

2014 15th International Scientific Conference on

ELECTRIC POWER ENGINEERING (EPE)





Welcome...

to the 2014 15th International Scientific Conference on Electric Power Engineering (EPE 2014). On behalf of the organizing committee who has been working for over a half year to put this meeting together, we cordially welcome all participants. The EPE conferences are organized in turns by two technical universities: VŠB-Technical University of Ostrava and Brno University of Technology in this time.

Our goal in planning this meeting has been to provide an intellectually stimulating atmosphere for the exchange of scientific ideas concerning research, development and service in electrical power engineering area in a relaxing environment. We hope that you will have the opportunity to take advantage of the conference venue. Please don't hesitate to contact one of us if any questions arise.

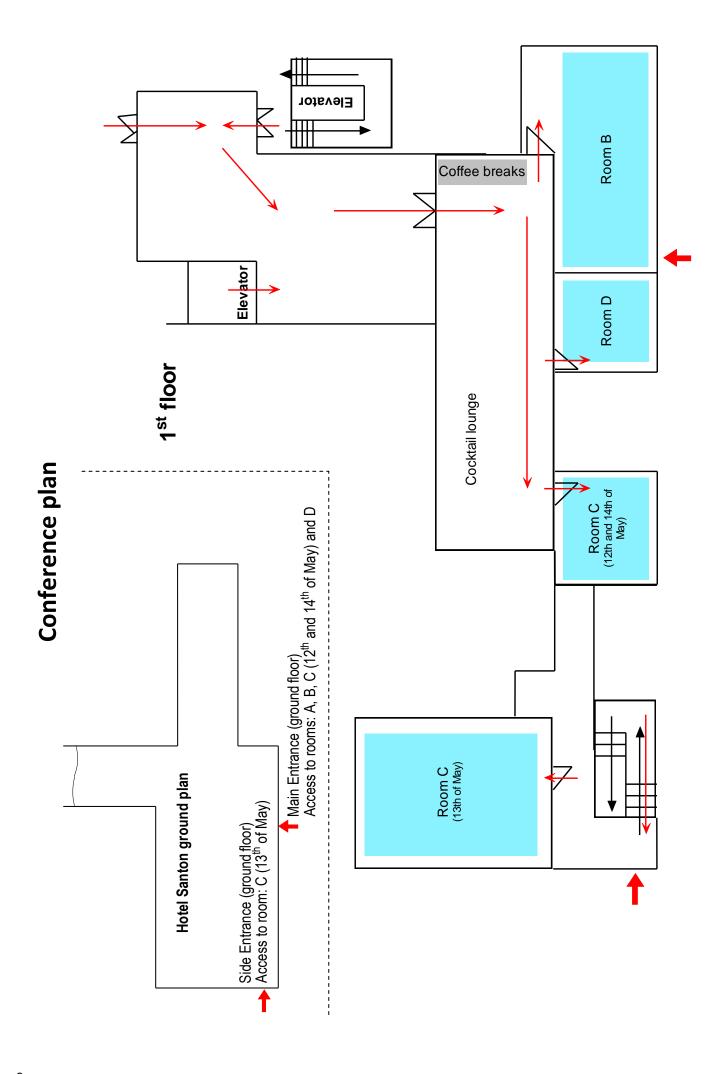
Thanks for coming, and enjoy your time in Brno!

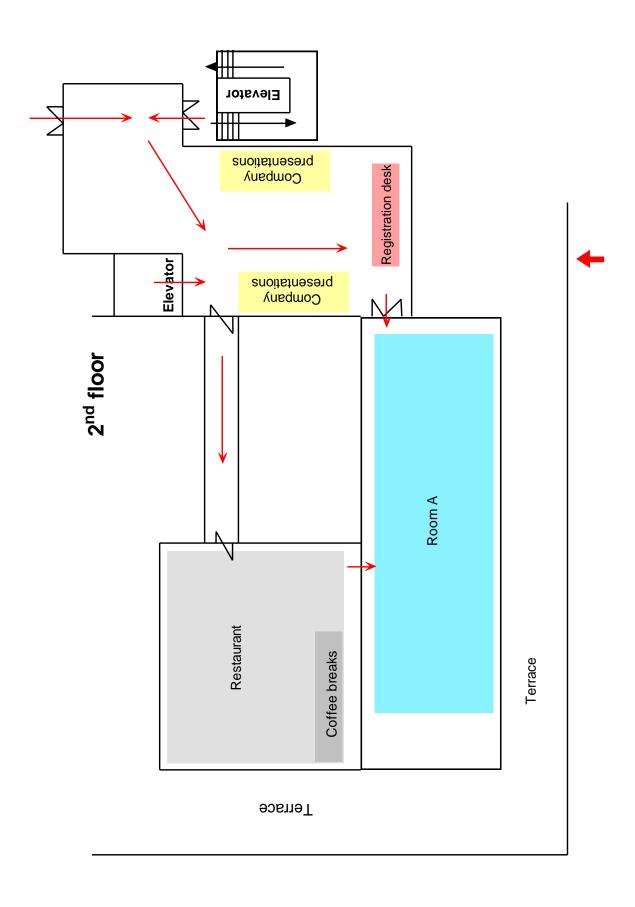
The Conference Program

- 00:6	10:45 - 11:45	11:45 - 13:30	14:00 - 15:30	Room Forecast Predictio	15:30 - 16:00	16:00 - 17:30	Room Distributiv	00.07
	Room			Room A - Session A1 - Forecasting and Generation Prediction from Renewables			Room A - Session A2 - Distribution System Operation with Distributed Renewable Sources	
Registration – 2 nd floor	Room A Plenary Session - Conference C	Lunch – Restaurant 2 nd floor	Parallel sessions 1	Room B - Session B1 - Power Quality - Low-Frequency Continuous Disturbances	Afternoon coffee break	Parallel sessions 2	Room B - Session B2 - Power Electronics I	Molomo mortal Doctation and floor
2 nd floor	Session - Conference Opening and Keynote presentation	int 2 nd floor	ions 1	Room C - Session C1 - Electrical Insulating Systems I	ee break	ions 2	Room C - Session C2 - Power Lines and Cables	Suc tack and floor
	u			Room D - Session D1 - Current Trends in Nuclear Power Utilization and Research			Room D - Session D2 - Illumination Systems I	

