

ORGANIZERS:



■ АБС Электро



CONFERENCE PROGRAMME

5th International Scientific and Technical Conference

ACTUAL TRENDS IN DEVELOPMENT OF POWER SYSTEM RELAY PROTECTION AND AUTOMATION

Sochi, June 1–5, 2015

SUPPORTED BY:



МИНИСТЕРСТВО ЭНЕРГЕТИКИ
РОССИЙСКОЙ ФЕДЕРАЦИИ



Conference programme

MONDAY, JUNE 1ST

10:00 – 11:00 PARTICIPANTS REGISTRATION

Congress Hall Lobby

11:00 – 11:30 CONFERENCE OPENING

Congress Hall

11:30 – 12:45 PLENARY SESSION

Congress Hall

*Co-chairmen: A. Zhukov (JSC SO UPS, Russia),
I. Patriota de Siqueira (CIGRE SC B5, Brazil)*

I. Patriota de Siqueira (CIGRE SC B5, Brazil)

**Research Committee of CIGRE B5 «Relay
Protection and Automation»: Purposes and
Objectives**

A. Zhukov (JSC SO UPS, Russia)

**Prospects for Development of the Relay
Protection and Automation in the UPS of Russia**

*K. Bakić (South East European Region of CIGRE,
Slovenia)*

Activities of CIGRE South East European Region

12:45 – 13:30 PRESS-CONFERENCE

Congress Hall

13:00 – 14:00 LUNCH

Restaurant «Russian Riviera»

**14:00 – 15:30 Seminar of International Council on Large
Electric Systems CIGRE B5 Study Committee**

Congress Hall

*Chairman: I. Patriota de Siqueira (CIGRE SC B5,
Brazil)*

15:30 – 16:00 COFFEE BREAK

**16:00 – 18:00 Seminar of International Council on Large
Electric Systems CIGRE B5 Study Committee**

Congress Hall

*Chairman: I. Patriota de Siqueira (CIGRE SC B5,
Brazil)*

19:00 – 21:00 WELCOME COCKTAIL

Restaurant «Russian Riviera»



Conference programme

TUESDAY, JUNE 2ND

9:00 – 12:30 SECTION 1.1: ADVANCED RELAY PROTECTION AND AUTOMATION SYSTEM. ESTABLISHMENT OF IDEOLOGY AND CONCEPTUAL DEVELOPMENT ISSUES

Congress Hall Room 1

*Co-chairmen: G. Nudelman (JSC VNIIR, Russia),
I. Patriota de Siqueira (CIGRE SC B5, Brazil)*

9:00 – 10:30 *J. Cardenas (GE Digital Energy, Spain)*

S.1.1-1. Selective Backup Protection for AC HV and EHV Transmission Lines

M. Kezunovic (Texas A&M University, Dept. of ECEN, USA)

S.1.1-2. Hierarchically Coordinated Protection: an Integrated Concept of Corrective, Predictive and Inherently Adaptive Protection

D. Jenkins (Alstom Grid UK Ltd, UK)

S.1.1-3. Engineering of Protection, Automation and Control Systems

H.-J. Herrmann, S. Schneider (Siemens AG, Germany)

S.1.1-4. Innovative Design of IEDs and Functions Allow Flexible Transformer Protection Applications

D. Dolezilek, C. Gordon, D. Anderson, S. McCreery, W. Edwards (Schweitzer Engineering Laboratories, Inc., USA)

S.1.1-5. Simplifying Teleprotection Communications With New Packet Transport Technology

A. Apostolov, T. Schossig (OMICRON electronics GmbH, USA, Austria)

S.1.1-6 Implications and Benefits of Standardized Protection and Control Schemes

10:30 – 11:00 COFFEE BREAK

11:00 – 12:30 *F. Reis Filho (Farfilho Consultoria, Comércio e Representações LTDA, Brazil)*

S.1.1-7. Protection of Transmission Lines With Series Compensation – New Tools

A. Voloshin, Ya. Arcishevsky, A. Zhukov (NRU MPEI, JSC SO UPS, Russia)

S.1.1-8. Principles of Creation of Intelligent Systems of Relay Protection and Automation

Conference programme

11:00 – 12:30 *A. Kulikov, P. Kolobanov, V. Petrova (NNSTU, Russia)*

S.1.1-9. Enhancement of Relay Protection Digital Signal Processing Algorhythmes

Yu. Lyametz, M. Martynov, A. Nesterin (Research Center Bresler Ltd, Russia)

S.1.1-10. Training Modules of Power Lines Microprocessor Relay Protection

LI Yaping (China National Testing Center for Relays and protection equipment, China)

S.1.1-11. Standardization in Relay Protection of Intelligent Systems

V. Kapustin, S. Gorenkov (Ltd Siemens, Russia)

S.1.1-12. Substation Automation Systems Based on Multifunctional Microprocessor Devices

