tereschenko, Julia Yamnenko, Liubov Klepach - <i>National Technical University of Ukraine "Kyiv Polytechnic Institute", Ukraine</i> Valeriia Peterheria - <i>Taras Shevchenko National University of Kyiv, Ukraine</i>	11.8 Power Demand Forecasting Using Stochastic Model: Parameter Estimation (ID 146) 217 Ruihong Ma - <i>Henan Danfeng Technology Co., Ltd, China</i> Rentao Wu - <i>University of Edinburgh, UK</i> Mustafa A. Khanwala - <i>University College London, United Kingdom</i> Dan Li - <i>Durham University, United Kingdom</i> Shuping Dang - <i>University of Oxford, United Kingdom</i>

Technical Programme

Wednesday, July 8th, 09:45 – 10:45

Session 9: (continued) Poster Session Chair: Miroslaw Lukowicz, Wroclaw University of Technology, Poland Room: 115	
11.9 The Model of the Capacitive Circuit in Matlab Software Which is used for the Analysis of Surge Protection Effectiveness (ID 154) 221 Joanna Budzisz - <i>Wroclaw University of Technology, Poland</i>	11.10 Cyber Security in Communication of SCADA Systems using IEC 61850 (ID 156) 243 Robert Czechowski, Pawel Wicher, Bernard Wiecha - <i>Wroclaw University of Technology, Poland</i>
11.11 Earth Faults Detection and Isolation System for MV Network (ID 51) 225 Jozef Lorenc, Jerzy Andruszkiewicz, Bartosz Olejnik, Bogdan Staszak - <i>Poznan University of Technology, Poland</i> Przemyslaw Balcerek - <i>ABB Corporate Research Center, Kraków, Poland</i>	11.12 Application of C-type Filter to DC Adjustable Speed Drive (ID 54) 250 Chamberlin Stephane Azebaze Mboving, Zbigniew Hanzelka - <i>AGH University of Science and Technology, Poland</i>
11.13 The Electricity Consumption in Polish Households (ID 47) 232 Marek Kott - <i>Wroclaw University of Technology, Poland</i>	11.14 Improvement the Reliability of HV Power Transmission Lines Protection by means of Modern Devices and Methods (ID 69) 257 Arif M. Gashimov, Fakhraddin L. Khidirov, Aytek Babayeva - <i>Azerbaijan Scientific–Research and Design-Prospecting Institute of Power Engineering LTD, Azerbaijan</i> Ahmet Nayir - <i>Fatih University, Turkey</i>
11.15 Regenerative Load Emulator with Battery Charging for Evaluation of Energy Management in Microgrid with Distributed Renewable Sources (ID 26) Vani Vijay, C. Viswanatha, Neha Adhikari - <i>Central Power Research Institute, Bangalore, India</i> 237 Giridhar P. Kini - <i>Manipal University, India</i>	11.16 The use of Cloud Computing in AMI System Architecture (ID 128) 262 Krzysztof Billewicz - <i>Wroclaw University of Technology, Poland</i>

Technical Programme

Wednesday, July 8th, 09:45 – 10:45

Session 9: (continued) Poster Session Chair: Miroslaw Lukowicz, Wroclaw University of Technology, Poland Room: 115	
<p>11.17 Evaluation of Differentiation of Energy Tariffs for Households in Terms of Their Stimulatory Function (ID 130) 268 Wiktorja Grycan - <i>Wroclaw University of Technology, Poland</i></p>	<p>11.18 Research of the Impact of Voltage Quality and Reactive Power Configuration for Shock Loads Connected into Distribution Network (ID 65) 294 Jun-xiao Zhang, Xue-ying Zhang - <i>Grid Planning & Research Center, Guandong Power Grid Corporation, China</i> Jia-hao Yang, Yong-jun Zhang, Hong-jie Geng, Sen Ouyang - <i>South China University of Technology, China</i></p>
<p>11.19 A Differential Setting Method for Gateway Reactive Power Interval of 110kV Substation (ID 75) 273 Yongjun Zhang, Yingqi Yi, Shuyi Sun - <i>South China University of Technology, China</i></p>	<p>11.20 A new Approach to Voltage Collapse Point Assessment by Continuous Tellegen's Power Flow (ID 36) 298 Peyman Mohammadi, Alireza Shamim - <i>Fajr Petrochemical Company, Iran</i> Javad Erfanian - <i>Ramtec Company, Iran</i> Yusof Mohammadosmanvandi - <i>Padidehkarsazsanat Company, Iran</i> Hamid Lesani - <i>Tehran University, Iran</i></p>
<p>11.21 Analysis of Ancillary Services within Smart Grid Framework (ID 43) 280 Ramona Vatu, Oana Ceaki, Monica Mancasi, Radu Porumb, George Seritan - <i>University Politehnica Bucharest, Romania</i></p>	<p>11.22 Analysis of Electromagnetic Disturbances for Grid-Connected PV Plants (ID 44) 303 Oana Ceaki, Ramona Vatu, Monica Mancasi, Radu Porumb, George Seritan - <i>University Politehnica Bucharest, Romania</i></p>
<p>11.23 FPGA based Vector Control of PM Motor using Sliding Mode Observer, (ID 151) 285 Hanan Mikhael Dawood Habbi - <i>Baghdad University, Iraq</i> Afaneen Anwer Abood Al-Khazraji - <i>Technology university, Iraq</i></p>	<p>11.24 Optimizing Differential Protection Settings for Power Transformer, (ID 79) Saad M. Saad, Abdelsalam Elhaffar, Khalil El-Arroudi - <i>University of Benghazi, Libya</i> 308</p>
<p>11.25 Macromodeling as an Approach to Improve the Analysis of Electric Power Systems and their Elements (ID 101) Petro Stakhiv, Oksana Hoholyuk - <i>Lviv Polytechnic National University, Ukraine</i> 290</p>	<p>11.26 Modeling Transients in Compensated Electrical Grids during Line Faults (ID 103) 314 Yuriy Varetsky, Mykchajlo Sehedra, Ivan Taran - <i>Lviv Polytechnic National University, Ukraine</i></p>