Tuesday 13 th of May, 2014	f May, 2014			
8:15 - 9:15		Parallel sessions 3	ssions 3	
	Room A - Session A3 - Power Systems Management, Optimization and Services	Room B - Session B3 - Voltage Control in Distribution Systems	Room C - Session C3 - Electrical Insulating Systems II	Room D - Session D3 -
9:15 - 9:45		Morning coffee break	fee break	
9:45 - 11:30		Parallel sessions 4	ssions 4	
	Room A - Session A4 - Transmission and Distribution Systems	Room B - Session B4 - Renewable Energy Sources	Room C - Session C4 - Electrical Machines and Drives	Room D - Session D4 - Nuclear Energy Research
11:30 - 13:00		Lunch – Restaurant 2 nd floor	rant 2 nd floor	
13:00 - 14:30		Parallel sessions 5	ssions 5	
	Room A - Session A5 - Generators for Wind Applications	Room B - Session B5 - Solutions for Future Grids	Room C - Session C5 - Reliability and Maintenance	Room D - Session D5 - Nuclear Power Plant Safety and Operation
14:30 - 15:00		Afternoon coffee break	ffee break	
15:00 - 16:00		Parallel sessions 6	ssions 6	
	Room A - Session A6 - Micro and Hybrid Grids	Room B - Session B6 - IEC 61850 9-2 Process Bus Applications	Room C - Session C6 - Diagnostics I	Room D - Session D6 - CENEN-NET Workshop
16:15 - 17:00		Parallel sessions 7	ssions 7	
		Room B - Session B7 - Electrical Protections	Room C - Session C7 - Diagnostics II	Room D - Session D7 - CENEN-NET Workshop
19:00 -		The conference banquet – Technical Museum in Brno	echnical Museum in Brno	

Wednesdy 14 of May, 2014 8:15 - 9:30		Parallel sessions 8	sions 8	
	Room A - Session A8 - Power Electronics II	Room B - Session B8 - Electrical Traction Systems	Room C - Session C8 - Power and Voltage Quality	
9:30 - 10:00		Morning coffee break	ee break	
10:00 - 11:15		Parallel sessions 9	sions 9	
	Room A - Session A9 - Energy Storage	Room B - Session B9 - Power Systems Apparatus and Devices	Room C - Session C9 - EMC and Metering	
11:30 - 11:45		Room A Plenary Session – Conference Closing Ceremony	nference Closing Ceremony	
11:45 - 13:30		Lunch – Restaurant 2 nd floor	rant 2 nd floor	
14:00 - 16:00	Technical visit – High Current (Sho	Current (Short-Circuit) and High Vo	rt-Circuit) and High Voltage Laboratories at Brno University of Technology	rsity of Technology





The Conference Program in Detail

Monday, May 12, 2014

9:00 - ...: ... P articipants registration

10:45 - 11:45 Conference opening and Keynote presentation

Room A - Plenary session

Welcome speaches

K181 Protection challenges and solutions for Smart Grids

Theodor Connor (Siemens AG, Germany)

11:45 - 13:30 Lunch

14:00 - 15:30 Parallel sessions 1

Room A - Session A1

Forecasting and Generation Prediction from Renewables

Chairman: Markus Zdrallek (Wuppertal University, Germany)

1033 Photovoltaic Power Generation Hourly Modelling

Hannu-Pekka Hellman (Helen Electricity Network Ltd, Finland) Matti Koivisto, Matti Lehtonen (Aalto University, Finland)

L148 Optimal Design of Neural Tree for Solar Power Prediction

Sebastián Basterrech, Lukáš Prokop, Tomáš Buriánek, Stanislav Mišák (VŠB - Technical University of Ostrava, Czech Republic)

L113 Analysis of Wind Speed and Power Time Series Preceding Wind Ramp Events

Jana Heckenbergerová, Jaroslav Marek (University of Pardubice, Czech Republic) Petr Musílek (University of Alberta, Canada)

L098 Impact of Photovoltaic Power Plants Operation on Differential Change of Distribution Grid Power Martin Smoček, Zdeněk Hradílek (VŠB - Technical University of Ostrava, Czech Republic)

L141 Distribution of Wind Power Plants to Reduce Variability of Renewable Generation

Dhrupad Debnath, Petr Musílek (University of Alberta, Canada) Jana Heckenbergerová (University of Pardubice, Czech Republic)

Room B – Session B1 Power Quality - Low-Frequency Continuous Disturbances

Chairman: Lothar Fickert (Graz University of Technology, Austria)

1179 Power Definitions for Electrical Systems with Nonsinusoidal and Unbalanced Conditions
Alfredo Testa (Second University of Naples, Italy)

L085 Model of Electric Arc Furnace for Designing of Power Quality Improvement Equipment Martin Čerňan, Josef Tlustý (Czech Technical University in Prague, Czech Republic)

L122 The Analysis of the Measured Data of Wind Turbines Vestas V90 - 2.0 MW

Jan Unger, Petr Rozehnal, Petr Krejčí (VŠB - Technical University of Ostrava, Czech Republic)

L032 Analysis and Simulation of Disturbance of Excavator in Sintering Ore-Storage Yard Tomáš Hrubý, Stanislav Kocman (VŠB - Technical University of Ostrava, Czech Republic)

L021 Comparison of Schemes of Traction Transformer Stations in Terms of Their Impact on the Asymmetry in the Power Supply System

Bogdan Fukala, Josef Paleček (VŠB - Technical University of Ostrava, Czech Republic)