12:30 – 14:00 **LUNCH**

Restaurant «Russian Riviera»

14:00 – 18:00 **SECTION 1.2: ADVANCED RELAY PROTECTION AND AUTOMATION SYSTEM. ESTABLISHMENT OF IDEOLOGY AND CONCEPTUAL DEVELOPMENT ISSUES**

Congress Hall Room 1

Co-chairmen: V. Vorobjev (JSC SO UPS, Russia), J. Cardenas (GE Digital Energy, Spain)

14:00 – 15:30 *V. Balashov, E. Kolobrodov, A. Nikulin, D. Krupnov (JSC VNIIR, Russia)*

S.1.2-1. Optimization of Algorithms and Settings of Transformer Differential Protection

S. Shovkoplyas, I. Levchenko, E. Satsuk (SRSPU(NPI), JSC SO UPS, Russia)

S.1.2-2. Relay and Automation Sewn Discretely Controlled Rectifier Unit in Melted Ice Melting and Overhead Power Line

V. Antonov, V. Naumov, A. Ilyin, A. Soldatov, N. Ivanov (CSU, EKRA Research and Production Enterprise Ltd, Russia)

S.1.2-3. Recurrent Decomposition – the Effective Method of Structural Analysis of Relay Protection and Automation Signals

V. Nagay, I. Nagay (branch «ENEX» (JSC) «Yuzhnergosetproekt», Russia)

S.1.2-4. Possible Ways to Improve the Relay Protection of a Fixed Shunt Reactors 330-750 kV



Conference programme

14:00 – 15:30 *G. Nudelman, O. Onisova (JSC VNIIR, Russia)*

S.1.2-5. Development of General Requirements for Relay Protection of Power System with Small-scale Dispersed Power Plants

Ya. Arcishevsky, S. Vostroknutov, A. Zemtsov (NRU MPEI, RUELT Ltd Moscow, JSC FGS UPS, Russia)

S.1.2-6. Centralized Relay Protection and Automation of Small generation facilities

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00 *S. Subramanian, K. Venkataraman, Hengxu Ha (Alstom Grid UK Ltd, UK)*

S.1.2-7. Transient Earth Fault Detection on Compensated Earthed Systems

Yu. Romanov, A. Nesterin, A. Ashmarin (Research Center Bresler Ltd, Russia)

S.1.2-8. Relay protection of generator's excitation circuit against earth faults in one point

M. Kletsel, B. Mashrapov (Tomsk Polytechnic University, Toraighyrov Pavlodar State University, Russia)

S.1.2-9. Centralized Protection Accession of 6-10 KW

S. Pashkovsky, R.Vainshtein, A. Serbulov, V. Shestakov, S. Yudin (EKRA Research and Production Enterprise Ltd, Tomsk Polytechnic University, Russia)

S.1.2-10. Measuring the Degree of Mismatch Compensation Capacitive Earth Fault Current on the Basis of Current Overlay Two Frequencies

A. Kulikov, V. Ananov, M. Obalin (NNSTU, Russia)

S.1.2-11. Travelling wave fault location on lines with branches

V. Kozlov, M. Efimov, K. Ermakov, I. Plotnikov (Bresler SPE LLC, Russia)

S.1.2-12. Modern Fault Location Methods and Technique

V. Nagay, I. Nagay, S. Sarry, P. Kireev, A. Ukrainev (SRSPU(NPI), Russia)

S.1.2-13. Detection of the Faults in Electrical Networks with Incomplete Information

Conference programme

TUESDAY, JUNE 2ND

09:00 – 12:30 SECTION 2.1: «EMERGENCY AND MODE CONTROL»

Congress Hall Room 2

*Co-chairmen: A. Zhukov (JSC SO UPS, Russia),
A. Lisitsyn (JSC STC UPS, Russia)*

09:00 – 10:30 *N. Voropai, M. Negnevitsky, D. Panasetsky,
N. Tomin, V. Kurbatsky, A. Zhukov (ESI SB RAS,
University of Tasmania, Irkutsk State University,
Russia, Australia)*

S.2.1-1. Software Design of Intelligent System for Preventing Large-Scale Emergencies in Power Systems

*A. Osak, A. Shalaginov, D. Panasetsky, E. Buzina
(ESI SB RAS, Russia)*

S.2.1-2. Regime Reliability Analysis Using the Short-term Forecasting of the System Behavior and Evaluation of its Controllability

*N. Lizalek, D. Borodin, A. Vtoryshin, S. Arzhannikov
(Institute of power systems, Novosibirsk State
Technical University, Russia)*

S.2.1-3. The Algorithms of the Dynamic Stability Estimation in a Managed Transition to the Post-fault Mode

*N. Struchkova, A. Fedosov, O. Kim, A. Osak (Institute
of power systems, ESI SB RAS, Russia)*

