

SC A1 ROTATING ELECTRICAL MACHINES

PS1: Developments of Rotating Machines and Experience in Service

- A1-101 Unbalanced Magnetic Pull in Salient Pole Synchronous Machines A New Methodology to Calculate Orbital Eccentricity**
J.J.E ROCHA - *BRAZIL*
- A1-102 Fatigue Assessment in the Pole Fixation of Hydro-Generators**
T. HILDENGER - *BRAZIL*
- A1-103 Adjustable speed pumped storage system contributing in stabilization of power system**
T. ISHIZUKI - *JAPAN*
- A1-104 Upgrade from the fixed speed to adjustable speed (Okutataragi Pumped storage power plant)**
H. YAMASHITA - *JAPAN*
- A1-105 Ensuring High Quality Insulation System Of Large Motors – Design & Testing Requiring**
D.K. CHATURVEDI - *INDIA*
- A1-106 Efficiency and Cost-effectiveness comparison between Synchronous Reluctance Motor and Induction Motor**
B. H. KANG - *KOREA*
- A1-107 Root Cause Analysis of 450 MVA generator stator core fault**
CHR. (CHRISTIAN) BOUWMEESTER - *NETHERLANDS*
- A1-108 Impact of turbogenerator uprating on its transient response in case of grid events**
LUIS ROUCO - *SPAIN*
- A1-109 Improved Generator Performance with a Nanocomposite High Voltage Insulation System for Stator Windings – A Status Report**
J. R. WEIDNER - *GERMANY*
- A1-110 Flexible Turbogenerator Converter System with Enhanced Grid Support Features - Design and Applications**
K. CHAN - *SWITZERLAND*
- A1-111 Voith Hydro's experience with the aging of insulation**
T. HILDINGER - *GERMANY*
- A1-112 Loss reduction of salient pole synchronous generator damper winding by means of slot skew**
J. ŠTUDIR - *CROATIA*
- A1-113 Turbo Generator 4-pole 2235 MVA platform**
P LAFOSSAS - *FRANCE*
- A1-114 analytical and Numerical Computation of Wound Fields Synchronous AC Generators**
SAIDA BOUGHRARA - *ALGERIA*
- A1-115 Calculation and Analysis of Dynamic Damper Bars' Currents and Electromagnetic Force for a Generator/Motor Working as Synchronous Condenser**
D.J. TAO - *CHINA*
- A1-116 Development of Larger Output Indirectly Hydrogen-cooled Turbine Generator with High Heat Transfer Main Insulation**
H. SAKO - *SC A1*

SC A1 ROTATING ELECTRICAL MACHINES

PS2: Asset Management of Rotating Machines

- A1-201** Brazilian experience with the development and deployment of an online monitoring PD system on rotating machines based on virtual instrumentation
A.T. CARVALHO - *BRAZIL*
- A1-202** Progress in Interpreting On-line Partial Discharge Test Results from Motor and Generator Stator Windings
H. SEDDING - *CANADA*
- A1-203** Assessment of manufacture quality of stator windings insulation of rotating machines by means of macrographic analysis
RICARDO BAENA - *SPAIN*

SC A1 ROTATING ELECTRICAL MACHINES

PS3: Rotating Machines for Renewable and Dispersed Generation

- A1-301** Development of a Methodology for the Design of Axial Flux Microgenerators
J GARCIA, R CRVICICH, R PEGUEROLES - *ARGENTINA*
- A1-302** Reliability of electrical generators in wind turbines
A MCDONALD - *UNITED KINGDOM*

SC A2 TRANSFORMERS

PS1: Advances in transformer diagnostic and monitoring

- A2-101** Remote monitoring system and analysis of equipment performance for asset management
L.F. QUEIROZ - *BRAZIL*
- A2-102** Determinants of Transformer Life and Sophistication of Deterioration Diagnosis Corresponding to Aging
T. KIDO - *JAPAN*
- A2-103** Smart Monitoring of Power Transformers: Lessons Learned
T SAHA - *AUSTRALIA*
- A2-104** New Online Vibro-Acoustic Tap-Changer Diagnostic Method – First Results and Practical Experience
M. FOATA - *CANADA*
- A2-105** Denoising of UHF Signals based on RBPF and the Localization of PD Sources using FDTD Method in Power Transformer
C CHOI - *KOREA*
- A2-106** Advanced Dissolved Gas Analysis(DGA) Diagnostic Methods with Estimation of Fault Location for Power Transformer Based on Field Database
J.R. JUNG - *KOREA*
- A2-107** PD Monitoring in service of Power Transformers for Condition Assessment
HUGO GAGO - *SPAIN*
- A2-108** Diagnosing difficult transformer problems using online condition monitoring
S RYDER - *UNITED KINGDOM*
- A2-109** Condition monitoring and diagnostic assessment of transformers
W ZHONGDONG - *UNITED KINGDOM*
- A2-110** Transformer Health Index and Probability of Failure Based on Failure Mode Effects Analysis (FMEA) of a Reliability Centered Maintenance (RCM) Program
P. LORIN - *SWITZERLAND*
- A2-111** Parameters influencing Partial Discharge Measurements and their Impact on Diagnosis, Monitoring and Acceptance Tests of Power Transformers
S. COENEN - *GERMANY*

- A2-112 Assessment of Methanol as cellulose aging marker in mineral and ester oils**
ML COULIBALY - *FRANCE*
- A2-113 Expert System of Monitoring, Diagnostics and Control for Transformers (ESMDU_TRANS)**
A. BASS, L. KONTOROVYCH - *UKRAINE*
- A2-114 "Improvements of Large Power Transformer Condition Real Time Monitoring and Diagnosis Expert System – a Romanian Experience "**
C. MOLDOVEANU - *ROMANIA*
- A2-115 Interpretation of Results of Diagnostics of Power Transformers by Using the Frequency Response Analysis**
A.A. DROBYSHEVSKI, A.YU. VOLKOV, D.A. MATVEEV, V.S. LARIN - *RUSSIA*
- A2-116 Dynamic Behaviour of Fault Gases and Online Gas Sensors**
S. TENBOHLEN - *GERMANY*

SC A2 TRANSFORMERS

PS2: EHV / UHV and EHV DC / UHV DC Transformers and their components

- A2-201 Evaluation Method of VFT Stresses for Power Transformer Winding design - Interaction Experience between Manufacturer and Utility**
A. VITA - *BRAZIL*
- A2-202 Establishing Power Transformers Capability while under Geomagnetic Disturbances**
R GIRGIS - *USA*
- A2-203 3 Phase 420 kV Shunt Reactor manufacturing and quality sensitivity for vibration control – A case study**
VIJAYAKUMARAN MOORKATH - *INDIA*
- A2-204 The world's first 400 kV transformers filled with esters**
G. PUKEL - *AUSTRIA*
- A2-205 The proposal of permissible vibration level for power transformer and its accessories**
W.H. CHOI - *KOREA*
- A2-206 Short circuit design conception and validation of a 570 MVA, single-phase GSU-Transformer by SC-Withstand tests on a mock-up unit**
JOSÉ PORRERO - *SPAIN*
- A2-207 Advanced designs of variable shunt reactors with on-load tap-changers for wider regulation range**
L. KIRCHNER - *GERMANY*
- A2-208 Large Power Transformers using Alternative Liquids - Experience in the range of 420 kV transmission level**
R. FRITSCHKE - *GERMANY*
- A2-209 No load long duration test experience to test the thermal performance of the**
M RYADI - *FRANCE*
- A2-210 Research and Application of UHV AC Transformers and Shunt Reactors**
X.N. WANG - *CHINA*
- A2-211 Fast Response Thyristor Controlled Shunt Reactor. Development and Application Experience**
A. ANTONOV, L. KOSOLAPOV, L. KUBAREV, M. PERNA, M. PESHKOV, P. BULYKIN, V. CHUPRIKOV, Y. GORYUSHIN - *RUSSIA*

SC A2 TRANSFORMERS

PS3: Transformer windings

- A2-301 Accelerated Transformer Aging using Upgraded Kraft and Natural Ester Insulation System**
K RAPP - *USA*

- A2-302 Post-Failure Evaluation of Dielectric Performance of Winding of 38-y.o. Transformer Enhanced by On-Line Moisture Monitoring**
V DAVYDOV - AUSTRALIA
- A2-303 On-site replacement of OLTC, drying of winding insulation, induced voltage test with PD measurement of 250 MVA, 400/110 kV, 40 years old transformer**
J PLOWUCHA, M SZROT, R KUBICKI, R MALEWSKI - POLAND
- A2-304 Experiences and innovations in transformer short-circuit current withstand testing**
R.P.P. SMEETS - NETHERLANDS
- A2-305 Design of 154kV power transformer using natural ester oil**
B. H. BAE - KOREA
- A2-306 A Study on Inflammable Gas Generation according to Small Gap Discharge within Floating Electrodes by Induced Voltage in Power Transformer**
K. H. LEE - KOREA
- A2-307 Dry-type subtransmission transformer: dry transformers for the 123 kV and 145 kV voltage class dry transformers for the 123 kV and 145 kV voltage class**
M. CARLEN - SWITZERLAND
- A2-308 Short-circuit testing of 66 kV / 31.5 MVA dry-type power transformer**
M. CARLEN - SWITZERLAND
- A2-309 Evaluation of the Thermal Performance of Transformer Windings by Numerical Investigations and Measurements**
S. TENBOHLEN - GERMANY
- A2-310 Novel Thermal-Hydraulic Network Model for Shell-Type Windings. Comparison with CFD and Experiments**
H CAMPELO - PORTUGAL
- A2-311 Influence of the Lightning Impulse Shape on the Electrical Stresses on Windings Insulation of Power Transformers and Shunt Reactors**
D.A. MATVEEV, V.S. LARIN - RUSSIA

SC A3 HIGH VOLTAGE EQUIPMENT

PS1: High voltage equipment for emerging power system conditions

- A3-101 Overview of Non-intrusive Condition Assessment of T&D Switchgear**
N UZELAC - USA
- A3-102 Reduction of the TRV for Terminal Circuit Breakers on Series Compensated Lines**
B SHPERLING - USA
- A3-103 Survey on Requirements for Bus-transfer Current Switching**
S. TSUKAO - JAPAN
- A3-104 Voltage and Current Measurements for Smart Applications in Substations at Hydro-Québec**
F. ZAVODA - CANADA
- A3-105 Development of high voltage vacuum interrupter with earthed metal enclosure for the transmission line**
J. S RYU - KOREA
- A3-106 Development of HVDC Circuit Breaker with Fast Interruption Speed**
B. C. KIM - KOREA
- A3-107 Switching transients with simple transformer-line/cable configurations**
A. (ANTON) JANSSEN - NETHERLANDS
- A3-108 New test-methods for circuit breakers of 800kV and above**
R.P.P. SMEETS - NETHERLANDS