Room C – Session C1 Electrical Insulating Systems I

Chairman: Rainer Haller (University of West Bohemia, Czech Republic)

L169 Aspects of Statistical Treatment of Electrical Breakdown Behaviour in Gas-Insulated Apparatus
Rainer Haller, Petr Martínek, Eva Müllerová (University of West Bohemia, Czech Republic)

L025 Alternative Electrical Insulating Fluids in Power Transformers

Michal Svoboda, Pavel Trnka (University of West Bohemia, Czech Republic)

L132 Research of Electrophysical Properties of Oil-Paper Insulation

Lukáš Lisoň, Iraida Kolcunová, Ján Zbojovský, Miroslav Kmec (Technical University of Košice, Slovak Republic)

L076 Influence of Tools Setting on Processing Quality of XLPE Core Insulation

Radek Nejdl, Václav Mentlík (University of West Bohemia, Czech Republic)

L038 Dielectric Analysis of Polyethylene Terephthalate (PET) and Polyethylene Naphthalate (PEN) Films Jiří Ulrych, Radek Polanský, Josef Pihera (University of West Bohemia, Czech Republic)

L013 Electrical Parameters of Water at Lightning Impulse

Michal Krbal, Petr Baxant, Jan Škoda, Stanislav Sumec (Brno University of Technology, Czech Republic)

Room D – Session D1 Current Trends in Nuclear Power Utilization and Research

Chairman: Jiří Martinec (Brno University of Technology, Czech Republic)

1078 Study of Spent Fuel Management by Transmutation in an Accelerator Driven Subcritical System

Ambika Tundwal, Vinod Kumar (G.G.S. Indraprastha University, India) Manish Sharma, Nagendra S. Raghaw (University of Rajasthan, India) Chitra Bhatia (McMaster University, Canada)

L120 Small and Modular Reactors and Their Potential Use in the Czech Republic

Ľubomír Sklenka, Evžen Losa (Czech Technical University in Prague, Czech Republic)

L041 Equilibrium Thorium Fuel Loading in VVER-1000 Reactor

Jan Frýbort (Czech Technical University in Prague, Czech Republic)

L093 3D Neutronic Analysis of VVER1000/V-320 Using PARCS Code

Bruno Miglierini, Guido Mazzini, Marek Ruščák (Research Centre Rez, Czech Republic)

L006 Comparison of Economic Impacts of Safe and Dangerous Failure of Safety System

Jan Kamenický, Jaroslav Zajíček (Technical University of Liberec, Czech Republic)

15:30 – 16:00 Afternoon coffee break

16:00 - 17:30 Parallel sessions 2

Room A - Session A2

Distribution System Operation with Distributed Renewable Sources

Chairman: Miles A. Redfern (University of Bath, UK)

1177 Smart Distribution Grids for Germany's Energiewende

Roman Uhlig, Nils Neusel-Lange, Markus Zdrallek (Wuppertal University, Germany)

L094 Distributed Generation and Its Influence on Voltage Changes in Low Voltage Grids and Transformer Loading

Martin Liška, Peter Janiga, Boris Cinutla, Dominik Vigl'aš, Peter Arnold (Slovak University of Technology in Bratislava, Slovak Republic)

L140 Voltage Analysis of the Distribution Network with Renewable Resources Using EMTP-ATP

Marián Uher, Stanislav Mišák (VŠB - Technical University of Ostrava, Czech Republic)

L080 Voltage and Frequency Stability Analysis of an Island-Mode LV Distribution Network

Miloslava Tesařová, Karel Noháč (University of West Bohemia, Czech Republic)

S186 High Current Precision Locating of Ground Faults

Lothar Fickert, Christian Raunig (Graz University of Technology, Austria)

Room B – Session B2 Power Electronics I

Chairman: Alfredo Testa (Second University of Naples, Italy)

1182 Advance Power Electronic Converters for Renewable Energy Systems

Prasad Enjeti (Texas A&M University, USA)

L082 Optimization of Converter Design for Photovoltaics with Accumulation

Petr Chlebiš, Kateřina Barešová, Martin Borski, Jiří Špička (VŠB - Technical University of Ostrava, Czech Republic)

L087 The Electric Drive with Indirect Frequency Converter and Asynchronous Motors with Improved Immunity against the Supply Voltage Dips

Václav Kůs, Martin Pittermann, Jiří Fořt (University of West Bohemia, Czech Republic)

L092 Current Control Techniques for Mains Connected Converters under Unbalanced Conditions

Martin Bejvl, Petr Šimek, Jiří Škramlík, Viktor Valouch

(Academy of Sciences of the Czech Republic, Czech Republic)

L079 Current Harmonics of Voltage-Source Active Rectifier with Random Switching Frequency Václav Kůs, Tereza Josefová (University of West Bohemia, Czech Republic)

Room C – Session C2 Power Lines and Cables

Chairman: Anna Gawlak (Częstochowa University of Technology, Poland)

L130 Possible Use of Airborne LiDAR for Monitoring of Power Lines in Slovak Republic Alena Otčenášová, Marek Höger, Juraj Altus (University of Žilina, Slovak Republic)

L099 Comparison of Mechanical Strength and Durability of Selected Cables
Attila Kment, Marek Pípa, Peter Arnold, František Janíček

(Slovak University of Technology in Bratislava, Slovak Republic)

L048 Modelling of Power Lines with Covered Conductors in Simulation Software DYNAST Vladislav Síťař, Karel Noháč (University of West Bohemia, Czech Republic)

Jan Veleba (ABB, s. r. o., Czech Republic)

L039 Analysis of the Inductive Effects of Overhead Lines to Close Pipelines
Zbyněk Janda, Karel Noháč (University of West Bohemia, Czech Republic)

L091 The Phase Sequence Selection for Cables Lines at Extra High Voltage Level

Martin Belatka, Martin Paar, Antonín Matoušek (Brno University of Technology, Czech Republic)