S.2.1-4. An Integrated Approach to Solving the Problem of Retain the Dynamic Stability in Power System

*A. Landman, A. Petrov, M. Petrushkov, O. Sakaev,
A. Subbotin-Tchukalsky (Institute of power systems,
Russia)*

S.2.1-5. Implementation of Fault-tolerant Distributed Computing System for Emergency Control of Power Systems

*T. Fatur, J. Kosmač (Solvera Lynx d.d., ELES d.o.o.,
Slovenia)*

S.2.1-6. Real-time and Short-term Forecast Assessment of Power Grid Operating Limits - SUMO

10:30 – 11:00 COFFEE BREAK



Conference programme

11:00 – 12:30 *J. Ordacgi F., G. Cardoso Jr., D. do N. Gonçalves (Operador Nacional do Sistema Elétrico – ONS, Brazil)*

S.2.1-7. Perspectives of Applying Hierarchic System Integrity Protection Schemes in Brazil

A. Zhukov, E. Satsuk, A. Lisitsyn, B. Nejumin, P. Cats, M. Edlin (JSC SO UPS, JSC STC UPS, Russia)

S.2.1-8. JSC SO System of Maximum Allowed Power Flow Limit Implementation in Checked Interconnection for Current Power System Operation

S. Yufreev, G. Shabalin, A. Pazderin, P. Chusovitin (Ural Federal University, Russia)

S.2.1-9. Determining the Control Actions to Ensure the Static Stability in the Emergency Control Problem Based on Newton's Method in Optimization

E. Satsuk, A. Filinkov, A. Yudin (JSC SO UPS, Russia)

S.2.1-10. Automation Schemes of Transient Stability Control in Tyumen Power System in Case of Ural Power System Tie Lines Overload

A. Arestova, O. Gorte, M. Khmelik, A. Grobovoy, N. Kirjanova (Novosibirsk State Technical University, Skoltech, Russia)

S.2.1-11. Energy Storage Unit as a Tool for Emergency control on an example of the Russky Island power network

P. Chusovitin, O. Malozemova (Ural Federal University, Russia)

S.2.1-12. Low-power Generating Units Dynamic Stability Improvement by Means of Doubly-fed Induction Generators with Phase Boosting

12:30 – 14:00 **LUNCH**
Restaurant «Russian Riviera»

14:00 – 16:00 **SECTION 2.2: «EMERGENCY AND MODE CONTROL»**

Congress Hall Room 2

Co-chairmen: A. Zhukov (JSC SO UPS, Russia), A. Lisitsyn (JSC STC UPS, Russia)

Conference programme

14:00 – 15:30 *T. Klimova, M. Savvatin (NRU MPEI, Russia)*

S.2.2-1. Impact Analysis Periodically Changing Load on the Occurrence of Low-Frequency Oscillations

T. Klimova, A. Zhukov, E. Satsuk, A. Rasshcheplyaev (NRU MPEI, JSC SO UPS, Russia)

S.2.2-2. Tuning aspects of Automatic excitation control for low frequency oscillations mitigation in power systems

A. Zhukov, E. Satsuk, A. Safronov (JSC SO UPS, Russia)

S.2.2-3. Adaptation of Gas Turbine CTD – 160 Regulation System to the Unified Power System of Russia Operation Requirements

A. Fishov, R. Khabibulin, N. Kardzhaubaev (NSTU, Russia)

S.2.2-4. Efficiency Assessment of the Voltage Regulation Concepts in Electric Grids with Distributed Generation

D. Panasetsky, V. Kurbatsky, N. Tomin (ESI SB RAS, Russia)

S.2.2-5. A Multi-Agent-Based Algorithm for Load Shedding Against Overloading in Distribution Networks

D. Myshlyannikov, A. Fishov, M. Frolov (Novosibirsk State Technical University, Russia)

S.2.2-6. Identification of Node Parameters for the Tasks of Control of EPS Modes

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00 SECTION 3: «MODELING»

Congress Hall Room 2

Co-chairmen: J. Zakonjsek (Relarte Ltd, Slovenia), A. Voloshin (NRU MPEI, Russia)

16:00 – 18:00 *G. Nudelman, A. Navolochnyi, O. Onisova (JSC VNIIR, Russia)*

S.3-1. The Use of Combined Methods for Large Power System Simulation in Real-Time and Faster than Real-Time

U. Romanov, A. Shevelev, A. Navolochnyi, O. Onisova (Research Center Bresler Ltd. JSC VNIIR, Russia)

S.3-2. Simulation of Complex Dynamic Power System Conditions for Generator Protection Testing



Conference programme

16:00 – 18:00 *M. Andreev, Yu. Borovikov, N. Ruban, A. Sulaymanov (Tomsk Polytechnic University, Russia)*