- A3-109 Test-circuits and testing of HVDC circuits breakers**
R.P.P. SMEETS - *NETHERLANDS*
- A3-110 Very fast transient over voltages on paper oil insulated inductive voltage transformers**
JAVIER GARCÍA - *SPAIN*
- A3-111 Inductive voltage transformers for auxiliary services power supply in substations. Design, specification and normative aspects and application example**
ELOY RÉGIL - *SPAIN*
- A3-112 Arresters with advanced cooling performance for protection of valves in HVDC converters**
R. GOEHLER - *GERMANY*
- A3-113 Environmentally Friendly Perfluoroketone-based Mixture as Switching Medium in High Voltage Circuit Breakers**
J.D. MANTILLA - *SWITZERLAND*
- A3-114 DETAILED ANALYSIS OF LIVETANKS, DEAD TANKS AND GAS CIRCUIT-BREAKERS USING A NEW ENVIRONMENTAL FRIENDLY GAS**
S SILVANT - *FRANCE*
- A3-115 METHODOLOGIES FOR POLLUTION TESTS ON COMPOSITE HOUSINGS**
G. TESTIN - *ITALY*
- A3-116 Transient behaviour of conventional and innovative capacitive voltage transformers: simulations and HV laboratory testing**
A. VALANT, C SERAFINO, M. REBOLINI, P. AVAGNINA, V. IULIANI - *ITALY*
- A3-117 Research and Development of a Full-bridge Based Hybrid HVDC Circuit Breaker in Flexible HVDC Transmission Grid**
G.F. TANG - *CHINA*
- A3-118 The Establishment of Standard System for Accuracy Measuring on Harmonics of Electronic Voltage Transformers**
X. LIU - *CHINA*
- A3-119 In-adequate Damping Leading to Ferroresonance on Voltage Transformers: A Case Study**
ALAA RAHMA - *GULF STATES COMMITTEE*

SC A3 HIGH VOLTAGE EQUIPMENT

PS2: Lifetime management of transmission & distribution equipment

- A3-201 Challenges for managing overstresses and end of life of HV equipment**
A.C. CARVALHO - *BRAZIL*
- A3-202 Investigation on Contamination Deposit Performance and Pollution Withstand Voltage Characteristics of Polymer Devices**
H. KAGAWA - *JAPAN*
- A3-203 Transformation in Lifetime Asset Management of EHV Circuit Breakers – A Case Study**
BALASAHEB DOIPHODE - *INDIA*
- A3-204 Contactless thermal online-monitoring of electrical equipment under load to determine the load level and damage avoidance**
T. GRAEF - *GERMANY*
- A3-205 D-Watch – intelligent disconnecter mechanism for digital substation**
E STELLA, J RAYON, M PIVATO - *ITALY*

SC A3 HIGH VOLTAGE EQUIPMENT

PS3: Application of information technology tools for development & management of high voltage equipment

- A3-301 Coupled Fluid-Mechanical Analysis Method in High-Voltage Circuit Breakers Design**
C. Y. BAE - *KOREA*

- A3-302** **CFD ANALYSIS AND NUMERICAL STUDY OF THE HOT GAS FLOW INSIDE THE HIGH VOLTAGE GAS CIRCUIT BREAKERS**
J. H. PARK - *KOREA*
- A3-303** **Reduced scale feasibility of temperature rise tests in substation connectors**
CARLOS ABOMAILEK - *SPAIN*
- A3-304** **Power quality enhancement through optimum combination of controlled switching and low scatter CB drives**
F AIT-ABDELMALEK - *FRANCE*
- A3-305** **Mathematical and physical models development for study the high-voltage resistive dividers of digital voltage transformers**
A.A. YABLOKOV, A.V. MAKAROV, V.D. LEBEDEV - *RUSSIA*

SC B1 INSULATED CABLES

PS1: Feedback from newly installed or up graded cable systems

- B1-101** **Implementation Measures: An Overhead Transmission Line moves to Underground Transmission Line**
E.F. KARABOLAD - *BRAZIL*
- B1-102** **Adoption of Premolded Joint and specialized cable installing method for the 275kV XLPE cable underground transmission line in a tunnel**
S. KOBAYASHI - *JAPAN*
- B1-103** **Transpower NZ North Auckland and Northland (NAaN) Project in Auckland, NZ**
N RAHMAN - *AUSTRALIA*
- B1-104** **Monitoring and up-gradation of Underground Cable Network by various methods**
D MIRASHI - *INDIA*
- B1-105** **Mutual Inductive Interference of 400 kV Cable Systems**
R. MURATOVIC - *AUSTRIA*
- B1-106** **BC Hydro Experience to mitigate a hot spot along a 230kV XLPE cable circuit using a novel cooling solution**
S. CHERUKUPALLI - *CANADA*
- B1-107** **Development of AC 400kV XLPE Submarine Power Cable System**
S.B. LEE - *KOREA*
- B1-108** **Location of overvoltage limiters used for accessory protection to assure the insulation coordination of cable over-sheaths accessories of high voltage cable systems**
FERNANDO GARNACHO - *SPAIN*
- B1-109** **Cable system qualification process for the Italy - France HVDC intertie**
M. MARZINOTTO - *ITALY*

SC B1 INSULATED CABLES

PS2: Best use of existing cable systems

- B1-201** **Maintenance Strategies Developed for the Underground Transmission Systems of ISA - Interconexión Eléctrica**
J.C.R. LOPES - *BRAZIL*
- B1-202** **Utility Experience with Field Condition Assessment of High Voltage Underground Cable Systems**
E BASCOM - *USA*
- B1-203** **Field Testing of high Voltage Cable: The Experience with AC Test on 115 kV Cables in MEA Thailand**
A RAJAKROM - *THAILAND*
- B1-204** **CANCELLED - Using DTS Data to Establish Soil Thermal Resistivity Characteristics**

- B1-205 Learning from on-line monitoring of medium voltage power cables – with PD and fault location**
E.F. STEENNIS - *NETHERLANDS*
- B1-206 Measurements and FEA results of steel armour losses in three-core submarine XLPE cables**
J.M. LEE - *KOREA*
- B1-207 Improvement of Dissolved Gas Analysis Technique for Oil-Filled Cable Facilities and Practical Application of Gas Analysis Technique to XLPE Cable Facilities**
M. SOGA - *JAPAN*
- B1-208 Development of a robot for maintenance work in the spanish-french electrical interconnection tunnel**
JAVIER ARÉVALO - *SPAIN*
- B1-209 Sheath currents monitoring in high voltage isolated cables**
ALEXANDRA BURGOS - *SPAIN*
- B1-210 Transmission capacity management of subsea cables for the grid connection of offshore wind farms**
C. RATHKE - *GERMANY*
- B1-211 Maintenance strategies for MV/HV subsea cable networks**
R GIUSSANI - *UNITED KINGDOM*
- B1-212 Life Cycle Assessment (LCA) of a 380 kV double circuit HVAC cable transmission line**
A FIORELLA, A POSATI, G LAVECCHIA, G ZA, K BERNARDI, L GUIZZO, M REBOLINI, S FILIPPINI - *ITALY*
- B1-213 Belgian experience with real time temperature system in combination with distributed temperature sensing techniques**
B. MAMPAEY - *BELGIUM*
- B1-214 Fire Safety of Cables in Power Grid: Tracking Combustion Test Standards of Cables and New Insights on Test Framework**
J.Q. ZHANG - *CHINA*
- B1-215 Submarine Cable Location. New technology – development and testing**
O HOBBERSTAD - *NORWAY*
- B1-216 Current Rating and Risk of Cavity-Induced Breakdown in Mass Impregnated Non-Draining HVDC Subsea Cables**
M. RUNDE - *NORWAY*
- B1-217 Application of Partial Discharge Diagnostic technique on High Voltage Cable sealing ends to predict catastrophic failures with supportive case study**
K. SRIRAMAKAVACHAM - *GULF STATES COMMITTEE*

SC B1 INSULATED CABLES

PS3: Insulated cables in the Power System of the Future

- B1-301 A new voltage level for extruded DC cables**
MARKUS SALTZER - *SWEDEN*
- B1-302 Development of the Riser Cable System for Offshore Floating Wind Power Project**
Y. TATENO - *JAPAN*
- B1-303 Systematic Description of Dynamic Load for Cables for Offshore Wind Farms. Method and Experience**
T. KVARTS - *DENMARK*
- B1-304 Understanding losses in three core armoured submarine cables**
FILIPE MIGUEL FARIA DA SILVA - *DENMARK*
- B1-305 NEW TRANSITION JOINT**
B GONZÁLEZ SARDI, H GRINSCHPUN, I RUIZ - *ARGENTINA*
- B1-306 Use of aluminium for Cable Conductors and sheaths in EHV power cable systems**
T. (TOMASZ) KOLTUNOWICZ - *NETHERLANDS*

- B1-307 EFFECT OF ULTRAVIOLET RADIATIONS AND SANDSTORMS ON THE FLASHOVER VOLTAGE OF SILICONE RUBBER CABLE TERMINATIONS**
L.S. NASRAT - *EGYPT*
- B1-308 Simplified Undergrounding of 400 kV Overhead Lines with Superconducting Cable Systems**
M. STEMMLE - *GERMANY*
- B1-309 After Laying Tests on Long HVAC and HVDC Extruded insulated Cable Systems**
F LESUR - *FRANCE*
- B1-310 400kV – 2 x 1000MW Submarine Cable Crossing of the Dardanelles Strait**
F. KOKSAL - *TURKEY*
- B1-311 Optimization of Sea Cable Structure Based on Load Carrying Capacity**
E.D. WANG - *CHINA*
- B1-312 The world longest and deepest 430 kV XLPE submarine cable**
A STAMSAAS - *NORWAY*
- B1-313 Thermal characterization of seabed along the NordLink cable route – results and comparison of measurements methods**
G EVENSET - *NORWAY*
- B1-314 Effect of Water Pipeline on Ampacity of Underground Cables: Case Study**
M. S. BAAZZIM - *GULF STATES COMMITTEE*

SC B2 OVERHEAD LINES

PS1: Overhead Lines for high power transfer capacity

- B2-101 HVDC TRANSMISSION SYSTEM ASSOCIATED TO BELO MONTE HYDROPOWER PLANT - STUDIES AND DEFINITIONS APPLIED TO THE BASIC DESIGN OF A \pm 800 kV TRANSMISSION LINE INNOVATION AND CHALLENGES FOR A NEW VOLTAGE LEVEL IN BRAZIL**
M.C. ARAUJO - *BRAZIL*
- B2-102 Increasing the transfer capacity of overhead lines on the connection of wind power plants, through correlation between climatic data and temperature of conductors at higher currents**
O. REGIS JR. - *BRAZIL*
- B2-103 Prospective DC Conversion of a Major 345 kV AC Line**
B. MEHRABAN - *USA*
- B2-104 Assessment of HTLS Conductors to Increase the Power Transfer in the Mexican Electric Transmission System**
R. CASTELLANOS - *MEXICO*
- B2-105 Operational aspects of dynamic line rating. Application to a real case of grid integration of wind farms**
ANTONIO GONZÁLEZ - *SPAIN*
- B2-106 Compact lines with pivoted insulated cross-arms. General stability design criteria**
PABLO RODRÍGUEZ - *SPAIN*
- B2-107 A 500 kV HVAC circuit reconversion into a \pm 500 kV HVDC bipole line in the Central Interconnected System (Chile)**
A. ALEGRIA - *CHILE*
- B2-108 Verification of thermal rating calculations for high temperature low sag (HTLS) conductors**
T. FREHN - *GERMANY*
- B2-109 Assessment on the ignition of electric arc and flashover distances between overhead transmission lines and the surrounding vegetation**
A POSATI, E COLOMBO, G PANNUNZIO, M FORTELEONI - *ITALY*
- B2-110 Monopole 220 kV tubular tower of steel tubes and cast steel without visible connections.**
JONASSON ARNI BJÖRN - *ICELAND*
- B2-111 Operation Experience of 1000 kV Ultra High Voltage AC Transmission Technology**
Y.B. SHU - *CHINA*