Przemyslaw Chodura (Eindhoven University of Technology, Netherlands)

L119 Dynamic Rating of Supply Cables of a Stabilizing Furnace

Jaroslav Šnajdr, Jiří Lucák, Zdeněk Vostracký, Jiří Kožený (University of West Bohemia, Czech Republic)

Room D – Session D2 Illumination Systems I

Chairman: Karel Sokanský (VŠB - Technical University of Ostrava, Czech Republic)

L138 Solution of Lighting for Pedestrian Crossing to Increase Their Visibility

Zdeněk Bláha, Karel Sokanský, Tomáš Novák (VŠB - Technical University of Ostrava, Czech Republic)

L137 Energy Performance Numerical Indicators of Public Lighting

Dionýz Gašparovský, Roman Dubnička, Peter Janiga, Michal Barčík (Slovak University of Technology in Bratislava, Slovak Republic)

L159 Evaluation of Energy Performance of Road Lighting System

Jan Zálešák, Zuzana Pelánová (Czech Technical University in Prague, Czech Republic)

L142 New Development in Control System ČEPS, a.s. Electrical Substation Outdoor Lighting
Ivo Ullman (ČEPS, a. s., Czech Republic)
Jan Otýpka, Tomáš Mlčák (VŠB - Technical University of Ostrava, Czech Republic)

L133 A New Methodology for Failure Identifying in Public Lighting Network by Smart Metering
Peter Janiga, Dionýz Gašparovský, Michal Barčík, Lukáš Lipnický
(Slovak University of Technology in Bratislava, Slovak Republic)

19:30 - ... : ... Welcome party - Restaurant 2nd floor

Tuesday, May 13, 2014

8:15 -9:15 Parallel sessions 3

Room A – Session A3

Power Systems Management, Optimization and Services

Chairman: Jerzy Szkutnik (Częstochowa University of Technology, Poland)

L024 Main Directions of Investment in the Sector of Electrical Energy Distribution

Anna Gawlak, Leszek Poniatowski (Częstochowa University of Technology, Poland)

L026 Technological Aspects of Electrical Energy Distribution

Anna Gawlak (Częstochowa University of Technology, Poland)

L127 Comparison of Reducing Losses and Reducing Generation Costs during Electricity Production
Victor Astapov, Jelena Shuvalova (Tallinn University of Technology, Estonia)

L115 A Method for Assessment of Impact of RES Integration onto Ancillary Services

Petr Janeček, Andrea Zápotocká, Martin Střelec (University of West Bohemia, Czech Republic)

Room B – Session B3 Voltage Control in Distribution Systems

Chairman: Kazimierz Wilkosz (Wroclaw University of Technology, Poland)

L012 Operation of the Distribution Transformer MV/LV with the Voltage Regulation under Load Martin Kašpírek, Jan Jiřička (E.ON Česká republika, s. r. o., Czech Republic)

L114 Distributed Generation and Voltage Control in Distribution Network

František Bernáth, Petr Mastný (Brno University of Technology, Czech Republic)

L061 STATCOM Effect on Voltage Stability in Ghanaian Electrical Grid
Joseph Eminzang Essilfie, Zdeněk Müller, Jan Švec, Josef Tlustý
(Czech Technical University in Prague, Czech Republic)

L175 Voltage Regulation Optimization in Low Voltage Network Based on Voltage Quality Index Marek Kopicka, Jiri Drapela, David Topolanek (Brno University of Technology, Czech Republic)

Room C – Session C3 Electrical Insulating Systems II

Chairman: Jana Jiřičková (University of West Bohemia, Czech Republic)

L029 The Influence of Thermal Properties of Aluminum Oxide on Electrical Insulating Materials
Tetjana Tomášková, Pavel Trnka (University of West Bohemia, Czech Republic)

L074 Measurement of Polypropylene Rope Electrical Strength
Jozef Balogh, Jaroslav Petráš, Jaroslav Džmura (Technical University of Košice, Slovak Republic)

L088 Water and Temperature Influence on Polyolefin Silane Cross-Linkined Cable Insulation
Jaroslav Lelák, Terézia Skoršepová, Michal Váry, Eduard Firický, Miroslava Smitková
(Slovak University of Technology in Bratislava, Slovak Republic)

L164 Novel Nanocomposite DGEBA/TEOS

Lukáš Harvánek, Václav Mentlík (University of West Bohemia, Czech Republic)

Room D - Session D3 Illumination Systems II

Chairman: Tomáš Novák (VŠB - Technical University of Ostrava, Czech Republic)

L108 Measurement and Analysis of Disruptive Glare UGR Method by Using Luminance Analyzer
Zbyněk Carbol, Barbara Helštýnová, Karel Sokanský, Tomáš Novák
(VŠB - Technical University of Ostrava, Czech Republic)

L121 Prototype of a Low-Cost Luxmeter with Wide Measuring Range Designed for Railway Stations
Dynamic Lighting Systems

Roman Hrbáč, Václav Kolář, Tomáš Novák, Mikołaj Bartłomiejczyk (VŠB - Technical University of Ostrava, Czech Republic)

L015 Operating Parameters of Luminaires for Phytotron

Michal Krbal, Petr Baxant, Jan Škoda, Stanislav Sumec (Brno University of Technology, Czech Republic)

L143 Automated System of the Measurement of Electric Parameters of Luminaires and Light Sources at Chosen Operational Conditions

Peter Janiga, Roman Dubnička, Anton Rusnák, Dionýz Gašparovský (Slovak University of Technology in Bratislava, Slovak Republic)

9:15 – 9:45 Morning coffee break 9:45 – 11:30 Parallel sessions 4

Room A – Session A4 Transmission and Distribution Systems

Chairman: Karel Noháč (University of West Bohemia, Czech Republic)

Utilization of Multi-Agent System for Power System Topology Verification
Kazimierz Wilkosz (Wroclaw University of Technology, Poland)