S.3-3. Simulation of Relay Protection for Tasks of Adequate Reproduction of Transitional Processes in Power Systems

S. Tokarev (RADIUS Automatica, Russia)

S.3-4. Multiconductor Transmission Lines Phase-mode Transformation Approximation in Travelling Wave Fault Location

S. Kuzhekov, A. Degtyarev, P. Forsyth, C. Peters, J. Zakonjsek, M. Shamis (Kvazar, RTDS Technologies Ltd, «EnLAB», Russia, Slovenia, Canada)

S.3-5. Mathematical Simulation of Current Transformers during deep saturation of magnetic circuits

K. Aprosina («Prosoft-Systems» Ltd, Russia)

S.3-6. Using Polynomial Approximation for Signal Processing in Relay Protection

K. Aprosina, S. Semenko («Prosoft-Systems» Ltd, Ural Federal University, Russia)

S.3-7. Power System Transient Effective Calculation Method for Shared Memory Parallel Calculative System

A. Mayzel, M. Popov, V. Ryabov (Saint-Petersburg Polytechnic University, Russia)

S.3-8. Real-Time Digital Diagnostics Complex (DDC-RT) implementation procedure

WEDNESDAY, JUNE 3RD

09:00 – 12:30 SECTION 1.3: «ADVANCED RELAY PROTECTION AND AUTOMATION SYSTEM. ESTABLISHMENT OF IDEOLOGY AND CONCEPTUAL DEVELOPMENT ISSUES

Congress Hall Room 1

Co-Chairmen: G. Nudelman (JSC VNIIR, Russia), J. Zakonjsek (Relarte Ltd, Slovenia)

09:00 – 10:30 *I. Dorofeev (LYSIS LLC, Russia)*

S.1.3-1. Centralized or Distributed? Reliability Comparative Analysis of Some Architecture Solutions for Relay Protection Systems With the Digital Secondary Chains

Conference programme

09:00 – 10:30 *A. Charkin (LYSIS LLC, Russia)*

S.1.3-2. Implementation Experience of Digital Centralized Substation Automation System Based on Integrated Software Solution iSAS

A. Voloshin, E. Voloshin, A. Lebedev, A. Andreev, V. Tazin, D. Serov (NRU MPEI, «SmartEPS» LLC Russia)

S.1.3-3. Creating Multiagent System Using IEC 61850 Protocols for Substation Equipment Control

V. Kharlamov, S. Romanov (Unitel Engineering LLC, Russia)

S.1.3-4. Prospects for the Use of PLC Channels in RPA Systems

V. Kharlamov, A. Khasanov (Unitel Engineering LLC, Russia)

S.1.3-5. High Reliable Channels over Digital Communication Networks in Existing and Next-generation RPA Systems

A. Chirkov, Yu. Chirkov («Prosoft-Systems» Ltd, Russia)

S.1.3.6. Protection and Control Systems Redundant Communication Channels Implementation Approaches

10:30 – 11:00 COFFEE BREAK

11:00 – 12:30 *J. Chen, G. Wang, K. Wang, X. Zhao (NR ELECTRIC CO., Ltd, China)*

S.1.3-7. Research and Application of Digital Generator Protection Based on Fibre Optical CT

A. Zhukov, V. Vorobjev, A. Rasshcheplyaev, N. Doni, A. Shurupov, A. Arcishevsky (JSC SO UPS, EKRA Research and Production Enterprise Ltd, NRU MPEI, Russia)

S.1.3-8 Automation reducing the possibility of switching to fault close-in 500-750 kV transmission lines in testing operation

A. Shmoilov, V. Korneev (Tomsk Polytechnic University, Russia)

S.1.3-9. About Line Protection on Wires High-Voltage Potential

V. Vanin, M. Popov, S. Popov, V. Bakhluiev (Saint Petersburg Polytechnic University, Russia)

S.1.3-10. The Research of Magnetizing Current Filter and the Replication of Secondary Current of Transformers



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11:00 – 12:30 *T. Vinokurova, O. Dobryagina, E. Shagurina, V. Shuin, S. Pashkovsky (Ivanovo State Power Engineering University, EKRA Research and Production Enterprise Ltd, Russia)*

S.1.3-11. A Comprehensive Approach to the Problem of Selective Single-phase Earth Fault Protection for Distribution Medium-Voltage Networks

D. Menendez, J. Cardenas, M. Kanabar (GE Digital Energy, Spain)

S.1.3-12. Advancements & Future Trends in Protection of Wind Energy

12:30 – 14:00 **LUNCH**

Restaurant «Russian Riviera»

14:00 – 18:00 **SECTION 4: «RELAY PROTECTION AND AUTOMATIC EQUIPMENT UTILIZATION»**

Congress Hall Room 1

Co-chairmen: V. Vorobjev (JSC SO UPS, Russia), H-J. Herrmann (Siemens AG, Germany)