Technical Programme

Wednesday, July 8th, 11:15 – 13:00

Session 12: Power System Operation Chair: Waldemar Rebizant, Wroclaw University of Technology, Poland Room: Aula D (10D/109)
A Robust Parameter Estimation Method Based on LAV Estimator. (ID 42) 318 Volkan Ozdemir, Murat Gol - <i>Middle East Technical University, Turkey</i>
Chaotic Behavior of Single Machine Infinite Bus power system subjected to Turbine Torque Ripple (ID 97) 323 Sunil P. Nangrani, Sunil S. Bhat - <i>Visvesvaraya National Institute of Technology - VNIT, India</i>
Security Information Sharing for the Polish Power System (ID 52) 328 Rafal Leszczyna, Robert Malkowski - <i>Gdansk University of Technology, Poland</i> Maciej Losinski - <i>Żarnowiec Pumped-Storage Power Plant, Poland</i>
Improved Continuation Load Flow to Enhance Maximum Loadability Estimation (ID 90) 334 Peyman Mohammadi, Heidar Dehghani - <i>Fajr Petrochemical Company, Iran</i> Hamid Lesani - <i>Tehran University, Iran</i> Yousof Mohammadiosmanvandi - <i>Padidehkarsazsanat Company, Iran</i>
A Study of Operation Area for Power Line with UPFC (ID 88) 339 Tomasz Okon, Kazimierz Wilkosz - <i>Wroclaw University of Technology, Poland</i>

Thursday, July 9th, 09:00 – 10:45

Session 13: Renewable Energy Chair: Ivan Dudurych, EirGrid, Ireland Room: Aula D (10D/109)
Application of an Adaptive Neuro-Fuzzy Controller for Speed Control of Switched Reluctance Generator Driven by Variable Speed Wind Turbine (ID 121) S.M. Muyeen, Ahmed Al-Durra - <i>The Petroleum Institute, United Arab Emirates</i> 345 Hany M. Hasanien - <i>Ain Shams University, Egypt</i>
Primary and Secondary Frequency Control in a Small Power System (SPS) with Rotating and Static Sources after Islanding (ID 15) 351 Marian Sobierajski, Wilhelm Rojewski - <i>Wroclaw Univeristy of Technology, Poland</i>
Modeling and Study of Operating Modes of Small Hydro Power Plants with Double Fed Induction Generators N/A Musahil Musayev - <i>Azerbaijan Scientific-Research & Design-Prospecting, Power Engineering Institute, Azerbaijan</i>
Application of Adaptability Coefficient in Power Production Evaluation of a Wind Farm (ID 49) 359 Vahid Rasouli, Sahar Allahkaram - <i>Islamic Azad University, Iran</i> Mohamad Reza Tavakoli - <i>University of Isfahan, Iran</i>
Real-time Distributed Economic Dispatch for Distributed Generation Based on Multi-Agent System (ID 57) 365 Kui Luo - <i>China Electric Power Research Institute, China</i> Qiuwei Wu, Jacob Østergaard, Arne Hejde Nielsen - <i>Technical University of Denmark, Denmark</i>

Technical Programme

Thursday, July 9th, 11:15 – 13:00

Session 14: System Analysis and Modelling

Chair: Kazimierz Wilkosz, Wroclaw University of Technology, Poland

Room: Aula D (10D/109)

Modeling and Analysis of the Single-Core Phase Shifting Transformer and Its Differential Protection (ID 153) 372

Krzysztof Solak, Waldemar Rebizant - *Wroclaw University of Technology, Poland*

Ludwig Schiel - *Siemens AG Berlin, Germany*

Analysis of Small Signal Modeling of Single-phase Grid-interactive Power Converter with LCL Filter (ID 147) N/A

Chitti Babu Baladhandautham, Tomas Cernak - *VSB-Technical University of Ostrava, Czech Republic*

Naga Sowmya Tontepu - *Arizona State University, United States*

Eugeniusz Rosolowski - *Wroclaw University of Technology, Poland*

Modernization of Hydraulic Turbine Model in the Electrodynamic Model of Power System (ID 67) 379

Dmitry Nikitin, Oleg Bakhmisov, Alexey Khokhlov, Yury Korolev - *National Research University "Moscow Power Engineering Institute", Russian Federation*

Neural Modeling of the Electrical Power System Development Based on IEEE RTS Test Data (ID 50) 386

Jerzy Tchorzewski, Maciej Pytel - *University of Natural Sciences and Humanities, Siedlce, Poland*

Verification of New Protection Algorithm for Compensated MV Distribution Systems (ID 118) 393

Mirosław Lukowicz, Paweł Wicher, Bernard Wiecha - *Wroclaw University of Technology, Poland*

Efficiency Analysis of ROCOF Relay for Anti-Islanding Application (ID 91) N/A

Daniel Bejmert - *Wroclaw University of Technology, Poland*