L004 Impact of the Topology Changes Implementation to Synchronization Options in the Transmission System

František Janíček, Martin Jedinák (Slovak University of Technology in Bratislava, Slovak Republic)

L035 Firefly Based Approach for Optimal Power System Black-Start Restoration

Amany El-Zonkoly, Hussein Desouki, Ahmed Farghaly (Arab Academy for Science & Technology, Egypt)

L105 Impact of Fault Location on Transient Stability of Synchronous Generator

Boris Cintula, Žaneta Eleschová, Anton Beláň, Vladimír Volčko, Michal Koníček, Matúš Kováč (Slovak University of Technology in Bratislava, Slovak Republic)

L040 FACTS Devices Influence on Power Losses in Transmission Systems

Ghaeth Fandi, Zdeněk Müller, Libor Straka, Jan Švec (Czech Technical University in Prague, Czech Republic)

L150 Fast-Decoupled Method for Contingency Analysis

Roman Vykuka, Lucie Noháčová (University of West Bohemia, Czech Republic)

Room B – Session B4 Renewable Energy Sources

Chairman: Zdeněk Hradílek (VŠB - Technical University of Ostrava, Czech Republic)

Hydro Energy Potential Estimation for Hydrokinetic Power Plants

Anna Mutule, Ansis Kalnacs (Riga Technical University, Latvia)

L172 Cooperation of Small Hydropower Plant with Wastewater Treatment Plant
Jiří Pěcha, Ondřej Škorvan (Research and Development Division ASIO Ltd., Czech Republic)
David Kubín, Petr Mastný (Brno University of Technology, Czech Republic)

L083 Support of Peripheral Areas in the Moravian-Silesian Region Using Micro-Hydroelectric Power Plants
Petr Chlebiš, Martin Sobek, Kateřina Barešová (VŠB - Technical University of Ostrava, Czech Republic)

L104 Measurement of Heat Pump-Statistical Data Analysis

Jan Šrámek, Zdeněk Hradílek (VŠB - Technical University of Ostrava, Czech Republic)

L152 Experimental Validation of Solid Oxide Fuel Cell's Basic Operational Characteristic

Daniel Minařík, Petr Moldřík (VŠB - Technical University of Ostrava, Czech Republic) Tony Meadowcroft (The University of Birmingham, UK)

L062 PV Panels under Lightning Conditions

Milan Bělík (University of West Bohemia, Czech Republic)

Room C – Session C4 Electrical Machines and Drives

Chairman: Václav Kůs (University of West Bohemia, Czech Republic)

L014 Comparison of Voltage Distribution in End-Winding of Synchronous Generator

Ondřej Krpal, Eva Kučerová (University of West Bohemia, Czech Republic)

L070 Design of Permanent Magnet Assisted Synchronous Reluctance Machine

Ants Kallaste, Toomas Vaimann (Tallinn University of Technology, Estonia) Anouar Belahcen (Aalto University, Finland)

L059 Vector Control Implementation of Low Voltage Permanent Magnet Synchronous Motor

Pavel Brandstetter, Ondřej Petrtýl, Pavel Rech (VŠB - Technical University of Ostrava, Czech Republic)

L060 Electric Vehicle Energy Consumption Monitoring

Pavel Brandstetter, Jan Vaněk, Tomáš Verner (VŠB - Technical University of Ostrava, Czech Republic)

L067 Optimisation of Electric Drive Setting in Battery Powered Locomotive

Vaclav Sládeček, Ivo Neborák, Petr Palacký (VŠB - Technical University of Ostrava, Czech Republic)

L135 Decentralized Battery Management System

Karel Čermák, Matouš Bartl (University of West Bohemia, Czech Republic)

L170 Robust Digital Regulator for Railway Battery Charging Station

Matouš Bartl, Karel Čermák (University of West Bohemia, Czech Republic)

Room D – Session D4 Nuclear Energy Research

Chairman: Karel Katovský (Brno University of Technology, Czech Republic)

S053 Low cost Nuclear Electronic Circuits and Laboratory Experiments

Y K Vijay (Vivekananda Global University, India)

L139 Cherenkov Glow Analysis by Luminance Distribution Processing

Jan Varmuža, Michal Krbal, Karel Katovský (Brno University of Technology, Czech Republic)

L173 Investigation of (n,2n) Cross Sections for Some Structural Materials at 14.0 MeV

Nand Lal Singh (M.S.University of Baroda, India)

Paresh M. Prajapati (Institute of Plasma Research, India)

L157 Accelerator Driven p(37)-D₂O Fast Neutron Source at NPI Řež

Milan Štefánik (Nuclear Physics Institute of the ASCR, Czech Republic)

Pavel Bém, Miloslav Götz, Milan Honusek, Mitja Majerle, Jan Novák, Eva Šimečková,

František Veselý (Academy of Sciences of the Czech Republic, Czech Republic)

Karel Katovský (Brno University of Technology, Czech Republic)

L077 Monte Carlo Simulation of Radiation Damage by Gamma Rays

Ambika Tundwal, Vinod Kumar (G.G.S. Indraprastha University, India)

Nagendra S. Raghaw (University of Rajasthan, India)

S184 Investigation of Neutron Induced Damage in Materials Using Positron Annihilation Spectroscopy

Hari Shanker Palsania (University of Rajasthan, India)

11:30 - 13:00 Lunch

13:00 - 14:30 Parallel sessions 5

Room A – Session A5 Generators for Wind Applications

Chairman: Matti Lehtonen (Aalto University, Finland)

1176 Investigation of Autonomous Regime of a Permanent Magnet Synchronous Wind Generator

Julia Djagarova (Technical University of Varna, Bulgaria)

Nikolay Djagarov (Nikola Vaptsarov Naval Academy, Bulgaria)

L020 Design of Slow-Speed Slotless SmCo Permanent Magnet Synchronous Generator for Wind Applications

Toomas Vaimann, Ants Kallaste, Norman Korn, Sten Laurit (Tallinn University of Technology, Estonia)