14:00 – 15:30 *A. Atnishkin, M. Shirokin (Research Center Bresler Ltd, Russia)*

S.4-1. Differential Negative Sequence Current Protection as a Tool for Detection Fault in Power Transformer

Abdelsalam Omar Ahmed (General Electricity Company, Libya)

S.4-2. Distance Protection Performance Analysis

D. Dolezilek, J. Dearien (Schweitzer Engineering Laboratories, Inc., USA)

S.4-3. Lessons Learned Through Commissioning and Analyzing Data from Ethernet Network Installations

N. Aleksandrov (SPE «Dynamics», Russia)

S.4-4. Quality Testing is a Way to Reliable PAC System

D. Dolezilek, C. Gordon, D. Anderson, T. Tibbals (Schweitzer Engineering Laboratories, Inc, USA)

S.4-5. Modern Ethernet Failure Recovery Methods for Teleprotection and High Speed Automation

S. Shoarinejad, J. Cardenas, J. Seco (Araz Energy, GE Digital Energy, Spain)

S.4-6. The Azerbaijani Experiences in Digital Substation Deployment

Conference programme

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00 *S.López, S.Sofroniou (REE, IPTO, Spain, Greece)*

S.4-7. Dominant Practice Of Central European Electrical Utilities For Transmission System Protection

V. Terzija, G. Preston, V. Stanojevic, Z. Radojevic (University of Manchester, Parsons Brinckerhoff, Elektromreza Srbije, Sungkyunkwan University, UK, Serbia, Korea)

S.4-8. Statistical Evaluation of the Algorithm for Short Transmission Line Fault Analysis

A. Zhukov, V. Vorobjev, D. Steshenko, B. Maksimov, A. Voloshin (JSC SO UPS, NRU MPEI, Russia)

S.4-9. Construction Methods of Automatic Fault Analysis Systems

A. Lisitsyn, D. Sulimov (JSC STC UPS, «PARMA» LLC, Russia)

S.4-10. The Development Autonomous Digital Fault Recorders in Russia

A. Podshivalin, N. Aleksandrov (Research Center Bresler Ltd, SPE «Dynamics», Russia)

S.4-11. Verification of PAC Measurements at a Substation: Identifiability of Errors

V. Goldshtein, A. Vedernikov, A. Gofman (Samara State Technical University, JSC SO UPS, Russia)

S.4-12. Comparison Analysis of Accounts Methods of Normal and Emergency Conditions to Provide Proper Power-System Protection Operation

A. Shapeev, A. Egorov, S. Frolov (CJSC CHEAZ, LLC «Center for project management CHEAZ», Russia)

S.4-13. Information Technologies Implementation Influence on the Relay Protection and Automation Maintenance System

A. Motorin, E. Shipilova (Unitel Engineering, LLC, Russia)

S.4-14. Step-by-step Modernization of Existing Substations Under the Digital Substation Concept

V. Lebedev, A. Yablokov (Ivanovo State Power Engineering University, Russia)

S.4-15. Research of Electromagnetic Compatibility Optical and Digital Current and Voltage Transformers



Conference programme

WEDNESDAY, JUNE 3RD

09:00 – 12:30 SECTION 5.1: WAMPAC APPLICATION EXPERIENCE AND DEVELOPMENT ISSUES

Congress Hall Room 2

Co-chairmen: A.Zhukov (JSC SO UPS, Russia), D. Dolezilek (Schweitzer Engineering Laboratories, USA)

09:00 – 10:30 *I. Patriota de Siqueira (Tecnix Engenharia e Arquitetura Ltda., Brazil)*

S.5.1-1. Assessing the Impact of Wide-Area Protection Schemes on Performance and Reliability of Electrical Power Systems

H.-U. Faubel, S. Steger (Siemens AG, EM EA PRO S PROM, Tennet TSO GmbH, Germany)

S.5.1-2. Utility Experiences with Phasor Measurement Units in Wide Area Monitoring Systems

A.Zhukov, E.Satsuk, D.Dubinina, O.Opalev, D.Utkin (JSC SO UPS, Russia)

S.5.1-3. Utility Experiences in the Development, Implementation and Operation of WAMS in the UPS of Russia

F.Gaidamakina, A.Kislovskiy (AlteroPower Ltd, Russia)

S.5.1-4. The Evolution of WAMS of SO UPS. Technical overview

A.Zhukov, E.Satsuk, D.Dubinina, O.Opalev, D.Utkin (JSC SO UPS, Russia)

S.5.1-5. Monitoring of Low Frequency Oscillations from PMU Data in UPS of Russia

J. Cardenas, D. Patynowski, D. Menendez, J. Roca, J. Germain, A. Huete, M. Canales, A. Martinez, J. Rosendo, J. Roldán, J. Montañez (GE Digital Energy, Gas Natural Fenosa, EON, Universidad de Sevilla, Spain)