- B2-112 Design Verification by Analysis of Transmission Lines Exposed to Large Topographic Variations, Temperature Changes and Extreme Ice Loads**
O.C. WROLDSEN - *NORWAY*
- B2-113 Design and engineering of a new 525 kV HVDC line in Norway**
B. THORSTEINSSON - *NORWAY*
- B2-114 Monitoring and forecasting ice loads on a 420 kV transmission line in extreme climatic conditions**
B NYGAARD - *NORWAY*
- B2-115 Compact controllable 110 – 500 kV overhead lines**
E BYCOVA, L TIMASHOVA, S KAREVA, V POSTOLATI, Y GORYUSHIN, Y SHAKARIAN - *RUSSIA*

SC B2 OVERHEAD LINES

PS2: Project management, construction and maintenance

- B2-201 Calculation Accuracy of High-Temperature Sag for ACSR in Existing Lines**
D DOUGLASS - *USA*
- B2-202 The Development of Electric Wires of High Tensile Strength and Corrosion Resistance, and Their Application to Renewal of 500 kV Long Span Transmission Lines Crossing the Strait**
H. SASAKI - *JAPAN*
- B2-203 Innovation in evaluating and managing the reliability of aged transmission structures**
R KULKARNI - *AUSTRALIA*
- B2-204 Execution Of Transmission Projects With Innovative Methods For Augmentation Of EHV Network In Mega City Of Mumbai – Challenges & Solutions**
U.K. MAHARAJA - *INDIA*
- B2-205 A New Model for Developing, Constructing, Financing and Operating Major Transmission Projects in Alberta**
E. GHANNOUM - *CANADA*
- B2-206 A portable digital X-Ray system for the in-situ detection of ACSR broken strands at suspension clamps: field results and introduction onto Line Scout Robotic Technology**
N. POULIOT - *CANADA*
- B2-207 The new tower lifting method for the 345kV transmission lines**
B. H. KIM - *KOREA*
- B2-208 Research into an increased number of unexplained line outages of polymeric insulator sets used within the Czech transmission grid**
JAN LACHMAN - *CZECH & SLOVAK Reps.*
- B2-209 Improved Efficiencies in Conductor Stringing**
A OSCAR, S NEVE - *UNITED KINGDOM*
- B2-210 A novel HTLS thermo-mechanical model: applications to Italian OHTL.**
A PICCININ, D POLI, F BASSI, G GIANNUZZI, G LUTZEMBERGER, M GIUNTOLI, P PELACCHI - *ITALY*
- B2-211 Real Time Measurements for Online Monitoring and Intelligent Management of High Voltage Transmission Lines**
C MOLDOVEANU - *ROMANIA*
- B2-212 Condition Assessment of Overhead Line Convertors by the Pulse Current Method**
S HELLESO - *NORWAY*

SC B2 OVERHEAD LINES

PS3: Application of new materials and technologies

- B2-301 Innovation-Section: test-run for upgrading 220 kV to 380 kV using insulated cross arms and coated conductors**
K. REICH - *AUSTRIA*

- B2-302 Testing Steel Lattice Towers with a Hybrid (Numerical / Experimental) Method**
S. LANGLOIS - CANADA
- B2-303 Development of Estimating Method for Conductor corrosion and High corrosion resistant Conductor for overhead transmission lines**
N. SHIMIZU - JAPAN
- B2-304 Appropriateness of concrete poles for 400 kV Wintrack II**
A.J.P. (TON) VAN DER WEKKEN - NETHERLANDS
- B2-305 Temperature Profile along an Overhead Line Conductor in and near the Tension Clamp**
P.B. BUEHLMANN - SWITZERLAND
- B2-306 Comparative Investigations of the Erosion Resistance and the Hydrophobicity Effects of Silicone Rubber used for Housings of AC and DC Insulators**
F. SCHMUCK - SWITZERLAND
- B2-307 CompactLine – a new Overhead Transmission Line Concept**
S. BEHREND - GERMANY
- B2-308 A new design of high voltage overhead line using composite poles**
T RAULT - FRANCE
- B2-309 Design, testing and installation of innovative 380 kV Dutton–Rosental towers**
A PICCININ, A POSATI, M FORTELEONI, M MARZINOTTO, M REBOLINI, P BERARDI - ITALY
- B2-310 Development of Large Cross-Section Conductors for UHV DC Transmission Lines**
K.J. ZHU - CHINA
- B2-311 Proposals for additions to IEC requirements intended to verify quality of glass cap and pin insulators**
K. HALSAN - NORWAY
- B2-312 Spacer Damper Problems on Quad Bundle Lines in National Grid, Saudi Arabia**
WALEED AL-AMEER - GULF STATES COMMITTEE
- B2-313 Corona noise comparison of the standard and surface treated conductors obtained with monitoring of the newly erected 400 kV line and with corona testing in high-voltage laboratory**
I ROZMAN - SLOVENIA

SC B3 SUBSTATIONS

PS1: Advances in substation technology

- B3-101 Non-Conventional Instrument Transformers for Improved Substation Design**
L KOJOVIC - USA
- B3-102 Ceramic and Hybrid Support Insulators for UHVDC Systems**
G. GOEDEL - AUSTRIA
- B3-103 Substation Automation from Conventional to full Digital Technologies – Case Studies and Impact**
PURSHOTTAM KALKY - INDIA
- B3-104 High Power Underground Transmission for HV DC**
H. KOCH - GERMANY
- B3-105 170 kV pilot installation with a ketone based insulation gas with first experience from operation in the grid**
T. DIGGELMANN - SWITZERLAND
- B3-106 Application of a fluoronitrile gas in GIS and GIL as an environmental friendly alternative to SF6**
D. GAUTSCHI - SWITZERLAND
- B3-107 Dielectric testing of GIS RC-dividers for HVDC GIS/GIL substations with increased dielectric requirements**
E. SPERLING - SWITZERLAND

- B3-108** **Advanced insulation and switching concepts for next generation High Voltage Substations**
N. PRESSER - *GERMANY*
- B3-109** **Basic features of the new 145kV metal-enclosed, SF6 gas insulated switchgear**
D. GORENC - *CROATIA*
- B3-110** **2nd generation DC grid access for offshore wind farms: “HVDC in an AC fashion”**
P. MENKE - *SC B3*
- B3-111** **Customer process for technical qualification of NCIT-products for high-voltage GIS applications**
W OLSZEWSKI - *FRANCE*
- B3-112** **First ABB PASS M0S 420kV installation in TERNA Substation**
M. SPINELLI - *ITALY*
- B3-113** **Pilot project principles for a digital substation**
M. PETRINI - *ITALY*
- B3-114** **An Autonomous Intelligent Robot for Electronic Equipment Inspection Used in Substation**
L. LI - *CHINA*
- B3-115** **High Frequency Current in the Power System and Its Influence on Transfer Accuracy of Electronic Current Transformer**
C. ZHANG - *CHINA*

SC B3 SUBSTATIONS

PS2: Developments and new thinking in substation design

- B3-201** **Applying mixed technology switchgear (MTS) for adaptation of substations to meet new Brazilian power system requirements of availability**
C.S.S. XAVIER - *BRAZIL*
- B3-202** **Brown Field Implementation of an IEC 61850 Based Integrated Protection and Automation System**
M PIMENTA - *USA*
- B3-203** **Integrating In-house IEC61850 Technology into Existing Substation:A Case of EGAT Substation Control System**
V KONGTHON - *THAILAND*
- B3-204** **Countermeasures in a substations for large renewable energy adoption**
K. UEHARA - *JAPAN*
- B3-205** **Integrating IEC61850 into Existing Substations in MEA’s Distribution System**
P JINTAGOSONWIT - *THAILAND*
- B3-206** **Retrofitting and Modernization of Conventional Substation to An IEC 61850 Based Automated Substation – A Case Study of 400KV Amreli Substation**
N SHETH - *INDIA*
- B3-207** **50kV switchgear lost? Up & running in 30 hours solution!**
P. (PIET) KNOL - *NETHERLANDS*
- B3-208** **Bus-Node - A Novel Substation Concept**
G.S. KOEPPL - *SWITZERLAND*
- B3-209** **Implementation of Building Information Modelling (BIM) process in substation design software to increase design quality**
M KOKORUŠ - *BOSNIA HERZEGOVINA*
- B3-210** **Mitigation of the Impact of Increasing Short Circuit Levels on Aging Transmission Substation Structures in Ireland**
J DUNNEY - *IRELAND*
- B3-211** **Integration of an IEC 61850 process bus in an existing substation**
T BUHAGIAR - *FRANCE*

- B3-212 Design and implementation of NTP and SNTP time synchronization using Ethernet architecture**
NIRMAL NAIR - *NEW ZEALAND*
- B3-213 Development of common technical requirements for monitoring and diagnostic systems to improve availability of substations**
L.A. DARIAN, R.M. OBRAZTSOV - *RUSSIA*
- B3-214 Completing the IEC 61850 substation – the need for metering**
R. HUGUES - *SC B3*

SC B3 SUBSTATIONS

PS3: Evolution in Substation Management

- B3-301 RF Sensors Development and Condition Metric Development for Contaminated Substation Insulation**
A. PHILLIPS - *USA*
- B3-302 Current situation and Recent Challenges in Asset Management of Aging T&D Substation Facilities in Japan**
T. KOBAYASHI - *JAPAN*
- B3-303 Development of a Substation Fire Management Strategy and the implementation of Hypoxic Fire Prevention System**
M VERRIER - *AUSTRALIA*
- B3-304 Operational Experience In 1200kV (UHVAC) National Test Station, India**
B.N. DE. BHOWMICK - *INDIA*
- B3-305 Partial Discharge Diagnosis Method using Non-phase Synchronized UHF PD Pattern based on On-site Measurement Database for Substation**
J.R JUNG - *KOREA*
- B3-306 Experiences in Gas Insulated Substation tests, on factory and acceptance test on site after installation.**
M. GUZMAN - *MEXICO*
- B3-307 Evaluation of the High Voltage Gas Insulated Substations (GIS) Based on Flashovers in the 220 kV Switchgears**
ADEL EL FARASKOURY - *EGYPT*
- B3-308 Removing risk of eventual discharges between GIS grounding parts and cable sheath connected to the substation earth through a separate grounding lead**
FERNANDO GARNACHO - *SPAIN*
- B3-309 Impact of Renewable Grid Code compliance on Substation design**
JOSÉ MIGUEL GALLEGO - *SPAIN*
- B3-310 Enablers for Cost Saving in Air Insulated Substation Asset Management On behalf of CIGRÉ WG B3-32**
H. CUNNINGHAM - *SC B3*
- B3-311 Life extension program for GIS Circuit breaker retrofitting Le Havre Project**
R LAGARTINHO - *FRANCE*
- B3-312 Using indicators to screen and monitor substation vulnerability affecting security of supply**
E GRAMME - *NORWAY*
- B3-313 Optimal Design of Grounding System for HV/EHV AC Substation**
K. SHABANIAN - *IRAN*