L129 Research of Transients in Induction Generator for Small-Scale Wind Power in Off-the-Grid by Using EMTP - ATP

Stanislav Rusnok, Pavel Sobota, Veleslav Mach (VŠB - Technical University of Ostrava, Czech Republic)

L117 Model of PMSG Wind Turbine in Hybrid Energy System

Jan Morávek, Petr Mastný (Brno University of Technology, Czech Republic)

L128 Induction Generator Optimized Operation for Small-Scale Wind Power in Program LabVIEW

Stanislav Rusnok, Pavel Sobota, Radim Jílek, Tomáš Mlčák

(VŠB - Technical University of Ostrava, Czech Republic)

Room B – Session B5 Solutions for Future Grids

Chairman: Jaroslava Orságová (Brno University of Technology, Czech Republic

- New Solutions in Transmission and Distribution Network in Frame Renewable Portfolio Standards

 Jerzy Szkutnik (Częstochowa University of Technology, Poland)
- L089 Concept of Charging Stations for Electric Cars

 Oliver Marcinčin, Zdeněk Medvec (VŠB Technical University of Ostrava, Czech Republic)
- L144 PLC Communication in Smart Grid

 Aleš Krutina, Jan Bartovský (University of West Bohemia, Czech Republic)
- L017 Modeling of Controlled Renewable Distributed Power Generators

 Emil Dvorský, Pavla Hejtmánková, Lenka Raková (University of West Bohemia, Czech Republic)

Room C – Session C5 Reliability and Maintenance

Chairman: Jan Švec (Czech Technical University in Prague, Czech Republic)

- L072 Influence of Financial Equivalent of Supply Interruption on Decision Making in Distribution Networks

 Petr Skala, Václav Dětřich, Oto Bucholcer (EGÚ Brno, a. s., Czech Republic)
- L126 Stages of Development of 110 kV Power Lines Restoration Method

 Vít Houdek, Stanislav Rusek, Radomír Goňo (VŠB Technical University of Ostrava, Czech Republic)
- L123 Full Scope Risk Monitor for the Transmission Grid

Pavol Hlaváč, Zoltán Kovács (RELKO Ltd., Slovak Republic) Marek Špok (Tractebel Engineering, a. s., Czech Republic) Milan Kubala (EnergoConstruct, s. r. o., Slovak Republic) Anton Cerman (Slovak University of Technology in Bratislava, Slovak Republic)

- L028 Monte Carlo and Fault Tree Aproaches in Reliability Applications of Gas Transmission Network
 Pavel Praks, Sergio Contini, Vitis Kopustinskas (Joint Research Centre, European Commission, Italy)
- L011 Credibility of RCM Analysis Results

 Jan Kamenický, Jaroslav Zajíček (Technical University of Liberec, Czech Republic)
- L034 Reliabity of the Electrical Power System
 Zbyněk Martínek, Tomáš Klor, Jaroslav Holý (University of West Bohemia, Czech Republic)

Room D – Session D5 Nuclear Power Plant Safety and Operation

Chairman: Jan Frýbort (Czech Technical University in Prague, Czech Republic)

S183 Main challenges of 3D neutronics analysis

Suren Bznuni (Yerevan State University, Armenia)

- L134 ANDREA Recalculation of Operation History of VVER-440

 Lenka Heraltová, Jan Frýbort (Czech Technical University in Prague, Czech Republic)
- L151 Fault Tree Analysis of Emergency Core Cooling System and Containment Spray System of WWER440/V213

Luboš Piterka, Jana Jiřičková, Martin Lovecký (University of West Bohemia, Czech Republic)

L109 Severe Accidents Management in PWRs

Jana Rajzrová, Jana Jiřičková (University of West Bohemia, Czech Republic)

L090 Validation of the TRACE Code Using PSB-VVER Experiments

Martin Blaha (TES s. r. o., Czech Republic)

14:30 - 15:00 Coffee break

15:00 - 16:00 Parallel sessions 6

Room A – Session A6 Micro and Hybrid Grids

Chairman: Josef Tlustý (Czech Technical University in Prague, Czech Republic)

1178 Smart DC Micro-Grids

Miles A. Redfern (University of Bath, UK)

L081 The Protection and the Control of a Small Off-Grid System

Stanislav Mišák, Jakub Vramba, Jindřich Stuchlý (VŠB - Technical University of Ostrava, Czech Republic) Peter Braciník, Marek Höger (University of Žilina, Slovak Republic)

L165 Operational Characteristics of Photovoltaic Systems

Petr Mastný, Jiří Drápela, Jan Šlezingr, Jan Morávek (Brno University of Technology, Czech Republic)

L147 The Cooperation of Fuel Cells and Renewable Energy Sources: A Short Review of Operated Energetics Systems and Their Main Deficiencies of PEMFC Models in Hybrid Systems

Michal Ptáček, Tomáš Pavelka, Jan Novotný (Brno University of Technology, Czech Republic)

Room B – Session B6 IEC 61850 9-2 Process Bus Applications

Chairman: Krzysztof Solak (Wroclaw University of Technology, Poland)

S185 Application of IEC 61850-9-2 in MV Switchgear with Sensor Use

Jiří Pokorný (ABB, s. r. o., Czech Republic)

L102 Overcurrent Protection Relay Model Using IEC 61850-9-2 Sampled Values

Tomáš Bajánek (Brno University of Technology, Czech Republic)

L171 IEC 61850 Communication Based Distance Protection

Kinan Wannous, Petr Toman (Brno University of Technology, Czech Republic)

L018 Software Tool for Verification of Sampled Values Transmitted via IEC 61850-9-2 Protocol

Stanislav Sumec (Brno University of Technology, Czech Republic)

Room C – Session C6 Diagnostics I

Chairman: Rainer Haller (University of West Bohemia, Czech Republic)

L047 Partial Discharges Evaluation at DC Voltage

Josef Pihera, Rainer Haller, Petr Mráz (University of West Bohemia, Czech Republic)

L073 Inductive Sensor Usage for Partial Discharge Measurements on High Voltage Coils

Jozef Balogh, Jaroslav Petráš, Jaroslav Džmura (Technical University of Košice, Slovak Republic)

L071 Analysis of Transformer State by Fuzzy TOPSIS and AHP Method

Mikołaj Bartłomiejczyk, Štefan Hamacek (VŠB - Technical University of Ostrava, Czech Republic) Miroslav Gutten (University of Žilina, Slovak Republic)

L156 Usage of Inrush Current Surge for Early Detection of Inter-Winding Faults

Aleksandrs Dolgicers, Jevgenijs Kozadajevs, Ivars Zalitis (Riga Technical University, Latvia)

Room D – Session D6 CENEN-NET Workshop

Chairman: Karel Katovský (Brno University of Technology, Czech Republic)

Workshop dealing with nuclear education networking possibilities organized within the frame of CENEN-NET project of the Czech Nuclear Education Network association CENEN

Room B – Session B7 Electrical Protections

Chairman: Krzysztof Solak (Wroclaw University of Technology, Poland)

L096 EMTP Testing of Selected PST Protection Schemes

Krzysztof Solak, Waldemar Rebizant (Wroclaw University of Technology, Poland) Ludwig Schiel (Siemens AG, Germany)

L044 Distance Protection Based on Artificial Neural Networks

Libor Straka, Ghaeth Fandi (Czech Technical University in Prague, Czech Republic)

L068 Fault Analysis of Smart Grid Power System Employing Simultaneous

Jakub Ehrenberger (Czech Technical University in Prague, Czech Republic)

Room C – Session C7 Diagnostics II

Chairman: Rainer Haller (University of West Bohemia, Czech Republic)

L160 A New Statistical-Physical Model to the Description of Aging of Electroinsulating Systems
Jakub Souček, Pavel Trnka (University of West Bohemia, Czech Republic)

L107 Dielectric Spectroscopy of Transformer Oil Based Ferrofluid from View of i(t) Characteristics at Initial Stage of Ageing

Roman Cimbala, Martin German-Sobek, Jozef Király, Marek Pavlík (Technical University of Košice, Slovak Republic)

L022 Fourier Transform Infrared Spectroscopy as a Tool for Identification of the Curing Process of Epoxy Resin

Pavel Prosr, Radek Polanský, Michal Čermák (University of West Bohemia, Czech Republic)

Room D - Session D7 CENEN-NET Workshop

Chairman: Jiří Martinec (Brno University of Technology, Czech Republic)

Workshop dealing with nuclear education networking possibilities organized within the frame of CENEN-NET project of the Czech Nuclear Education Network association CENEN

18:00 - 18:10

Meeting before hotel and leaving to reach close tram station by walk

18:30 Tram departs for the Technical Museum

OREA Wellness Hotel Santon OPristavni 1064/38

OPristavni 1064/38

Walk 7 min

SS0 m

Abeco (a)

Pristaviste O

Pristaviste O

Transfer from the hotel Santon to the Technical Museum is organized by a privat tram connection from close tram station "Pristaviste" to tram station "Technicke museum". It is necessary to be at the Pristaviste station at least 10 minutes before the departure time; it means at 18:20.

19:00 – 24:00 Conference banquet inTechnical Museum

Casual dress code is expected.

00:15 Tram departs from the Technical Museum for the hotel Santon

Wednesday, May 14, 2014

8:15 - 9:30 Parallel sessions 8

Room A – Session A8 Power Electronics II

Chairman: Václav Kůs (University of West Bohemia, Czech Republic)

L056 A Novel ZVZCS Half Bridge and Full Bridge DC-DC Converter Topologies for Traction Applications
V. V. Subrahmanya Kumar Bhajana, Pavel Drábek (University of West Bohemia, Czech Republic)

L058 A New ZVS-ZCS Multilevel DC/DC Converter with Current Fed Dual Active Circuits for Traction Applications

V. V. Subrahmanya Kumar Bhajana, Pavel Drábek (University of West Bohemia, Czech Republic)

L125 Hard to Resonant Switchable Converter

Petr Španěl, Miroslav Patočka (Brno University of Technology, Czech Republic)

L097 The Boost Converter with Air Core Coil

Aleš Havel, Martin Borski, Jiří Špička, Martin Tvrdoň (VŠB - Technical University of Ostrava, Czech Republic)

L075 Application Note for the Construction of SiC Medium Power Converter with High Switching Frequency
Petr Vaculík (VŠB - Technical University of Ostrava, Czech Republic)

Room B – Session B8 Electrical Traction Systems

Chairman: Petr Toman (Brno University of Technology, Czech Republic)

L106 Simulation of Stray Currents on Single Track in Matlab Simulink

Pavel Svoboda, Stanislav Zajaczek, Roman Šprlák, Jitka Mohylová (VŠB - Technical University of Ostrava, Czech Republic)

L030 Measurement of Ground Currents Leaking from DC Electric Traction

Václav Kolář, Roman Hrbáč (VŠB - Technical University of Ostrava, Czech Republic)

L086 Remote Earth in the Electrified Railway Traction

Lubomír Ivánek, Phan Thi Thanh Thao (VŠB - Technical University of Ostrava, Czech Republic) Lukáš Wežranowski (SEWECOM ONLINE, s. r. o., Czech Republic)

L043 Examination of Current Fields in the Vicinity of Railway L - Type Platform

Stanislav Zajaczek, Pavel Svoboda, Lubomír Ivánek, Roman Šprlák (VŠB - Technical University of Ostrava, Czech Republic)

L052 Design of New Power Supply Unit for Steel Materials Contact Stress Testing Device

Peter Staš, Ladislav Slíva, Stanislav Mišák (VŠB - Technical University of Ostrava, Czech Republic)