S.5.1-6. Fault Locator Approach for High-impedance Grounded or Ungrounded Distribution Systems Using Synchrophasors

10:30 – 11:00 COFFEE BREAK

11:00 – 12:30 *J. Cardenas (GE Digital Energy, Spain)*

S.5.1-7. Islanding Detection with Phasor Measurement Units

Conference programme

11:00 – 12:30 *Yu. Ivanov, A. Cherepov, D. Dubinin («Prosoft-Systems» Ltd, JSC SO UPS, Russia)*

S.5.1-8. WAMS Architecture and Systems Component Analysis

A. Nebera, N. Shubin, P. Kazakov, D. Utkin («Prosoft-Systems» Ltd, JSC SO UPS, Russia)

S.5.1-9. Preliminary Results and Possible Perspectives of WAMS Pilot Project Based on Phasor Point

F. Gaidamakin, A. Kislovskiy (AlteroPower Ltd, Russia)

S.5.1-10. Advanced Phasor Data Concentrator for Power Utilities

Yu. Ivanov, A. Cherepov, D. Dubinin, A. Kislovskiy («Prosoft-Systems» Ltd, JSC SO UPS, AlteroPower Ltd, Russia)

S.5.1-11. Optimization of Data Transfer to the Control Centers

12:30 – 14:00 **LUNCH**

Restaurant «Russian Riviera»

14:00 – 18:00 **SECTION 5.2: WAMPAC APPLICATION EXPERIENCE AND DEVELOPMENT ISSUES**

Congress Hall Room 2

Co-chaimen: A. Nebera (CJSC RTSoft, Russia), J. Cardenas (GE Digital Energy, Испания)

14:00 – 15:30 *A. Mokeev (Northern (Arctic) Federal University, Russia)*

S.5.2-1. Methods for Analysis of PMU Functioning During Electromagnetic and Electromechanical Transient Processes

Yu. Ivanov, A. Cherepov, D. Dubinin, T. Klimova, A. Rasshcheplyayev («Prosoft-Systems» Ltd, JSC SO UPS, N RUMEU, Russia)

S.5.2-2. MU Testing. Practical Research and Improvement Questions Test Procedures

A. Mokeev, V. Bovykin, A. Miklashevich, A. Rodionov (Northern (Arctic) Federal University, Engineering Centre «Energoservice», Russia)

S.5.2-3. Expansion of Functionality PMU

A. Pokidyshev («PARMA» LLC, Russia)

S.5.2-4. IEEE C37.118.1 Requirements Analysis



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14:00 – 15:30 *A. Bashlyayev («PARMA» LLC, Russia)*

S.5.2-5. Features of Technical and Programmatic Implementation of the Function PMU in Digital Fault Recorders «PARMA RP 4.11»

I. Kolosok, E. Korkina, E Buchinsky (ESI SB RAS, Russia)

S.5.2-6. WAMS Data Processing for Solving Power System Control Problems

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00 *A. Berdin, D. Bliznuk, P. Kovalenko, A. Cherepov (JSC STC UPS, Russia Ural Federal University, «Prosoft-Systems» Ltd, Russia)*

S.5.2-7. Improving the Quality of the State Parameters' Measurements in Electromechanical Transients

V. Denisov, A. Nagaytsev, A. Fishov, V. Fishov, M. Shiller (Novosibirsk State Technical University, Novosibirsk RDO of JSC SO UPS, Russia)

C.5.2-8. Experimental Investigation on the Power System Physical Model Prototype of the Power System Stability Monitoring System Based on the Synchronized Measurements in Nodes of its Connection

P. Bartolomey, S. Semenenko (Ural Federal University, Russia)

S.5.2-9. PMU Allocation for the Accelerated Power Systems' Power Flow Calculations in Automatic Control Tasks on the WAMS System Basis

P. Chusovitin V. Taschchilin, A. Pazderin (Ural Federal University, Russia)

S.5.2-10. On-line PSS Tuning Method Based on Phasor Measurements

I. Ivanov, A. Murzin (Ivanovo State Power Engineering University, Russia)

S.5.2-11. Single-Circuit Line Parameter Estimation Based on Synchrophasor Measurements

Conference programme

THURSDAY, JUNE 4TH

9:00 – 12:30 SECTION 6: «IEC 61850 STANDARD IMPLEMENTATION EXPERIENCE AND IMPLEMENTATION PROBLEMS»

Congress Hall Room 1

Co-chairmen: N. Doni (EKRA Research and Production Enterprise Ltd, Russia), D. Dolezilek (Schweitzer Engineering Laboratories, USA)

9:00 – 10:30 *L. De Oliveira, C. Dutra, L. Groposo, I. Cruz, S. Richards (Alstom Grid Brazil, Alstom Grid UK Ltd, Brazil, UK)*