SC B4 HVDC AND POWER ELECTRONIC SYSTEMS

PS1: HVDC systems and their applications

- B4-101 A second and longer ± 800 kV DC bipole completes Belo Monte's integration**
D.S. CARVALHO JR. - *BRAZIL*

- B4-102 Semi-fullbridge Modular Multilevel Converter: An Inherent DC Fault Current Limiting Topology**
E.H. WATANABE - *BRAZIL*
- B4-103 Smooth coordination and management of impact of EstLink 2 transmission testing on electricity markets, power system operations and system technical performance**
T RAUHALA - *FINLAND*
- B4-104 Celilo HVdc Terminal Upgrade Project - Pacific NW-SW HVdc Intertie System**
M. REYNOLDS - *USA*
- B4-105 Protective Firing in LCC HVDC: Purposes and Present principles. Settings and behavior**
PATRIK KARLSSON - *SWEDEN*
- B4-106 HVDC POWER FROM SHORE**
GUNNAR PERSSON - *SWEDEN*
- B4-107 50 years of Operating Experience of Sakuma Frequency Converter Station - Changing Roles in the Japanese Power System's Transition**
Y. MAKINO - *JAPAN*
- B4-108 Zambezi (previously Caprivi) Link HVDC Interconnector: Review of Operational Performance in the First Five Years**
THOMAS, TG MAGG - *SOUTH AFRICA*
- B4-109 Commissioning Experience and Challenges of World's First 800 kV, 6000 MW NER – Agra Multi terminal HVDC System**
M.S. RAO - *INDIA*
- B4-110 AC-DC Interaction Study For Upcoming \pm 800 kV, 3000 MW Champa Kurukshetra HVDC Link**
MAHESH VARDIKAR - *INDIA*
- B4-111 Converter Transformer Inrush Control Using Hybrid Pre-insertion Resistors and Point-on-Wave Switching in the New Zealand HVDC System**
J. HU - *CANADA*
- B4-112 Using Classic LCC HVdc to Transmit Renewable Energy from Weak AC Systems**
D. KELL - *CANADA*
- B4-113 HVDC Overhead Line Design Considering LCC vs. VSC Technology**
P. WANG - *CANADA*
- B4-114 Nelson River Pole 1 Thyristor Leakage Assessment & Online Monitoring**
X. LI - *CANADA*
- B4-115 Enabling DC Fault Blocking Capability of Hybrid Modular Multilevel Converter HVDC using Asymmetrical Full-bridge Submodule**
K. HUR - *KOREA*
- B4-116 Test Circuit for Voltage Sourced Converter Valve in MMC-Based HVDC**
Y. H. CHUNG - *KOREA*
- B4-117 Operational experience of new Spain-France HVDC interconnection**
JUAN BOLA - *SPAIN*
- B4-118 A closer look at protection concepts for DC systems**
E. SPAHIC - *GERMANY*
- B4-119 Providing dc fault ride-through capability to H-bridge MMC-based HVDC Networks**
E. KONTOS - *NETHERLANDS*
- B4-120 Automated Operation of Parallel VSC HVDC Links Embedded in an AC Power System**
K. FREY - *GERMANY*
- B4-121 Diode-Rectifier HVDC link to onshore power systems: Dynamic performance of wind turbine generators and reliability of liquid immersed HVDC Diode Rectifier Units**
P. MENKE - *GERMANY*

- B4-122** EMTP simulation verification of full bridge MMC HVDC operational advantages
D JOVCIC - UNITED KINGDOM
- B4-123** Feedback on IFA 2000 France-England Refurbishment Project
A DROUET D'AUBIGNY - FRANCE
- B4-124** Feedback on INELFE France Spain HVDC Project
J LONCLE - FRANCE
- B4-125** Commutation failures mitigation in multi-infeed network with high renewable
F. PALONE - ITALY
- B4-126** Communication-free control solution for the provision of frequency regulation services in HVDC grids: Numerical Simulation and Experimental Validation in Reduced Scale Platforms
C MOREIRA - PORTUGAL
- B4-127** Study of Backbone Structure Change from Synchronous to Asynchronous in China Southern Power Grid
B.R. ZHOU - CHINA
- B4-128** Interaction between parallel HVDC and AC overhead lines
S. BODAL - NORWAY
- B4-129** Experience from a bipolar HVDC system with a Voltage Source Converter and a Line Commutating Converter
T. MIDTSUND - NORWAY
- B4-130** Saudi Arabia Central-West HVDC Project: 3500 MW \pm 600 kV LCC 800 km High Performance embedded link crossing a desert area
A. H. AL-MUBARAK - GULF STATES COMMITTEE
- B4-131** SURVEY OF THE RELIABILITY OF HVDC SYSTEMS THROUGHOUT THE WORLD DURING 2013 – 2014
M.G. BENNETT, N.S. DHALIWAL - SC B4
- B4-132** Design consideration associated with DoWin3 and evolution of Alstom Grid's MaxSine® VSC Technology
D. FONTEYNE - UNITED KINGDOM

SC B4 HVDC AND POWER ELECTRONIC SYSTEMS

PS2: FACTS and other Power Electronic (PE) systems for transmission

- B4-201** Brazilian Experience Regarding Interactions between Series Capacitors and SVCs - Main challenges of the Tucuruí-Macapa-Manaus Interconnection Project
A.R.M. TENÓRIO - BRAZIL
- B4-202** Blocking reactor as part of SVC system - a novel concept for harmonics reduction and lowered operational losses
J AHO - FINLAND
- B4-203** Comparison of Switching Schemes for STATCOMs using Modular Multi-Level Converters
J TURUNEN - FINLAND
- B4-204** Acoustic aspects for Air Core Dry Type Reactors - Specification, Design, Testing, Field Measurements
P. DOPPLMAIR - AUSTRIA
- B4-205** Essex STATCOM Life Assessment and Extension
J. BURROUGHS - CANADA
- B4-206** Planning and commissioning of 130MVA GCT-STATCOM for transient stability improvement
H. IWANE - JAPAN
- B4-207** IGBT Explosion Test for STATCOM Sub-module
J. H. OH - KOREA
- B4-208** Harmonic Performance Requirements and Mitigation for back-to-back HVDC in Turkish Transmission System
E. PARTAL - TURKEY

B4-209 Magnetically controlled shunt reactor use in 110-500 kV power grids

A.M. BRYANTSEV, A.N. BELYAEV, S.V. SMOLOVIK - *RUSSIA*

B4-210 Electrical Test of STATCOM Valves

B. SHENG - *SWEDEN*

SC B4 HVDC AND POWER ELECTRONIC SYSTEMS

PS3: DC and other Power Electronic (PE) systems for distribution

B4-301 Studies for Characterisation of Electrical Properties of DC Collection System in Offshore Wind Farms

YU-HSING CHEN - *DENMARK*

B4-302 Evaluation of the potential market for MVDC technology in Scotland

S HAY - *UNITED KINGDOM*

B4-303 Integrating Smart Solid State Transformers Into Distribution Substations

S. AWILI - *IRELAND*

SC B5 PROTECTION AND AUTOMATION

PS1: Protection Automation and Control System (PACS) Optimization and Life Time Asset Management

B5-101 Recording and Documentation Criteria Proposed for the Complete Life Cycle of Digital Substation Automation Systems in Brazil - Findings and Trends

M.E.C. PAULINO - *BRAZIL*

B5-102 Comparison of Risk Assessment Approaches in Wide Area Protection Coordination

B. GWYN - *USA*

B5-103 Innovative Wide-area and Local Voltage Control of Dynamic Shunt Compensation Devices to Prevent Voltage Collapse

M. PERRON - *CANADA*

B5-104 Concept and Method of Replacement of Protection Relay and Control Equipment

T. KAWAKAMI - *JAPAN*

B5-105 Evaluation of Compensating Saturation Algorithms for Protective Current Transformers

EHAB M. ESMAIL - *EGYPT*

B5-106 Towards the plug&play challenge, pursuing the goal of a Distribution Grid Management and Maintenance streamline

ZIGOR OJINAGA - *SPAIN*

B5-107 Functional Integration and IEC 61850 to optimise substation automation system design

CARLOS RODRÍGUEZ - *SPAIN*

B5-108 Automatic configuration management for PACS

M. OBRIST - *SWITZERLAND*

B5-109 Optimization techniques reducing periodic maintenance and retrofit outage times with digital substation technology

T. WERNER - *SWITZERLAND*

B5-110 The role of protection performance audits in the lifetime management of protection systems

P WATSON - *UNITED KINGDOM*

B5-111 System Redundancy in Power Substation Retrofits

D. LAI - *TAIWAN*

B5-112 Lifecycle management of existing PACS including maintenance and design at Rte

J NOE - *FRANCE*

B5-113 Automatic system for gathering data from IEDs - implementation specifics in Ukrainian power engineering

B STOGNII, D VOITOV, F PANOV - *UKRAINE*

- B5-114** Improving the Fault Location for Romanian Power Transmission Lines using the Existing Measurements
M. DRAGOMIR - ROMANIA
- B5-115** Towards optimized digital substation automation systems
R PAULO - PORTUGAL
- B5-116** PAC Life Time Management for transmission and distribution utilities:
REBECCA SHAW - NEW ZEALAND
- B5-117** The Identification of Transmission Line Overload and Faults Based on Voltage Plane
H.Z. LIU - CHINA
- B5-118** IEC 61850 Process Bus Application and Reliability Improvement
L. LI - CHINA
- B5-119** Case Study for Distance Protection on EHV Long Transmission Lines Followed by Transformers
NASSER R. AL-RAJEH - GULF STATES COMMITTEE
- B5-120** Quantitative Reliability Assessment of Alternative Busbar Protection Schemes
H AL KHAZIM - GULF STATES COMMITTEE
- B5-121** Using of Optimization techniques for development of functionally integrated systems of relay protection and automation
A.A. VOLOSHIN, A.F. DYAKOV, A.V. ZHUKOV, G.S. NUDELMAN - RUSSIA
- B5-122** PMU Based Real Time Vulnerability Assessment of Zone 3 Distance Relay to Prevent Cascading Outages
M-R. HAGHIFAM, T. GHANIZADEH BOLANDI - IRAN

SC B5 PROTECTION AND AUTOMATION

PS2: Coordination of Generator and power system Protection

- B5-201** A Universal Relay Protection Coordination Model for Synchronous Machine Based on Transient Stability
S. CHEN - USA
- B5-202** Coordination of Power Plant Backup Protection and Transmission System Protection in Thailand
S CHAIPUNHA - THAILAND
- B5-203** Coordination of Generator and Power System Protection in Korea
J. S. KANG - KOREA
- B5-204** System Protection against Voltage Instability and Impact of Generator Protection
CONSTANTINOS VOURNAS - GREECE
- B5-205** Operating experience with the coordinated requirements for power plant and power system protection
A. (ANTON) JANSSEN - NETHERLANDS
- B5-206** Probabilistic Analysis of Fault currents in Unbalanced Distribution Systems in the Presence of Stochastically Dependent Renewable Energy Re-sources.
A.F. NAIEM - EGYPT
- B5-207** Protection and Operation Requirements to Enhance Grid Stability with Large Scale Wind Integration in Egypt
MOHAMED ATTIA ELSHARNOBY - EGYPT
- B5-208** Performance of generator protection during power system failures – selected protection functions and new experiences with unsymmetrical faults
H. HERRMANN - GERMANY
- B5-209** The performance analysis of protection schemes in transmission systems with series compensated transmission lines using RTDS
R BUDHA - UNITED KINGDOM
- B5-210** Offshore context and protection issues
J CAZAL - FRANCE

- B5-211 "Coordinating Generating Units and Power System Protections "**
F. BALASIU - ROMANIA
- B5-212 HV Open Phase Detection Method Based on Symmetrical Components**
XIAOJUN WANG - NEW ZEALAND
- B5-213 Requirements for relay protection and automation applications of electric power stations, providing stability of their operation in electric power system**
A. RASSHCHEPLYAEV, A. ZHUKOV, E. SATSUK, S. PAVLUSHKO, V. VOROBYEV - RUSSIA
- B5-214 High-speed Generator-transformer Unit Backup Protection Scheme**
G. NUDELMAN, Y ROMANOV - RUSSIA

SC C1 SYSTEM DEVELOPMENT AND ECONOMICS

PS1: State of the art approaches and standardization in asset management decision making

- C1-101 Transitioning of Distribution Asset Management to a Prescriptive Approach**
D DORR - USA
- C1-102 Analysis of SCADA data for early fault detection in Wind turbines**
P. BANGALORE - SWEDEN
- C1-103 Development and application of an asset criticality framework to prioritise asset expenditure**
G ANCELL - AUSTRALIA
- C1-104 Changing interaction between asset renewal and planning in Australia and New Zealand**
G ANCELL - AUSTRALIA
- C1-105 Transmission Asset Management Through in-House Developed Software for Transmission System of Gujarat State**
MANISHKUMAR K. JANI - INDIA
- C1-106 Hazard Rate Model for Risk-based Asset Investment Decision Making**
G. FORD - CANADA
- C1-107 Condition assessment risk engineering**
D ONOUFRIOU - UNITED KINGDOM

SC C1 SYSTEM DEVELOPMENT AND ECONOMICS

PS2: Interface and allocation issues in planning T&D networks with multi-party projects

- C1-201 INVESTMENT ANALYSIS IN TRANSMISSION AND DISTRIBUTION PROJECTS - CALCULATION OF MANAGEMENT FLEXIBILITIES**
V;O. ALBURQUERQUE - BRAZIL
- C1-202 Assessment of Island Interconnection Projects via HVDC Links of Partial Capacity: The Case of Crete**
STAVROS PAPATHANASSIOU - GREECE
- C1-203 Transmission Network Planning and Delivery: comparing the German and Chilean Experiences**
J. ARANEDA - CHILE
- C1-204 Managing Regional Security of Supply: A Case Study from Scotland**
S GILL - UNITED KINGDOM
- C1-205 Djibouti Transmission Master Plan at 2033 horizon**
L. CHARLIER - DJIBOUTI
- C1-206 Research on Power Grid Planning Data Model and Data Stream of State Grid Corporation**
P. HUANG - CHINA
- C1-207 Challenges in Realising the Potential of the GCC Interconnector**
MOHAMED SHAIKH - GULF STATES COMMITTEE

SC C1 SYSTEM DEVELOPMENT AND ECONOMICS

PS3: New system solutions and planning techniques for flexible and robust system plans

- C1-301 Energizing Green Cities in Southeast Asia: Application of Sustainable Urban Energy and Emissions Planning in Vietnam**
D OSTOJIC - USA
- C1-302 Integration of Series FACTS into Interconnect-scale Production Cost and Long-term Planning Tools**
F. KREIKEBAUM - USA
- C1-303 Innovative approach to obtaining authorisation for new power corridors in South Africa**
KEVIN, K LEASK - SOUTH AFRICA
- C1-304 Change in selection philosophy of shunt line reactor allows Eskom to realize perpetual economic benefits**
SUMEET, S RAMANDH - SOUTH AFRICA
- C1-305 Overcoming barriers to the use of alternative and innovative solutions such as stand-alone power systems as an alternative to replacement of end-of-life network assets**
T FAIRFIELD - AUSTRALIA
- C1-306 Transmission System Planning under uncertainties including renewable penetration regime in Indian Context**
SUBIR SEN - INDIA
- C1-307 Probabilistic Power Flow as an element of planning methodology**
M PRZYGRÓDZKI, W LUBICKI - POLAND
- C1-308 Assessment of the Impact on Hybrid AC/DC Power System Following a Change of the Bulk Power System**
A. NAKAJIMA - JAPAN
- C1-309 Offshore wind farm stochastic economic evaluation**
MOHAMED ALI - EGYPT
- C1-310 Optimization of RES Generation in the European System**
JOSÉ L. FERNÁNDEZ - SPAIN
- C1-311 Technical and Economical Evaluation of the Use of Energy Storage to Provide Frequency Regulation Services in the Chilean Interconnected Systems**
A. ALEGRIA - CHILE
- C1-312 Complex Modernization of Russian Distribution Network of Bashkirenergo based on advanced Smart Grid Technologies**
H. MUELLER - GERMANY
- C1-313 New Approaches and Solutions for Future System Planning – a System System Planning – a System**
Y. COUGHLAN - IRELAND
- C1-314 Côte d'Ivoire Generation and Transmission Master Plan at 2030 horizon**
A. TRAORE, L. CHARLIER - IVORY COAST
- C1-315 e-Highway2050: a research project analysing very long term investment needs for the pan-European transmission system**
D. ORLIC, F. CARERI, G. MIGLIAVACCA, G. SANCHIS, N. GRISEY, T. ANDERSKI - SC C1
- C1-316 French Zonal Model for Development Studies**
G PAUL - FRANCE
- C1-317 An innovative cost-benefit analysis to assess transmission projects: the Italian case**
A VENTURINI, B COVA, D CANEVER, E ELIA, P DI CICCIO, P VICINI, S IBBA, V VASCELLARI - ITALY
- C1-318 Application of innovative grid-impacting technologies in pan-European and**
A. L'ABBATE - ITALY
- C1-319 A practical implementation of representative planning case selection for grid studies, as used in TYNDP studies for ENTSO-E**
P. VAN ROY - BELGIUM

- C1-320 Research on Optimization of the Capacity of Wind, Photovoltaic and Thermal Power of Bundling Transmission through UHVDC**
Z.Y. LIU - CHINA
- C1-321 Comparison between Deterministic and Probabilistic Methods for Evaluating Grid-Accommodative Wind Power Capacity**
E.S. DU - CHINA
- C1-322 Systematic Approach for Dynamic Equivalents Development of Large-Scale Power System Using PSS/E**
M. M. AL HAJJI, M.A. ABIDO - GULF STATES COMMITTEE
- C1-323 Planning and Design Considerations Associated with the Integration of the UAE's First Nuclear Power Plant**
BRUCE STEDALL - GULF STATES COMMITTEE
- C1-324 Improvement of mode controllability and short-circuit currents limitation in metropolises power grid by means of electromechanical AC links as an alternative to DC links**
A. MAYOROV, A. SHABASH, D. YAROSH, N. PINCHUK, P. SOKUR, V. DYACHKOV, V. NOVOZHILOV, V. TRETYAKOV, Y. DEMENTYEV, Y. KUCHEROV, Y. SHAKARIAN - RUSSIA

SC C2 SYSTEM OPERATION AND CONTROL

PS1: Grid operation solutions to changes in generation mix including distributed and renewable generating resources

- C2-101 Using a Dynamic Security Assessment Tool to Evaluate the Effects of Increasing Wind Power Penetration in Future Operating Conditions of the Brazilian Interconnected Power System**
F.R.M. ALVES - BRAZIL
- C2-102 Improvement of Technical Requirements for Connecting Wind Plants in the Brazilian Interconnected Power System**
S.L.A. SARDINHA - BRAZIL
- C2-103 High Fidelity Modeling Approach to Analysing Combined-Cycle Power Plant Response to Proposed ROCOF Requirements in Ireland**
S BARNES - USA
- C2-104 Tuning primary frequency controllers using robust control theory in a power system dominated by hydropower**
L. SAARINEN - SWEDEN
- C2-105 Full Scale Frequency Response Tests in the Nordic Synchronized Area**
A. WESTBERG - SWEDEN
- C2-106 Integration of PV Contribution into the Load Forecast and Dispatch**
D SHARAFI - AUSTRALIA
- C2-107 Selective Generation Shift Key determination - an enhanced method for the flow-based market coupling capacity calculation**
S. ALMEIDA DE GRAAFF - NETHERLANDS
- C2-108 Secondary Frequency Control and Balancing Operation Using Coordination Control of Conventional Sources and Battery Energy Storage System with Large-scale Renewable Energy Integratio**
Y. KANEUCHI - JAPAN
- C2-109 Storage application for frequency control of hourly cross-border program changes**
D. (DANNY) KLAAR - NETHERLANDS
- C2-110 Innovative tools for the future coordinated and stable operation of the pan-European electricity transmission system**
G.A. MORALES - NETHERLANDS
- C2-111 Increased cooperation between TSO and DSOs as precondition for further developments in ancillary services due to increased distributed (renewable) generation**
M. KRANHOLD - GERMANY
- C2-112 Primary control reserves provision with battery energy storage systems in the largest European ancillary services cooperation**
M. KOLLER - SWITZERLAND

- C2-113 Real time synchronous generator dynamic reactive reserve monitoring by coordinated reactive power voltage controller**
B MIHIC, D ARNAUTOVIC, J DRAGOSAVAC, J MILANOVIC, S DOBRICIC, S SUBOTIC, T GAJIC, Ž JANDA - *SERBIA*
- C2-114 Anticipating Power System Needs in Response to the Global Energy Transition**
E. QUITMANN - *GERMANY*
- C2-115 Emulated Inertial Response from Wind Power: Ancillary Service Design and System Scheduling Considerations**
P DALY - *IRELAND*
- C2-116 Operational Security Challenges and Tools for a Synchronous Power System with High Penetration of Non-conventional Sources**
I. DUDURYCH - *IRELAND*
- C2-117 Smart dispatch of variable-speed Pump Storage Plants to facilitate the insertion of intermittent generation**
A NETO - *FRANCE*
- C2-118 Innovative solutions for real-time Dynamic Security Assessment and automatic system devoted to special protection schemes of Italian Defense plan**
C CANDIA, E CARLINI, F ISELLA, G BRUNO, L CAMPISANO, M STORI, P PAU, R SALVATI, V AGNETTA - *ITALY*
- C2-119 Power Systems Oscillations Damping with Regard the Finite Speed of Propagation the Electromechanical Waves**
O. AGAMALOV - *UKRAINE*
- C2-120 Integration of 2 days-ahead capacity forecast for managing Belgian energy imports**
F. SKIVEE - *BELGIUM*
- C2-121 Monitoring, operation and control solutions in the process of renewable energy source integration Transelectrica's experience**
D. ILISIU - *ROMANIA*
- C2-122 Probabilistic dimensioning of tertiary control reserve driven by the intermittency of renewable generation in Portugal**
N SILVA - *PORTUGAL*
- C2-123 Stability Control Strategy and Operation Practice of Large-Scale UHV AC / DC Hybrid Power System**
T. XU - *CHINA*
- C2-124 New Ancillary Service to Mitigate Deterministic Frequency Deviations**
B.H. BAKKEN - *NORWAY*
- C2-125 Automatic device of monitoring of stability margins**
A. LISITSYN, M. EDLIN, P. KATS, S. CHAPLUK - *RUSSIA*

SC C2 SYSTEM OPERATION AND CONTROL

PS2: Managing system disturbances and system restoration

- C2-201 Ensuring the black start capability of the South African Power system**
ALAN NAMBIAR - *SOUTH AFRICA*
- C2-202 Geomagnetic Disturbances Monitoring, Modelling and Mitigation**
S. SAGARELI - *USA*
- C2-203 EXPERIENCES WITH GENERATOR FAILURE AND EFFECT ON NETWORK AND LOAD RESPONSE**
ROBERT, R STEPHEN - *SOUTH AFRICA*
- C2-204 Wide-area control of SVCs in the Australian power system**
A VAHIDNIA - *AUSTRALIA*
- C2-205 POORLY DAMPED ELECTROMECHANICAL OSCILLATION IN THE 345 KV INTERCONNECTION BETWEEN ARGENTINA AND CHILE. IDENTIFICATION BASED ON A SLIDING PRONY ANALYSIS.**
F. ISSOURIBEHHERE, J. AGÜERO, J.C. BARBERO, R.D. MOLINA - *ARGENTINA*
- C2-206 Control of wind farm and VSC-HVDC to enhance frequency reserve**
G. JANG - *KOREA*

- C2-207 Methodology for next generation system operation between DSO and DSO**
R. SCHWERDFEGER - *GERMANY*
- C2-208 Advances in wide area monitoring and control**
D WILSON - *UNITED KINGDOM*
- C2-209 Disturbance Management in the Turkish Power System interconnected with the ENTSO-E System. Defence Strategies and Operation Experience**
F. ILICETO - *TURKEY*
- C2-210 Norwegian disturbance management system and database**
G. KJOLLE - *NORWAY*
- C2-211 Power system operation efficiency increasing considering transfer capacity parameters affection**
E. REPINA, V. DIYACHKOV - *RUSSIA*
- C2-212 Operator Training for Restoration of Power Systems with High Shares of Volatile Generation**
W. WELLSSOW - *GERMANY*
- C2-213 An Assessment of a Cost-effective Demand Response Scenario A case study for Jordan**
M. ALNABULSI - *JORDAN*

SC C3 SYSTEM ENVIRONMENTAL PERFORMANCE

PS1: Environmental liabilities of transmission and distribution assets

- C3-101 Analysis of the Impact of Geomagnetic Disturbances on the Austrian Transmission Grid**
T. HALBEDL - *AUSTRIA*
- C3-102 Electrocutation risks to endangered birds on MV overhead lines – South African experiences**
ANDREAS, A BEUTEL - *SOUTH AFRICA*
- C3-103 The authorization procedure for Energy Storage Systems Projects installed on the Italian Transmission Grid**
E. SENATORE, M. REBOLINI, N. DI PIETRO, R VANADIA, R. POLITO, S. TOSI - *ITALY*
- C3-104 Liability for contaminated sites initiated by the unbundling of the transmission grid in Belgium**
V. DUFOUR - *BELGIUM*

SC C3 SYSTEM ENVIRONMENTAL PERFORMANCE

PS2: Overhead lines and underground cables: acceptability issues

- C3-201 Evaluation method for values derived from substation instalment**
R. TAKAHASHI - *JAPAN*
- C3-202 Ausgrid's North Shore 132kV cables project - learnings on route selection, EMF mitigation and stakeholder engagement**
J HART - *AUSTRALIA*
- C3-203 HV Underground Cables Magnetic Field Mitigation Measures**
B. BARBIERI, C. WALL, P. ARNERA - *ARGENTINA*
- C3-204 3D multi-viewpoints environment to analyze the visual impact of overhead lines**
JAVIER MORENO - *SPAIN*
- C3-205 Analysis of Induced Electromotive Force in Phase Conductors of 35 kV Line Caused by Phase-to-Ground Fault in 400 kV Overhead Power Line**
A. PAVLOVIC, D. SALAMON, M. GRBIC - *SERBIA*
- C3-206 Visual Impact provision**
H PEARSON - *UNITED KINGDOM*
- C3-207 On the use of the HMCPL shielding system in renewing the underground HV power lines in big cities**
A. CANOVA, G. LAVECCHIA, L. GIACCONE, P RIBALDONE - *ITALY*

- C3-208** The citizens and local authorities views on actions taken to enhance public acceptance of a 380kV grid extension project
J. MENTENS - *BELGIUM*
- C3-209** Life cycle assessment of the UGC transmission system in Iceland
HILDUR HROLFSDOTTIR - *ICELAND*
- C3-210** Environmental Impact and Prevention Analysis for Urban Substations
J. WANG - *CHINA*
- C3-211** Implementation of 3D-graphic technology into practical overhead transmission line routeing
J. REBOLJ - *SLOVENIA*

SC C3 SYSTEM ENVIRONMENTAL PERFORMANCE

PS3: Climate Change: Implications for Electric Power Systems

- C3-301** Hydropower plants and the Climate Change: Impacts and Actions
P.K.T. NAKAYAMA - *BRAZIL*
- C3-302** Enhancing resilience of the North Indian Power System against pollution and foggy weather - An Experience
R.K. PORWAL - *INDIA*
- C3-303** Approaches to routing new transmission line in rural and urban areas
H PEARSON - *UNITED KINGDOM*
- C3-304** Reduction of greenhouse gases in GIS pilot project application in UK
E LARUELLE - *FRANCE*
- C3-305** Climate Change Impact on Electrical Power System, Case study from Jordanian Electrical System
M. ALOMARI - *JORDAN*

SC C4 SYSTEM TECHNICAL PERFORMANCE

PS1: Impact of inverter based generation and Energy Storage

- C4-101** Harmonic Distortion Assessment Related to the Connection of Wind Parks to the Brazilian Transmission Grid
R.P.D. ROSS - *BRAZIL*
- C4-102** Transient Stability Impacts of High Levels of RES on the Western US Grid
N. MILLER - *USA*
- C4-103** Utility Connected Smart Inverters - Lessons Learned from Demonstration of Open Standards and Protocols
A. HUQUE - *USA*
- C4-104** Development of improved aggregated load models for power system network planning in the Nordic power system
E. HILLBERG - *SWEDEN*
- C4-105** **CANCELLED** - Voltage stability based assessment of embedded generation carrying capacity in MV and LV distribution feeders
- C4-106** **CANCELLED** - The modeling optimization of Lithium ion batteries for the Energy Storage System for use in Frequency Regulation.
- C4-107** Voltage Swell Mitigation in EHV Real Network Using Flexible AC Transmission Systems Based on Evolutionary Computing Method
M. A. MOUSTAFA HASSAN - *EGYPT*
- C4-108** Power Quality Monitoring and Assessment in the Spanish Transmission System
AGUSTÍN DÍAZ - *SPAIN*

- C4-109 STORE: A COMPREHENSIVE RESEARCH AND DEMONSTRATION PROJECT ON THE APPLICATION OF ENERGY STORAGE SYSTEMS IN ISLAND POWER SYSTEMS**
LUIS ROUCO - *SPAIN*
- C4-110 Power Intensive Energy Storage and Multilevel STATCOM for frequency and voltage grid support**
E. SPAHIC - *GERMANY*
- C4-111 Changes in harmonic assessments of non-linear load connections**
L KOO - *UNITED KINGDOM*
- C4-112 Amplification of Harmonic Background Distortion in Wind Power Plants with Long High Voltage Connections**
C.F. JENSEN - *SC C4*
- C4-113 Power Quality and EMC Issues associated with future electricity networks – status report on behalf of CIGRE/CIREN JWG C4.24**
F. ZAVODA, G.C. LAZAROIU, J. MEYER, M.H.J. BOLLEN, P. CIUFO, R. LANGELLA, S.K. RONNBERG - *SC C4*
- C4-114 Investigation of Harmonics Trends and Characteristics on the Irish Transmission System by analysing Historical PQ Measurements and SCADA Records**
B. KELLY - *IRELAND*
- C4-115 LARGE SCALE ITALIAN ENERGY INTENSIVE STORAGE INSTALLATION: SAFETY ISSUES AND ENVIRONMENTAL COMPATIBILITY**
M. ANDRIOLLO, N. DI PIETRO, R. BENATO, R. POLITO, S. DAMBONE SESSA - *ITALY*
- C4-116 Electrochemical Energy Storage Systems and ancillary services: the Italian TSO's experience**
C. MARTARELLI, E.M. CARLINI, G BRUNO, L. ORTOLANO, L. ZARETTI, M. PETRINI, R. POLITO, S. GIONCO - *ITALY*
- C4-117 Impact of Photovoltaic Power Systems Control on Romanian Power Quality Measured in the Connection Common Points**
D. ILISIU - *ROMANIA*
- C4-118 Assessing Inverter Based Generation Exposure to Voltage Sags**
A SANTOS - *PORTUGAL*
- C4-119 Impact of Connecting Renewable Power Plants on the Dynamic Voltage Response, Voltage Stability and Low Voltage Ride Through (LVRT) Capability**
A. JABERT - *JORDAN*

SC C4 SYSTEM TECHNICAL PERFORMANCE

PS2: Challenges with modeling and evaluation of lightning performance and insulation coordination in the power system of the future

- C4-201 Application of the Leader Progression Model to evaluate the lightning performance of AC and DC EHV transmission lines**
P.M. MIGUEL - *BRAZIL*
- C4-202 Overview of statistical data on lightning outages of transmission lines in Japan**
M. MIKI - *JAPAN*
- C4-203 Economic Assessment of Lightning Performance Improvement of 69 kV Overhead Subtransmission Line on Monopole and Concrete Pole in MEA's Power Distribution System**
A PHAYOMHOM - *THAILAND*
- C4-204 A CASE STUDY AND OBSERVATION ON CAUSE OF TRANSMISSION LINE OUTAGES IN MALAYSIA**
I MOHAMED RAWI, M AB KADIR - *MALAYSIA*
- C4-205 Assessment of Lightning Shielding Performance of a 400 kV Double-Circuit Fully Composite Pylon**
T. JAHANGIRI - *DENMARK*
- C4-206 Numerical investigations of transient voltages in high voltage networks related to Insulation Coordination**
S. PACK - *AUSTRIA*
- C4-207 Analysis of opportunities to improve the HVDC SwePol Link operation due to commutation failures**
M PRZYGRÓDZKI, M SZABLICKI, P RZEPKA - *POLAND*

- C4-208 Investigating the Methodology and Implications of Implementing Long HVAC Cables in the Ireland and Northern Ireland Power System**
N. CUNNIFFE - *IRELAND*
- C4-209 Isolated systems interconnected via HV submarine XLPE cables**
G TREMOUILLE - *FRANCE*
- C4-210 Switching transients on very long HV ac cable lines: simulations and**
F. PALONE - *ITALY*
- C4-211 ELECTRICAL PERFORMANCE OF 10kV POLYMER INSULATOR UNDER LIGHTNING INDUCED VOLTAGE CONDITION**
M.Z.A. AB-KADIR - *MALAYSIA*
- C4-212 EFFECT OF PARALLEL 275kV TRANSMISSION LINE WITH OIL PIPELINE ON ELECTROMAGNETIC FIELD CALCULATION**
M.Z.A. AB-KADIR - *MALAYSIA*
- C4-213 Measurement Technology on Transient Processes of Lightning Striking Overhead Transmission Lines**
S.J. XIE - *CHINA*

SC C4 SYSTEM TECHNICAL PERFORMANCE

PS3: Bridging the gap between EMT , FEM and positive sequence grid simulation

- C4-301 Simulating Single-Pole Opening Using a Detailed Protection Model and a Transient Stability Program**
D. MACGREGOR - *USA*
- C4-302 Development of surge simulation techniques based on the finite difference time domain method and its application to surge analysis**
A. TATEMATSU - *JAPAN*
- C4-303 Defining - and Computing the Margin in Critical Clearing Time: Eskom experience**
FRANCO, LNF DE VILLIERS - *SOUTH AFRICA*
- C4-304 "Shunt Compensation, Reliability Analysis and Condition Monitoring System measurements and simulations for an EHV mixed Overhead line - Cable connection**
H. KHALILNEZHAD - *NETHERLANDS*
- C4-305 HVDC system modeling coherence between EMT and phasor domain tools**
S DENNETIERE - *FRANCE*
- C4-306 SOME MEANINGFUL EXAMPLES OF**
R. BENATO - *ITALY*

SC C5 ELECTRICITY MARKETS AND REGULATION

PS1: Interactions between wholesale and retail markets; the future of regulation

- C5-101 Aligning Regulatory Incentives and Price Signals in the Brazilian Wholesale and Retail Electricity Market**
X. VIEIRA FO. - *BRAZIL*
- C5-102 Market design of one hour ahead and real time market and implementation of cross-regional network operation in Japan**
H. ASANO - *JAPAN*
- C5-103 CANCELLED - Is the regulatory regime of liberalised electricity markets appropriate for the future?**
- C5-104 A methodology for the analysis of market design at the horizon 2030**
E CERQUIERA - *UNITED KINGDOM*
- C5-105 New approach to congestion management for decentralized market coupling using net export curves**
I.V. BLINOV - *UKRAINE*

SC C5 ELECTRICITY MARKETS AND REGULATION

PS2: Market models and regulatory structures in an evolving industry situation

- C5-201 Practices for Risk Assessment and Control in the Brazilian Electricity Market: state of the art**
P.M. PATRICK - *BRAZIL*
- C5-202 Market coupling, facing a glorious past?**
R HIRVONEN - *FINLAND*
- C5-203 The Importance of a Performance-Based Capacity Market to Ensure Reliability as the Grid Adapts to a Renewable Energy Future**
G. VAN WELIE - *USA*
- C5-204 HVDC Transmission Scheme for Sustainable Energy Supply**
YING JIANG-HÄFNER - *SWEDEN*
- C5-205 Impacts of asset investment of renewable energy on market design and operation**
K. OGIMOTO - *JAPAN*
- C5-206 Renewable Energy Policy and Barriers under Fluctuation of Energy Price and Economic Growth in Thailand**
K. PANPUEK - *THAILAND*
- C5-207 Introduction of Sub-Hourly Market in Power Exchanges and Facilitating Large Scale Renewable Energy Integration in India**
S.K. SOONEE - *INDIA*
- C5-208 CANCELLED - Preparation for implementation of a Capacity Mechanisms based on the cost based pool in the Korea electricity market**
- C5-209 REGULATORY STRUCTURE AND MARKET MODEL IN MALAYSIA WITH THE IMPLEMENTATION OF INCENTIVE BASED REGULATIONS (IBR) AND NEW ENHANCED DISPATCH ARRANGEMENT (NEDA)**
W WAN SYAKIRAH - *MALAYSIA*
- C5-210 Mexico 's Wholesale New Power Market**
M.A. AVILA-ROSALES - *MEXICO*
- C5-211 Restructuring System Services for the Highest Levels of Wind Integration**
J O'SULLIVAN - *IRELAND*
- C5-212 Capacity Markets and the EU Target Model – a Great Britain Case Study**
G HAWKER - *UNITED KINGDOM*
- C5-213 Capacity Remuneration Mechanisms: Results from a worldwide survey CIGRE Working Group C5-17**
G. DOORMAN - *SC C5*
- C5-214 Flow-based market coupling in the Central Western European region: Welcome to the market coupling 2.0**
D GARREC - *FRANCE*
- C5-215 Technical and Economic Impact analysis of Active Distribution Grids Operation**
G. PETRETTO - *ITALY*
- C5-216 Belgian Strategic Reserves – Implementation, Design Choices, and Market Outcome**
H. HOSCHLE - *BELGIUM*
- C5-217 Study of Key Issues for Direct Trading between Power Users and Plants**
X. ZHANG - *CHINA*
- C5-218 Capacity market. Change of the model shifting from deficit to excess**
A. KATAYEV, F. OPADCHIY - *RUSSIA*
- C5-219 Evaluating Regulatory Framework in Iran's Electricity Sector: A Benchmarking Analysis**
M. MOHAMMADI, M.P. ARABANI, S. RAMYAR - *IRAN*

SC C5 ELECTRICITY MARKETS AND REGULATION

PS3: Distributed resource and demand response integration from the perspective of electricity market structures

- C5-301 EVALUATION OF DEMAND SIDE MANAGEMENT MECHANISMS AND OPPORTUNITIES FOR THEIR DEVELOPMENT IN THE BRAZILIAN POWER INDUSTRY**
C. DORNELLAS - *BRAZIL*
- C5-302 Experiences and Lessons Learned based on Distributed Generator of EGCO in Thailand Power Grid**
G BUMROONGGIT, S POCHANART, W SINSUKTHAVORN - *THAILAND*
- C5-303 Market Access for Renewables in the German Power Market and Market Design Challenges**
P. GIESBERTZ - *NETHERLANDS*
- C5-304 Comparison of market designs enabling DSR participation in the energy market**
B GUÉDOU - *FRANCE*
- C5-305 The impact of active demand on the electrical system and its actors estimated**
M. LOMBARDI - *ITALY*
- C5-306 Project SMART – lessons learned from the emergency DSR programmes involving residential consumers and the aggregator**
K KULA, M KRUPA, M SOBCZAK - *POLAND*
- C5-307 DSO-TSO Interactions in Flexibility Contracting**
K. DE VOS - *BELGIUM*
- C5-308 The importance of market regulation in exploiting demand response on balancing market: Slovenian and Austrian case**
D. PARAVAN - *SLOVENIA*

SC C6 DISTRIBUTION SYSTEMS AND DISPERSED GENERATION

PS1: Integrated planning and operation for up grading distribution networks

- C6-101 THE GROWTH OF DISTRIBUTED GENERATION IN BRAZIL: OPPORTUNITIES, COSTS AND DIFFICULTIES FOUND**
P.H.R.P. GAMA - *BRAZIL*
- C6-102 Messaging for Enterprise Distributed Energy Resources**
J SIMMINS - *USA*
- C6-103 Learning from a 3.3 MW Utility Scale PV Plant Project**
T SAHA - *AUSTRALIA*
- C6-104 Dynamic distribution system planning considering distributed generation and uncertainties**
A VARGAS, D FRANCO, M SAMPER - *ARGENTINA*
- C6-105 A Probabilistic Monte-Carlo Simulation to Assess Distribution Network Reliability**
M. GAHA - *CANADA*
- C6-106 Advanced Self-Healing for Wide Area Power Outage and Network Reconfiguration for Feeder Uploading**
B. N. HA - *KOREA*
- C6-107 Impact of Distributed Energy Resources and Normally Open Switches on the Operational Performance of Low Voltage Distribution Networks**
EVANGELOS DIALYNAS - *GREECE*
- C6-108 An Adaptive Protection Infrastructure for Modern Distribution Grids with Distributed Generation**
GEORGIOS KORRES - *GREECE*
- C6-109 Protection coordination for distribution systems containing distributed generating units**
AHMED KAMEL - *EGYPT*
- C6-110 State estimation in MV distribution networks: experience in the Spanish smart grid project PRICE-GDI**
JOSÉ M. MAZA - *SPAIN*

- C6-111 Linear State Estimation in Low Voltage Grids Based on Smart Meter Data**
W. WELLSSOW - *GERMANY*
- C6-112 Intelligent control of on-load tap changer based on voltage stability margin estimation using local measurements**
H. FENG - *GERMANY*
- C6-113 South East Europe Distribution System Operators Benchmarking Study**
A. DOUB, G. MAJSTROVIC, G. STRMECKI, M. SKOK, T. BARICEVIC, W. POLEN - *CROATIA*
- C6-114 Key findings of a study into the development of future GB systems integrating low carbon technologies and smart solutions**
J KING - *UNITED KINGDOM*
- C6-115 Impact of distributed generation on load shedding scheme in France: current status and perspectives**
J OTTAVI - *FRANCE*
- C6-116 Technical-economic optimum development plan of the Distribution Network of Abidjan**
S. AHOUSSOU, S. LEYDER - *IVORY COAST*
- C6-117 Prosumers' Battery Electrical Storage Systems: new ancillary services,**
F. CAZZATO - *ITALY*
- C6-118 Real field testing results of the innovative Medium Voltage control system**
D. STEIN - *ITALY*
- C6-119 Linear Optimization for Active Distribution Systems Operation Considering Demand Response Mismatch**
Y. WANG - *CHINA*

SC C6 DISTRIBUTION SYSTEMS AND DISPERSED GENERATION

PS2: Energy infrastructure for urban networks

- C6-201 Local Adaptive Control of Solar Photovoltaics and Electric Water Heaters for Real-time Grid Support**
B. BHATTARAI - *DENMARK*
- C6-202 Towards Holistic Power Distribution System Validation and Testing – An Overview and Discussion of Different Possibilities**
T. STRASSER - *AUSTRIA*
- C6-203 Optimized and Enhanced Grid Architecture for Electric Vehicles in Europe**
S. UEBERMASSER - *AUSTRIA*
- C6-204 Leveraging Smart Grids Assets for Building Smart Cities at Marginal Cost**
REJI KUMAR PILLAI - *INDIA*
- C6-205 Advancing the method of estimating the distribution system condition by utilizing smart meters**
M. INAI - *JAPAN*
- C6-206 Beyond Smart Meters: Management of the LV network**
J. GARCÍA - *SPAIN*
- C6-207 Navigating the complex world of Energy supply and demand**
K SINGH - *UNITED KINGDOM*
- C6-208 Planning studies for active distribution grids in presence of EVs charging**
M. DI CLERICO - *ITALY*
- C6-209 The Integrated Model for Marketing and Distribution Information - Integration Architecture, Implementation and Validation**
L. GE - *CHINA*
- C6-210 Demonstrations of Communication Standards for Automated Demand Response and Smart Grid**
J. YOSHINAGA - *JAPAN*

SC C6 DISTRIBUTION SYSTEMS AND DISPERSED GENERATION

PS3: Microgrids and offgrid hybrid systems

- C6-301 NY Prize Community Grid Competition**
S. VENKATARAMAN - USA
- C6-302 Fast Demand Response as an Enabling Technology for High Renewable Energy Penetration in Isolated Power Systems**
M NEGNEVITSKY - AUSTRALIA
- C6-303 No Load Diesel Application to Maximise Renewable Energy Penetration in Offgrid Hybrid Systems**
M NEGNEVITSKY - AUSTRALIA
- C6-304 Business Cases for Isolated and Grid-connected Microgrids – Methodology and Applications**
G. JOOS - CANADA
- C6-305 Decision to Interconnect Distributed Energy Resources into Distribution Networks**
S. S. CHO - KOREA
- C6-306 Smart Region – Automation of Distribution System**
ZDENEK MÜLLER - CZECH & SLOVAK Reps.
- C6-307 Battery Energy Storage Control Strategies for Deterministic and Stochastic Power Profiles**
A. OUDALOV - SWITZERLAND
- C6-308 Smart grids for rural conditions and e-mobility - Applying power routers, batteries and virtual power plants**
V. BUEHNER - GERMANY
- C6-309 Probabilistic Planning of Multi-Microgrids with**
E. GHIANI - ITALY
- C6-310 The Hybrid Energy Storage System based on lithium-ion batteries and supercapacitors**
A.N. NOVIKOV, A.Z. ZHUK, E.A. BUZOVEROV, K.K. DENSHIKOV, N.L. NOVIKOV, T.YU, ZHORAIEV, YU.N. KUCHEROV - RUSSIA

SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

PS1: Compact Insulation Systems (AC and DC)

- D1-101 Solid-gas insulation in HVDC gas-insulated system: Measurement, modeling and experimental validation for reliable operation**
R. GREMAUD - SWITZERLAND
- D1-102 Interest of simulations to assess tests to be performed on DC GIS**
A GIRODET - FRANCE
- D1-103 Various Characteristics of GIS Insulation Systems and Test Method of Insulating Spacers for Residual DC Voltage**
S. OKABE - JAPAN
- D1-104 Evaluation of small scale testing for high field conductivity of HVDC cable materials**
C. ANDERSSON - SWEDEN
- D1-105 LONG TERM PERFORMANCE OF XLPE INSULATION MATERIALS FOR HVDC CABLES**
P.-O. HAGSTRAND - SWEDEN
- D1-106 Study of dielectric properties of XLPE for HVDC cables during long-term ageing**
A HASCOAT - FRANCE
- D1-107 ZnO stress grading tape for stator windings for electrical machines located at**
L. DONZEL - SWITZERLAND
- D1-108 DIELECTRIC PERFORMANCE BY ELECTRODE SURFACE PRETREATMENT AND MULTI-LAYER COATINGS IN GIS**
J. H. SON - KOREA

- D1-109 Tracking and Erosion Tests for Composite Insulators under DC Voltage**
X.D. LIANG - *CHINA*
- D1-110 Long-term performance of composite station insulators with larger diameters: laboratory tracking and erosion test vs. service experience**
I. GUTMAN - *SWEDEN*
- D1-111 The Effect of Bird Streamers on the Insulation Strength of HVDC Lines**
NISHAL, N MAHATHO - *SOUTH AFRICA*
- D1-112 Performance of polymeric insulators in hybrid AC/DC overhead lines under polluted conditions**
A. WAGNER - *GERMANY*
- D1-113 GCCIA POLLUTION TEST STATION: An Optimizing Tool for Pollution Site Severity & Selection of Optimum Insulators Profile In Eastern KSA**
AHMED AL-THAGAFI - *GULF STATES COMMITTEE*

SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

PS2: New materials

- D1-201 Electrical and thermal behaviour of synthetic transformer liquids**
Q LIU - *UNITED KINGDOM*
- D1-202 Preliminary study for use of vegetable esters in big power transformers**
F. SCATIGGIO - *ITALY*
- D1-203 The Thermal Stability of Al₂O₃ Modified Cellulose Insulation Paper**
C. TANG - *CHINA*
- D1-204 CHARACTERISTICS OF FLUORONITRILE/CO₂ MIXTURE AN ALTERNATIVE TO SF₆**
K. POHLINK - *SWITZERLAND*
- D1-205 Methodology to validate gases for switchgear applications**
C PREVE - *FRANCE*
- D1-206 Eco Friendly Thermoplastic Insulation for LV Switchgear Application**
BEEMA THANGARAJAN R - *INDIA*
- D1-207 Preparation of Exoergic Insulating Composite Material Using Electrostatic Adsorption Method**
Y. MURAKAMI - *JAPAN*
- D1-208 Comparative Investigation on Ester Insulating Liquids for High Voltage Applications**
I. HOEHLEIN-ATANASOVA - *GERMANY*

SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

PS3: Non-standardised stresses and emerging test techniques

- D1-301 Developments for FRA automation**
D TUSEK - *AUSTRALIA*
- D1-302 Diagnostic control of oil-paper insulation based on method of "direct" measurement of paper moisture content**
A.A. KOZLOV, A.V. KOZLOV, A.V. SHURUPOV, L.A. DARIAN, N.A. MATVEEV, V.P. POLISTCHOOK - *RUSSIA*
- D1-303 Development of a brand new spectrophotometric method for analysis of 2-furfuraldehyde in transformer oil as an indicator of paper degradation**
JAVIER JIMÉNEZ - *SPAIN*
- D1-304 CEMIG's Experience at Dissolved Gas Analysis Applied to OLTC**
C.D. SESSA - *BRAZIL*

- D1-305 A study of liquid-immersed transformer reference insulation systems used to determine thermal class**
H.M. WILHELM - *BRAZIL*
- D1-306 A development of DC PD pattern recognition method using Modified CAPD together with PD finding for Gas insulated apparatus under DC voltage**
J. Y. KOO - *KOREA*
- D1-307 Influence of simultaneous and different pulse sources on PD patterns under DC voltage stress. Use of different approaches of clustering before generating PD patterns**
MIGUEL A. SÁNCHEZ-URÁN - *SPAIN*
- D1-308 A Review of Dielectric Strength with Distorted Lightning Impulses**
J.N. SILVA, R. DÍAZ - *ARGENTINA*
- D1-309 Insulation Evaluation of High-voltage Insulation Systems for Actual Overvoltage Waveforms and Practical Field Conditions**
S. OKABE - *JAPAN*
- D1-310 Correction of Errors of Large Impulse High Voltage Dividers with the De-convolution Method**
Y LI - *AUSTRALIA*
- D1-311 Investigation of mechanical strength for station post composite insulators subjected to variable loads**
J BIELECKI, J WANKOWICZ - *POLAND*

SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION

PS1: New applications to control power systems

- D2-101 Smart: Intelligent and integrated platform for power operation centers**
E. ROCHA N. - *BRAZIL*
- D2-102 Implementation of PMU-Based Linear State Estimation into Energy Management Systems**
A. BOSE - *USA*
- D2-103 Leveraging Big Data and Modern Communication Protocols to Facilitate New Applications in Power Transmission and Distribution**
S. RAVISH - *USA*
- D2-104 Implementation of Information and Telecommunication Systems with the aim of Realization of Smart Grid in Japan**
H. DOI - *JAPAN*
- D2-105 Communications Infrastructure for Future Centralized Substation Protection and Control Systems**
Y. LUSKIND - *CANADA*
- D2-106 Implementation of Online Power System Network Analysis for the EMS in Korean Electric Power Control Center**
Y. I. KIM - *KOREA*
- D2-107 Results of applying a semantic interoperability strategy in Smart Grid applications for DSO in Mexico**
A. ESPINOSA - *MEXICO*
- D2-108 Classification of customers based on temporal load profile patterns**
IGNACIO BENÍTEZ - *SPAIN*
- D2-109 COCO: Construction Operational Control**
ANDRÉS CADENAS - *SPAIN*
- D2-110 Adding New Functions to the Energy Control System for Operating More Than a Decade in Taiwan**
J.D. LEE - *TAIWAN*
- D2-111 Ad-hoc WAMS - a Paradigm Shift**
D. BRNOBIC - *CROATIA*

- D2-112 Experiences from Intelligent Alarm Processing and Decision Support Tools in Smart Grid Transmission Control Centers**
N BARANOVIC - *CROATIA*
- D2-113 Distributed control architecture for effective Distributed Energy Resources Management**
G FOGGIA - *FRANCE*
- D2-114 CANCELLED - Leveraging big data analytics for customer engagement: the online and mobile**
- D2-115 Optimizing the Network and the Asset Lifecycle and Reduce Operational and Capital Costs through Predictive Analytics and Asset Health Management**
S. HAGNER - *SWEDEN*
- D2-116 Study and Practice of General State Estimation and Power Flow Hybrid Method for Modern Power Systems Control Center**
Y.Q. YAN - *CHINA*

SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION

PS2: EPU response to evolving cyber security landscape

- D2-201 Network Architecture and Cyber Security – Two Faces of the Same Coin**
R FERNANDEZ - *AUSTRALIA*
- D2-202 Cyber Security Architecture for Operational Technologies (ICS/SCADA)**
L. (LHOUSSAIN) LHASSANI - *NETHERLANDS*
- D2-203 Application and Management of Cybersecurity Measures for Protection and Control**
D. HOLSTEIN - *USA*
- D2-204 Application of Monitoring Standards for enhancing Smart Grids Security**
G. DONDOSSOLA - *ITALY*
- D2-205 Fuzzy Rule Based Expert System for SCADA Cyber Security**
D. MLAKIC, L. MAJDANDZIC - *BOSNIA HERZEGOVINA*

SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION

PS3: Mobile operational applications, systems and infrastructure

- D2-301 Wireless and Mobile Systems for Electric Power System Operation in Japan**
S. MICHIWAKI - *JAPAN*
- D2-302 Ensuring Uptime of WAMS Network with the Help of Common IT Tools – Case Studies**
P.K. AGARWAL - *INDIA*
- D2-303 Communication Networks for Indian Smart Grids**
N.S. SODHA - *INDIA*
- D2-304 Usefulness of AMI data communication systems to the development of Polish DSO smart MV and LV grids with regard to SCADA control systems**
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