Room C – Session C8 Power and Voltage Quality

Chairman: Zdeněk Müller (Czech Technical University in Prague, Czech Republic)

L103 Measurement of Harmonics in Low-Voltage Network on the Border between SVK and CZE

Roman Bodnár, Alena Otčenášová, Michal Regul'a, Dominik Szabó (University of Žilina, Slovak Republic)

L084 Designing and Modelling of a DVR in Matlab

Dominik Szabó, Roman Bodnár, Michal Reguľa, Juraj Altus (University of Žilina, Slovak Republic)

L146 Analysis and Mitigation of Ferroresonant Oscillations in Power System

Matúš Kováč, Žaneta Eleschová, Pavol Heretík, Michal Koníček (Slovak University of Technology in Bratislava, Slovak Republic)

L049 Monitoring of Power Quality Parameters in the Areas of Complaints about the Quality of Electrical

Petr Rozehnal, Jan Unger, Petr Krejčí (VŠB - Technical University of Ostrava, Czech Republic)

10:00 - 11:15 Parallel sessions 9

Room A – Session A9 Energy storage

Chairman: Petr Mastný (Brno University of Technology, Czech Republic)

L131 Modeling Vanad Redox Battery in Modelica

Lukáš Radil, Petr Mastný, Jan Macháček (Brno University of Technology, Czech Republic)

L042 Life Cycle Analysis of the Hydrogen Production

Miroslava Smitková, František Janíček (Slovak University of Technology in Bratislava, Slovak Republic)

L055 Calculation of Efficiency of Hydrogen Storage System at the Fuel Cells Laboratory

Jan Vaculík, Zdeněk Hradílek, Petr Moldřík, Daniel Minařík (VŠB - Technical University of Ostrava, Czech Republic)

L153 Techno-Economic Analysis of Different Battery Storage Suitable for Off-Grid Systems

Petr Kubalík, Stanislav Mišák, Jindřich Stuchlý, Jakub Vramba (VŠB - Technical University of Ostrava, Czech Republic)

Room B – Session B9 Power Systems Apparatus and Devices

Chairman: Jana Jiřičková (University of West Bohemia, Czech Republic)

L064 Investigation of Electrical Properties of ZnO Varistors Stressed by Current Pulses

Bystrík Dolník (Technical University of Košice, Slovak Republic)

L019 Analysis of Force Characteristic of Short-Circuit Release in Low Voltage Circuit Breaker

Petr Kačor, Petr Bernat (VŠB - Technical University of Ostrava, Czech Republic)

L101 Verification of Steady State Model of Power Autotransformer

Vladimír Volčko, Žaneta Eleschová, Anton Beláň, Peter Janiga, Boris Cintula, Pavol Heretík (Slovak University of Technology in Bratislava, Slovak Republic)

L158 Remarks on the Design of High-Temperature Devices with Electric Arc

Ivana Jakubová, Josef Šenk, Ilona Lázničková (Brno University of Technology, Czech Republic)

L111 The Influence of the Position of the Starting Material during Melting by the Electromagnetic Induction in a Cold Crucible

David Rot, Stanislav Jiřínec, Jiří Kožený, Michal Křesina (University of West Bohemia, Czech Republic)

Room C – Session C9 EMC and Metering

Chairman: Jiří Drápela, (Brno University of Technology, Czech Republic)

L136 Simulation of Electromagnetic Fields Propagation through the Various Materials

Ján Zbojovský, Alexander Mészáros, Dušan Medveď (Technical University of Košice, Slovak Republic)

L110 Measuring of the Shielding Effectiveness of Electromagnetic Field of Brick Wall in the Frequency Range from 1 GHz to 9 GHz

Marek Pavlík, Dušan Medveď, Iraida Kolcunová (Technical University of Košice, Slovak Republic)

L154 Precise Method for Digital Frequency Measurement for Class A Instruments

Tomáš Bedrník, Viktor Bubla, Pavel Štěpán, Jan Kraus (Technical University of Liberec, Czech Republic)

L145 Analytical Analysis of Transformer Interaction Caused by Inrush Current

Pavol Heretík, Matúš Kováč, Anton Beláň, Vladimír Volčko, Michal Koníček (Slovak University of Technology in Bratislava, Slovak Republic)

11:30 – 11:45 Conference closing ceremony

Room A - Plenary session

Concluding words from the Conference chair

11:45 - 13:30 Lunch

High Current (Short-Circuit) and High Voltage Laboratories at Brno University of Technology

Scope:

- The visit includes a guided tour through the laboratories with a presentation of test equipment for high current and high voltage testing.
- The laboratories are incorporated with the Centre for Research and Utilization of Renewable Energy and are used for experiments and research as well as type testing. The main equipment is of following parameters:
 - Short-Circuit Current Laboratory 150 kA(AC), 50 kA(DC)
 - High Voltage Laboratory AC source: 300 kV/1 A(AC); Impulse generator: 1000 kV/100 kJ
- Future information about the laboratories is available at following link in section "Laboratories": http://www.cvvoze.cz/en/vyroba/index

Important terms:

- Departure from Hotel Santon on May 14 at 14:00, duration about 2 hours (including transport).
- The visit is free of charge.
- Registration via email sent on epe2014@epe-conference.eu till May 9, 12:00.
- Please use the email subject: EPE2014 Technical visit.
- Note: There is limit on the number of participants. Registration will be completed on a "first come –
 first served" basis. Once we reach our maximum limit of delegates the registration for this visit will be
 closed.

Notes to presentations

Presentation types and times

K Keynote presentation	
Invited presentation	20 minutes for presentation + 5 minutes for discussion
L Standard presentation	10 minutes for presentation + 5 minutes for discussion
S Special presentation	10 minutes for presentation + 5 minutes for discussion

We kindly ask presenting authors to be present in the room at least 10 minutes before the session starts. Please introduce yourself to the chairman and deliver your presentation (USB drive is expected).





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