S.6-1. Importance of IED Performance on Process Bus Applications

C. Dutra, L. De Oliveira, S. Zimath (Alstom Grid Brazil, Brazil)

S.6-2. Framework for Process Bus Reliability Analysis

N. Doni (EKRA Research and Production Enterprise Ltd, Russia)

S.6-3. Combined Use of Protective Relaying Equipment Based on IEC 61850-9-2LE Standard and Protections with Traditional Analog Inputs

A. Apostolov, T. Shossig (OMICRON electronics GmbH, USA, Austria)

S.6-4. XML and UML – What They Are and Why We Need to Know Them

C. An, G. Lloyd, B. Smith, L. Zou, E. Girardot, A. Schwery, G. Perugini, A. Wechsler, B. Kawkabani (Alstom Grid UK Ltd, ALSTOM Power Hydro, EPFL, UK, France, Switzerland)

S.6-5. Application Experiences of IEC 61850 Sampled Measured Values and its Impact on Protection Systems

X. Dong, D. Wang, M. Zhao, B. Wang, Sh. Shi (Tsinghua University; State Grid Corporation of China; China Southern Power Grid Company, China)

S.6-6. Smart Power Substation Development in China

10:30 – 11:00 COFFEE-BREAK

11:00 – 12:30 *A. Costa (UTE, Uruguay)*

S.6-7. New Protection and Control Applications using the IEC 61850 in UTE Distribution Network



Conference programme

11:00 – 12:30 *T. Gorelik, O. Kirienco, P. Kabanov (JSC STC UPS, Russia)*

S.6-8. Actual Tasks of IEC 61850 and IEC 61970 Joint Application

M. Haikin (Gomelenergo, Republic of Belarus)

S.6-9. Experience in Design, Installation and Operation of the Substation 110 kV with the GE Hard Fiber Process Bus

Alvaro Tadeu A Pereira, Luciano Antonio C Lisboa, Paulo Ricardo L N Coutinho (Companhia Hidro Eletrica do Sao Francisco (CHESF), Brazil)

S.6-10. Strategies and Techniques Applied to IEC 61850 Based DSAS Architectures

T. Schossig (OMICRON electronics GmbH, Austria)

S.6-11. IEC 61850- Concepts for Testing and Isolation of Signals

A. Bulychev, V. Kozlov (Bresler SPE LLC, Russia)

S.6-12. Issues of Using IEC 61850 While Designing Relay Protection for Distribution Network

12:30 – 14:00 **LUNCH**
Restaurant «Russian Riviera»

14:00 – 15:30 **SECTION 7: «ISSUES OF CONTROL SYSTEM CYBER SECURITY IN THE ELECTRIC POWER INDUSTRY»**

Congress Hall Room 1

Co-chairmen: G. Nudelman (JSC VNIIR, Russia), J. Cardenas (GE Digital Energy, Spain)

A. Osak, D. Panasetsky, E. Buzina (Melentiev Energy Systems Institute, Russia)

S.7-1. The Human Factor in Ensuring Cyber Security of Power Facilities

14:00 – 15:30 *M. Nikandrov, M. Braguta (STC FGC UPS, Russia)*

S.7-2. Cyber Security Concept for Modern Electric Power Grid Environment

Ch. Bisale (Siemens AG, Germany)

S.7-3. Security Management for Substation Automation and Protection

K. Hagman (ABB Power Systems, Sweden)

S.7-4. Cyber Security measures in Protection and Control IED's

Conference programme

14:00 – 15:30 *D. Dolezilek (Schweitzer Engineering Laboratories, USA)*

S.7-5. Closed Loop Design Processes Satisfy IEC Security and Dependability Requirements While Improving Commissioning and Maintenance

P. Franco, G. Rocha, D. Dolezilek (Schweitzer Engineering Laboratories, USA)

S.7-6. Case Study: Increasing Reliability, Dependability, and Security of Digital Signals via Redundancy and Supervision

15:30 – 16:00 COFFEE-BREAK

16:00 – 17:00 ROUNDTABLE DISCUSSION OF THE KEY TOPICS OF CIGRE B5 STUDY COMMITTEE AT 46 CIGRE SESSION

Congress Hall Room 1

*Co-chairmen: A. Zhukov (JSC SO UPS, Russia),
I. Patriota de Siqueira (CIGRE SC B5, Brazil)*

17:00 – 18:00 CONFERENCE FOLLOW-UP

Congress Hall Room 1

19:00 – 21:00 GALA DINNER

Night Club Kleopatra



Conference programme

THURSDAY, JUNE 4TH

09:00 – 12:30 POSTER SECTION

Congress Hall Room 2

B. Novoselov («Benning Power Electronics» Ltd, Russia)

S.P-1. Reliability of Operative DC Systems as a Basis for Stable Operation in Relay Protection and Automation

F. Gaydamakin, K. Aprosin (AlteroPower Ltd, «Prosoft-Systems» Ltd, Russia)

S.P-2. Disconnect Switch State Detection by Video Data

I. Petrov (ABB LLC, Russia)

S.P-3. Intermittent Earth Fault Protection

A. Visyashchev, D. Fedosov (Irkutsk Technical University, Russia)

S.P-4. Features of the Digital Differential Protection of Traction Substations' Transformers

A. Kulikov, V. Zinin (Nizhny Novgorod State Technical University, JSC «NIPOM», Russia)

S.P-5. Instrumental Solutions of Relay Protection Terminals Based on Import Substitution

R. Vainshtein, S. Yudin, S. Pashkovsky (Tomsk Polytechnic University, EKRA Research and Production Enterprise Ltd, Russia)

S.P-6. Transformation of Electrical Quantities of Zero Sequence for Performance of Protection Against Short Circuit on the Earth in Networks with Various Modes of Grounding of a Neutral

L. Kolesov, V. Mozhzhukhina (Ivanovo State Power Engineering University, Russia)

S.P-7. Analysis of the Backup Distance Protection Operation Which Uses the Sum of Currents of Two Supplying Line Ends on a Line With Several Taps

B. Fedoseev, E. Kozlov (LLC Siemens, Russia)

S.P-8. Using PRP and HSR Redundancy Protocol in Substations

Conference programme

09:00 – 12:30 *B. Fedoseev, A. Razmakhaev (LLC Siemens, Russia)*

S.P-9. Using Precision Time Protocol in substations

K. Nikitin, D. Polyakov (Omsk State Technical University, Russia)

S.P-10. Analytic Determination of Insulation Residual Life

N. Kurguzov, L. Kurguzov, M. Kurgzova (S. Toraighyrov PSU, LP «Electrical Design Institute TELPRO», The Republic of Kazakhstan)

S.P-11. Digital Model of the Analog Relay Power Direction

A. Glazunova, E. Aksaeva, E. Sjemschikov (ESI SB RAS, Irkutsk Technical University, Russia)

S.P-12. Generation of Control Actions Using Artificial Neural Networks and Modified State Estimation

E. Zakharova, M. Popov (St. Petersburg Polytechnic University, Russia)

S.P-13. Structure Criteria Static Stability of Power Grids

N. Belyaev, Yu. Khrushchev, S. Svechkarev, A. Prokhorov (Tomsk Polytechnic University, Russia)

S.P-14. The Adaptive Generator-to-grid and Power System Parts Synchronizer Technique Effectiveness Analysis

V.Vasiliev, N.Lizalek (Institute of power systems, Russia)

S.P-15. System-defined Emergency Control Perfection

A. Gusev, A. Pischulin, V. Sulaymanova, R. Ufa (Tomsk Polytechnic University, Russia)

S.P-16. Hard- and Software Tool for Modeling Automatic Frequency and Power Regulators

A. Bogdanov, A. Gorchakov, I. Rybin (JSC STC UPS, Russia)

S.P-17. Testing Programs and Methods Development for Certification Tests of Emergency Control Equipment Using RTDS

T. Gorelik, O. Kirienco (JSC STC UPS, Russia)

S.P-18. Application Recommendations for Using IEC 61850 With Relay Protection and Automated Control System Devices



Conference programme

09:00 – 12:30 *T. Gorelik, O. Kirienco, P.Kabanov (JSC STC UPS, Russia)*

S.P-19. RTDS Application for Relay Protection and Automation Systems Test With IEC 61850- 9-2LE

Y. Mashinskiy, L. Orlov (CJSC RTSoft, Russia)

S.P-20. Digital Substations 6-35kV in Distribution Networks. Choice of Technical Solutions in Terms of Cost and Usability

V. Narovljanskij, T. Klimova, D. Safonov (JSC «Institut Jenergoseproekt», NRU MPEI, JSC SO UPS, Russia)

S.P-21. Features of Operation of Out-of-step Relay in the Conditions of the High Speed of Change of an Angle Between Parts a Power System

A. Mokeev, D. Ulyanov, A. Miklashevich, F. Orlov, I. Dranitsyn, E. Khromtsov (Northern (Arctic) Federal University, Engineering Centre «Energoservice» CJSC, Russia)

S.P-22. Intelligent Electronic Devices for Digital Substations 110(35)/6 kV

V. Lebedev, E. Zaitsev (Ivanovo State Power Engineering University, Russia)

S.P-23. Development of a Mathematical Algorithm for Calculating the Temperature of the Cable in Real Time for the Emergency Control System of High-voltage Cable Lines With XLPE 110 KV and Above

GENERAL MEDIA PARTNER:



MEDIA PARTNERS:

