2016 CIGRE SESSION TECHNICAL PROGRAMME

SC A1 ROTATING ELECTRICAL MACHINES

PS1: Developments of Rotating Machines and Experience in Service

A1-101 **CANCELLED - Unbalanced Magnetic Pull in Salient Pole Synchronous Machines A New Methodology to Calculate Orbital Eccentricity**

A1-102 **Fatigue Assessment in the Pole Fixation of Hydro-Generators**
T. HILDENGER, M. HAGMEYER, H. HENNING, D. LUDWIG - *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, A.K. GUPTA, P.K. BASU - *INDIA*

A1-106 **Efficiency and Cost-effectiveness comparison between Synchronous Reluctance Motor and Induction Motor**
B. H. KANG, L. FANG, J. H. SEO, J LEE - *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**
L. ROUCO, J. ARCHILLA, C. GAVILÁN - *SPAIN*

A1-109 **Improved Generator Performance with a Nanocomposite High Voltage Insulation System for Stator Windings – A Status Report**
J. R. WEIDNER, T. HILDINGER, M. BROCKSCHMIDT, P. GRÖPPEL, M. WEIL - *GERMANY*

A1-110 **Flexible Generator-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, Y.T. SUN, J.B. ZOU, B.J. GE - *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 Development and Deployment of an Online PD Monitoring System on Rotating Machines Based on Virtual Instrumentation**

A.T. CARVALHO, H.P. AMORIM, F.S. BRASIL, P.R.M VILHENA, D.S. 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**

R. BAENA, S. RODRÍGUEZ, A. VILLARRUBIA, B. REMARTÍNEZ, O. MARTÍNEZ - *SPAIN*

SC A1 ROTATING ELECTRICAL MACHINES

PS3: Rotating Machines for Renewable and Dispers ed Generation

A1-301 **Development of a Methodology for the Design of Axial Flux Microgenerators**

R CRIVICICH, J GARCIA, R PEGUEROLES - *ARGENTINA*

A1-302 **CANCELLED - Reliability of electrical generators in wind turbines**

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, J.M. ARAUJO, P.V. ALMEIDA, R.J.C PADILHA, D.O. NETO, C.C. SANTOS, L.G. LIMA, A. ALTMANN, L.C.F SANTOS - *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: Project Update**

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**

W.H CHOI, S.W HWANG-BO, C.S PARK, J.S PARK - *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, H.D SEO, S.J KIM, S.W KIM - *KOREA*

A2-107 **Condition Assessment of Power Transformers in service using PD Monitoring**

H. GAGO, F. GARNACHO, M.A. SÁNCHEZ-URAN, J. ORTEGO, I. ULIARTE - *SPAIN*

A2-108 **Diagnosing difficult transformer problems using online condition monitoring**

S RYDER, H DING, R HEYWOOD, P JARMAN, S WHITE - *UNITED KINGDOM*

A2-109 **Condition monitoring and diagnostic assessment of transformers**

Z WANG, Q LIU, P JARMAN, G WILSON, R HOOTON, D WALKER, P DYER, CH. KRAUSE, PWR SMITH, A GYORE, R MARTIN, P MAVROMMATIS, J NOAKHES - *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)**

L. KONTOROVYCH, A. BASS - *UKRAINE*

A2-114 **Improvements of Large Power Transformer Condition Real Time Monitoring and Diagnosis Expert System – a Romanian Experience**

C. MOLDOVEANU, M. FLOREA, A. RUSU, M. BUDAN, I. HATEGAN, P. STROICA, V. BREZOIANU, V. AURELIAN, M. AVRAMESCU, I. IONITA, S. SZLIVKA - *ROMANIA*

A2-115 **Interpretation of Results of Diagnostics of Power Transformers by Using the Frequency Response Analysis**

A.A. DROBYSHEVSKI, A.YU. VOLKOV, V.S. LARIN, D.A. MATVEEV - *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, J. MONTANHA, E. OLIVEIRA - *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**

V. MOORKATH, TANVI SRIVASTAVA, NILAD SEKHAR MITRA - *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**

K.H. LEE, C.J. PARK, C.H. YANG, 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**

M. CUESTO, J. PORRERO, M. MUÑOZ, J. CAMARA, P. HURLET, A. TANGUY, M. RYADI - *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. FRITSCHE - *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.C. HAN, X.N. WANG, N.H. WANG, B. LI, Z.R. WU, C.L. MI, X.L. ZHANG, J. T. ZHONG, S.B. SUN, S.J. WANG - *CHINA*

A2-211 **Fast Response Thyristor Controlled Shunt Reactor. Development and Application Experience**

A. ANTONOV, L. KOSOLAPOV, M. PESHKOV, M. PERNA, Y. GORYUSHIN, P. BULYKIN, L. KUBAREV, V. CHUPRIKOV - *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**

R MALEWSKI, M SZROT, J PLOWUCHA, R KUBICKI - *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, S. E. KIM, S. W. PARK, Y. G. KIM - *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, J. H. SONG, B. Y SEOK, H. M. KIM, I. R. CHOI - *KOREA*

A2-307 **Dry-type subtransmission transformer: dry power transformers for the 123 kV and 145 kV voltage class**

B. CRANGANU-CRETU - *SWITZERLAND*

A2-308 **Short-circuit testing of 66 kV / 34 MVA dry-type power transformer**

B. CRANGANU-CRETU - *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.M.R CAMPELO, J.P.B BALTAZAR, C.M.M CARVALHO, R.C. LOPES, R.T. OLIVEIRA, C.M. FONTE, M.M. DIAS, J.C.B LOPES - *PORTUGAL*

A2-311 **Influence of the Lightning Impulse Shape on the Electrical Stresses on Windings Insulation of Power Transformers and Shunt Reactors**

V.S. LARIN, D.A. MATVEEV - *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, C. Y. BAE, S. W. PARK, Y. G. KIM - *KOREA*

A3-106 **Development of HVDC Circuit Breaker with Fast Interruption Speed**

B. C. KIM, Y. H. CHUNG, H. D. HWANG - *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**

J. GARCÍA, A. IBERO - *SPAIN*

A3-111 **Inductive voltage transformers for auxiliary services power supply in substations. Design, specification and normative aspects and application example**

E. REGIL, A. BURGOS - *SPAIN*

A3-112 **Arresters with advanced cooling performance for protection of valves in HVDC converters**

R. GOEHLER - *GERMANY*

A3-113 **Environmentally Friendly Perfluoroketones-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, M. BOUTLENDJ, P. CARDANO, M. SARAVOLAC, M SEHOVAC, A. PIGINI - *ITALY*

A3-116 **Transient behaviour of conventional and innovative capacitive voltage transformers: simulations and HV laboratory testing**

C SERAFINO, P. AVAGNINA, A. VALANT, V. IULIANI, M. REBOLINI - *ITALY*

A3-117 **Research and Development of a Full-bridge Cascaded Hybrid HVDC Breaker for VSC-HVDC Applications**

G.F. TANG, X.G. WEI, W.D. ZHOU, S. ZHANG, C. GAO, Z.Y. HE, J. C. ZHENG - *CHINA*

A3-118 **The Establishment of Standard System for Accuracy Measurement of Harmonics of Electronic Voltage Transformers**

X. LIU, Z.Y. LI, H.Y. LIN, Y. TONG, X.Z. WANG - *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, J.F. AMON, C. LINDNER, J-F. BOUDREAU, B.N.G SARDI, P.R. VASQUEZ, F. RICHTER, P. MOREAU - *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**

B. DOIPHODE, S. KULKARNI, YASH KULKARNI, N.S. SODHA - *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 disconnector mechanism for digital substation**

E STELLA, M PIVATO, J RAYON - *ITALY*

SC A3 HIGH VOLTAGE EQUIPMENT

PS3: Applica tion 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, M. CUI, J.Y. PARK, J. CHOI, S.W PARK, Y.G KIM - *KOREA*

A3-302 CFD ANALYSIS AND NUMERICAL STUDY OF THE HOT GAS FLOW INSIDE THE HIGH VOLTAGE GAS CIRCUIT BREAKERS

J. H. PARK, M. J. HA, J. Y. BYEON, K. H. KIM - *KOREA*

A3-303 Reduced scale feasibility of temperature rise tests in substation connectors

C. ABOMAILEK, J.R. RIBA, P. CASALS-TORRENS - *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

V.D. LEBEDEV, A.A. YABLOKOV, A.V. MAKAROV - *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, R.D. THOMAZ JR, N.H.G R. LOUREDO, W. GOVINO, G.C. SILVESTRE - *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 220kV North Auckland and Northland (NAaN) Project in Auckland, New Zealand

N RAHMAN - *AUSTRALIA*

B1-104 Monitoring and up-gradation of Underground Cable Network by various methods

DILIP M. MIRASHI, N. SIRDESAI, M. KUMAR, KIRIT RANA - *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, S.Y KIM, H.S YOON, W.J. LEE, D.S CHO, S.H SON, H.D PARK, S.I JEON, J.Y KOO - *KOREA*

B1-108 Location of sheath voltage limiters (SVLs) used for accessory protection to assure the insulation coordination of cable outer sheath, sectionalising joints and terminations of high voltage cable systems

F. GARNACHO, A. KHAMLICHI, G. DENCHE, G. DONOSO, A. VALERO - *SPAIN*

B1-109 Cable system qualification process for the Italy - France HVDC intertie

M. MARZINOTTO, M. ALBERTINI, L. BENARD, F: CHARLES, P. HONDAA, M. MAMMERI, M. PAZIENZA, K. TARDY - *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, T.M. LIMA, A.P. LOZANO, M.S. MEDINA - *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, D.J PARK, G.Y JEONG, C.H LEE, J.N KIM, S.I JEON, H.D PARK, J. KAUMANNS - *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**

J. ARÉVALO - *SPAIN*

B1-209 **Sheath currents monitoring in high voltage isolated cables**

A. BURGOS, G. DONOSO, B. GARCÍA - *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, R WILSON, M SELTZER-GRANT - *UNITED KINGDOM*

B1-212 **Life Cycle Assessment (LCA) of a 380 kV double circuit HVAC cable transmission line**

L GUIZZO, M REBOLINI, A POSATI, K BERNARDI, S FILIPPINI, A FIORELLA, G ZA, G LAVECCHIA - *ITALY*

B1-213 **Belgian experience with real time temperature system in combination with distributed temperature sensing techniques**

P. LEEMANS, 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, M.H. FAN, W. LI, H. XIE, H. C. WU, S.P. WANG - *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, R. OLSEN, POUL MORTENSEN, IVAN ARANA - *DENMARK*

B1-304 **Understanding losses in three core armoured submarine cables**

FILIP FARIA DA SILVA, T. EBDRUP, CLAUS LETH BAK, CHR.F JENSEN - *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 Submarine Cable Structure Based on Ampacity

E.D. WANG, X. Y. ZHANG, B. BIAN, X. L. MA, T. J. QIU, J. 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 ±800 kV Transmission Line Associated to the Belo Monte Hydroelectric Power Plant - Studies and Definitions for the Basic Design - Innovation and Challenges for a New Level of Voltage in Brazil

M.C. ARAUJO, J.H.M FERNANDES, K.R. SANTOS, H.W.C SILVA, J.L.N MICHELINI FILHO, R.G. NOEL, B.S. PERRO, P.C.P SILVA JR, A. QUINTILIANO - *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., L.A.M DOMINGUES - *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

A. GONZÁLEZ, M. MAÑANA, R. MÍNGUEZ, R. DOMINGO, J. GONZÁLEZ, R. GARROTE, A. ARROYO, R. MARTÍNEZ, A. LASO - *SPAIN*

B2-106 Compact lines with pivoted insulated cross-arms. General stability design criteria

P. RODRÍGUEZ, J.C. POLO, L.F. ALVARADO, A. CARNICERO, J. JIMENEZ-OCTAVIO, C. SÁNCHEZ-REBOLLO - *SPAIN*

B2-107 A 500 kV HVAC circuit reconversion into a +/-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

M FORTELEONI, A POSATI, E COLOMBO, G PANNUNZIO - *ITALY*

B2-110 Monopole 220 kV tubular tower of steel tubes and cast steel without visible connections.

A.B. JONASSON, TH. BJARNASON, N. GUSTAVSSON, E.TH. INGOLFSSON, O. SKARPHEDINSSON, A.N. ANDRESSON - *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**

L TIMASHOVA, Y SHAKARIAN, S KAREVA, V POSTOLATI, E BYCOVA, Y GORYUSHIN - *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, V. SURANGE, P. MURUGAN, S. DESHMUKH, P.S. VERMA, M.V. DEODHAR - *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, C. H. PARK, S. G. BAN, H. K. 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 Efficencies in Conductor Stringing**

A OSCAR, S NEVE - *UNITED KINGDOM*

B2-210 **A novel HTLS thermo-mechanical model: applications to Italian OHTL.**

P PELACCHI, G LUTZEMBERGER, M GIUNTOLI, D POLI, F BASSI, G GIANNUZZI, A PICCININ - *ITALY*

B2-211 **Real Time Measurements for Online Monitoring and Intelligent Management of High Voltage Transmission Lines**

C. MOLDOVEANU, A. RUSU, M. FLOREA, M. VAJU, N. BALTA, I. HATEGAN, S. ZAHARESCU, M. AVRAMESCU, P. CURIAC, V. AURELIAN, B. TOADER, I. IONITA, F. GONI, C. RADU, AL. SZLIVKA - *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 uprating 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**

A. LOIGNON - *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 Hydrophobicity Effects and Erosion Resistance 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**

P BERARDI, M FORTELEONI, M MARZINOTTO, A PICCININ, A POSATI, M REBOLINI - *ITALY*

B2-310 **Development of 1250mm2 Large Cross-Section Conductors for UHV DC Transmission Lines**

K.J. ZHU, B. LIU, Z. LIU, Y. QI, J.J SI, Y.F. CHENG, J.C. WANG - *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**

P. KALKY, R. BHARAT, S. DEY, S. MAKWANA - *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 145 kV 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 **ABB PASS M0S 420kV for transmission substation**
M. SPINELLI, R. CAMERONI, C. GRANATA - *ITALY*

B3-113 **CANCELLED - Pilot project principles for a digital substation**

B3-114 **An Autonomous Intelligent Robot for Electronic Equipment Inspection Used in Substation**
L. LI, G.B. WU, S.Y. MU, M.C. FU, J. L. ZHAO, R. GUO, J.X. LI - *CHINA*

B3-115 **High Frequency Current in the Power System and Its Influence on Transfer Accuracy of Electronic Current Transformer**
C. ZHANG, X. N. KANG, Y. K. ZHENG, J.F. JI, M. Z. LIU, Y. B. YUAN - *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, F.N. FRAGA, A.V. GODOY, P.R.P SIMÕES - *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.M. SHETH, S.K. JADAV, B.J. PATEL - *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, W EYRICH, R GACANOVIC - *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, K. HINKLEY - *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 a Hypoxic Fire Prevention System**

M VERRIER - *AUSTRALIA*

B3-304 **Operational Experience In 1200kV (UHVAC) National Test Station, India**

B.N. BHOWMICK, I.S. JHA, S.B.R RAO, R. DHYEYA SHAH, R. SRIVASTAVA, R.K. SINGH, PROF. S.V. KULKARNI, S. KUMAR - *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, Y.M KIM, S.W KIM, J.B KIM - *KOREA*

B3-306 **CANCELLED - Experiences in Gas Insulated Substation tests, on factory and acceptance test on site after installation**

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**

F. GARNACHO, A. KHAMLICHI, G. DONOSO, G. DENCHE, A. VALERO - *SPAIN*

B3-309 **Impact of Renewable Grid Code compliance on Substation design**

J.M. GALLEGO, A. CASTRO, A. MELERO, S. MINGUEZ - *SPAIN*

B3-310 **Enablers for Cost Saving in Air Insulated Substation Asset Management**

H. CUNNINGHAM, R. MIGNE, A. WILSON ON BEHALF OF CIGRE WG B3.32 - *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., A.M. SILVA, J.H. ALMEIDA, T.C RIZZOTTO, M.J. XIMENES, F. ALVES, A.M. PENA, O.J. ROTHSTEIN, R. RISTOW, R. AZEVEDO, J.A CARDOSO, R. BROETTO, M.P. MONTEIRO, A. DIAS JR, F.C. JUSAN - *BRAZIL*

B4-102 Semi-fullbridge Modular Multilevel Converter: An Inherent DC Fault Current Limiting Topology

E.H. WATANABE, J.R. LEBRE, P.M.M PORTUGAL - *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, N. KUMAR, B.B. MUKHERJEE, R. KUMAR, M.M. GOSWAMI, O. CHANDY - *INDIA*

B4-110 AC-DC Interaction Study For Upcoming ± 800 kV, 3000 MW Champa Kurukshetra HVDC Link

M. VARDIKAR, V. SINGH, M.S. RAO, V. BAGADIA, M.M. GOSWAMI, O. CHANDY - *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, H KIM, J KANG, S KIM, J NA, D LEE, Y KWON - *KOREA*

B4-116 Test Circuit for Voltage Sourced Converter Valve in MMC-Based HVDC

Y. H. CHUNG, S. T. BAEK, J. H. LEE, E. C. NHO, J. H. JUNG - *KOREA*

B4-117 Operational experience of new Spain-France HVDC interconnection

J. BOLA, R. RIVAS, R. FERNÁNDEZ-ALONSO, G. PÉREZ, J. HIDALGO, L.M. CORONADO, C. LONGÁS, S. SANZ, G. LEMARCHAND, J. ROGUIN, D. GLAISE - *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, W LIN, S NGUEFEU, H SAAD - *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 penetration: TERNA's experience**

F. PALONE, M. DE SIMONE, S. GENTILI, G.M. GIANNUZZI, M. REBOLINI, R. ZAOTTINI - *ITALY*

B4-126 **Communication-free control solution for the provision of frequency regulation services in HVDC grids: Numerical simulation and experimental validation in a reduced scale platforms**

C.L. MOREIRA, J.R. GOUVEIA, J. RODRIGUES, B. SILVA, J.A. PEÇAS LOPES - *PORTUGAL*

B4-127 **Study of Backbone Structure Change from Synchronous to Asynchronous in China Southern Power Grid**

B.R. ZHOU, C. HONG, X.M. JIN, T. WANG, H.X. LI, L. HUANG - *CHINA*

B4-128 **Interaction btween parallel HVDC an 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 ±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 DolWin3 and evolution of GE's Grid Solutions Business VSC Solution**

D. FONTEYNE, P.L KHILAR, M BODEN - *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 Tucurui-Macapa-Manaus Interconnection Project**

A.R.M TENÓRIO, A.F.C AQUINO, A.A. NOHARA - *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, Y. S. HAN, Y. H. PARK, D. Y. LEE, J. K. JEONG, H. J. JEONG - *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

S.V. SMOLOVIK, A.N. BELYAEV, A.M. BRYANTSEV - *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-HS CHEN, C.G DINCAN, R.J OLSEN, MA-CH SHIMMELMANN, P. KJÆR, C.L. BAK - *DENMARK*

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

S HAY, G MCFADZEAN, C CLEARY - *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, A. CASCAES, D.G. FERREIRA, D. LELLYS, G.S. PENARIOL, J.C.M LIMA, M.R. BASTOS, P.H. FLORES, U.A. CARMO - *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 streamline Distribution Grid Management and Maintenance

Z. OJINAGA, I. AUZOKOA, J.M. GARCÍA, I. OJANGUREN - *SPAIN*

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

C. RODRÍGUEZ, E. VILLARREAL, J. FIGUERA, D. PRIETO, J. DELGADO, M. ORDUÑEZ - *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, A SUBBU - *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

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

B5-114 **Improving the Fault Location for Romanian Power Transmission Lines using the Existing Measurements**
M. DRAGOMIR, A. MIRON, GH. MORARU, A. DRAGOMIR - *ROMANIA*

B5-115 **Towards optimized digital substation automation systems**
R. PAULO, J. ELISEU, J.P. PEREIRA - *PORTUGAL*

B5-116 **Protection, Automation and Control (PAC) LifeTime Management for Transmission and Distribution utilities: Commonalities and Contrasts**
R HUEBNER - *NEW ZEALAND*

B5-117 **The Identification of Transmission Line Overload and Faults Based on Voltage Plane**
H.Z. LIU, Z.X. ZHOU, D.L. WANG, X.G. WANG, D.X. DU - *CHINA*

B5-118 **Reliability Improvements on IEC 61850 Process Bus Application**
L. LI, G. YANG, H. LV - *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**
T. GHANIZADEH BOLANDI, M-R. HAGHIFAM - *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, Y.S LYU, J.J YANG, S.H BYUN, J.H KIM, J.W CHO - *KOREA*

B5-204 **System Protection against Voltage Instability and Impact of Generator Protection**
C. VOURNAS, C. LAMBROU, V. NIKOLAIDIS - *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 System with Series Compensated Transmission Lines using a Real Time Digital Simulator (RTDS)**
R BUDHA, F HASHIESH, A TAYLOR, R ZHANG - *UNITED KINGDOM*

B5-210 **Offshore context and protection issues**
J CAZAL - *FRANCE*

B5-211 **Coordinating Generating Units and Power System Protections**

F. BALASIU, GH. MORARU - *ROMANIA*

B5-212 **HV Open Phase Detection Method Based on Symmetrical Components**

U AJMAL - *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. ZHUKOV, S. PAVLUSHKO, E. SATSUK, V. VOROBYEV, A. RASSHCHEPLYAEV - *RUSSIA*

B5-214 **High-speed Generator-transformer Unit Backup Protection Scheme**

Y ROMANOV, G. NUDELMAN - *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**

M.K. JANI - *INDIA*

C1-106 **Hazard Rate Model for Risk-based Asset Investment Decision Making**

G. FORD - *CANADA*

C1-107 **CANCELLED - Condition assessment risk engineering**

SC C1 SYSTEM DEVELOPMENT AND ECONOMICS

PS2: Interfac e 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, M.C. BRANDÃO, J.A.B MONTEVECHI, E.O. PAMPLONA - *BRAZIL*

C1-202 **Assessment of Island Interconnection Projects via HVDC Links of Partial Capacity: The Case of Crete**

S. PAPATHANASSIOU, M. PAPADOPOULOS, S. NANOU - *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, G HAWKER, K BELL - *UNITED KINGDOM*

C1-205 **Djibouti Transmission Master Plan at 2033 horizon**

L. CHARLIER, R. ADEN, J. DUBOIS - *DJIBOUTI*

C1-206 **Research on Power Grid Planning Data Model and Data Stream of State Grid Corporation**

P. HUANG, J. L. FENG, J. R. LI, F.Z. LUO - *CHINA*

C1-207 **Challenges in Realising the Potential of the GCC Interconnector**

MOHAMED SHAIKH - *GULF STATES COMMITTEE*

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, I.S. JHA, Y.K. SEHGAL, K. BHAMBANI - *INDIA*

C1-307 **Probabilistic Power Flow as an element of planning methodology**

W LUBICKI, M PRZYGRODZKI - *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**

J.L. FERNÁNDEZ, R. PEIRÓ - *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, S. AHOUSSOU, J. DUBOIS, B. JANSSENS - *IVORY COAST*

C1-315 **e-Highway2050: a research project analysing very long term investment needs for the pan-European transmission system**

G. SANCHIS, T. ANDERSKI, F. CARERI, N. GRISEY, G. MIGLIAVACCA, D. ORLIC - *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**

E ELIA, V VASCELLARI, P DI CICCO, S IBBA, D CANEVER, B COVA, A VENTURINI, P VICINI - *ITALY*

C1-318 **Application of innovative grid-impacting technologies in pan-European and regional case studies towards the EU Energy Union: the GridTech analyses**

A. L'ABBATE, H. AUER, C. VERGINE, O. D'ADDESE, A. SALLATI, P. TISTI, A. MANSOLDO - *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 the Efficient and Secure Transmission of Wind, PV and Thermal Power from Large-scale Energy Resource Bases through UHVDC Projects

Z.Y. LIU, Q. P. ZHANG, C. DONG, L. ZHANG, Z.D. WANG - *CHINA*

C1-321 Comparison between Deterministic and Probabilistic Methods for Evaluating Grid-Accommodative Wind Power Capacity

E.S. DU, N. ZHANG, C.Q. KANG, X.M. JIN, J.H. BAI - *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

P SOKUR, Y. DEMENTYEV, Y. SHAKARIAN, N. PINCHUK, V. NOVOZHILOV, V. TRETYAKOV, V. DYACHKOV, Y. KUCHEROV, D. YAROSH, A. MAYOROV, A. SHABASH - *RUSSIA*

SC C2 SYSTEM OPER ATION AND CONTROL

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

C2-101 Using a Static and 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, L.P. ALMEIDA, R.P. FERNANDES, J.A. PASSOS FILHO, F.L. LIRIO, R.M. HENRIQUES, P.O. LA GATTA, S. GOMES JR - *BRAZIL*

C2-102 Improvement of Technical Requirements for Connecting Wind Plants in the Brazilian Interconnected Power System

S.L.A SARDINHA, S.J.N CISNEIROS, M.J. BOTELHO, P. GOMES, D.O.C BRASIL, F.C. MEDEIROS, A. BIANCO, A.D.R MEDEIROS, P.E.M QUINTÃO, A.A. BARBOSA, F.R. SOBRAL - *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**

J DRAGOSAVAC, Ž JANDA, D ARNAUTOVIC, T GAJIC, S DOBRICIC, J MILANOVIC, S SUBOTIC, B MIHIC - *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**

G BRUNO, E CARLINI, R SALVATI, L CAMPISANO, V AGNETTA, P PAU, M STORI, C CANDIA, F ISELLA - *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, F. BALASIU, D. FIRICA - *ROMANIA*

C2-122 **Probabilistic dimensioning of tertiary control reserve driven by the intermittency of renewable generation in Portugal**

N. PINHO DA SILVA, R. PESTANA - *PORTUGAL*

C2-123 **Stability Control Strategy and Operation of Large-Scale UHVAC/DC Hybrid Power System**

T. XU, M.J. LI, J.B. HE, Z. YU, J.Y. ZHANG, J. YI, X.C. REN, H.T. ZHANG - *CHINA*

C2-124 **New Ancillary Service to Mitigate Determistic Frequency Deviations**

B.H. BAKKEN - *NORWAY*

C2-125 **Automatic device of monitoring of stability margins**

A. LISITSYN, P. KATS, S. CHAPLUK, M. EDLIN - *RUSSIA*

SC C2 SYSTEM OPER ATION 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 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.**

J. AGÜERO, R.D. MOLINA, J.C. BARBERO, F. ISSOURIBEHERE - *ARGENTINA*

C2-206 **Control of wind farm and VSC-HVDC to enhance frequency reserve**

G. JANG, H KIM, K KIM, Y YOO, B KO - *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 to address Emerging Requirements related to Inertia, Stability and Power Transfer in the GB Power System**

D WILSON, S CLARK, S NORRIS, J YU, P MOHAPATRA, C GRANT, P ASHTON, P WALL, V TERZIJA - *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**

V. DIYACHKOV, E. REPINA - *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 **Electrocution 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**

R VANADIA, M. REBOLINI, S. TOSI, N. DI PIETRO, E. SENATORE, R. POLITO - *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**

C. WALL, P. ARNERA, B. BARBIERI - *ARGENTINA*

C3-204 **3D multi-viewpoints environment to analyze the visual impact of overhead lines**

F.J. 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**

M. GRBIC, D. SALAMON, A. PAVLOVIC - *SERBIA*

C3-206 **CANCELLED - Visual Impact provision**

C3-207 **On the use of the HMCPL shielding system in renewing the underground HV power lines in big cities**

P RIBALDONE, G. LAVECCHIA, A. CANOVA, L. GIACCONE - *ITALY*

C3-208 **CANCELLED - The citizens and local authorities views on actions taken to enhance public acceptance of a 380kV grid extension project**

C3-209 **Life cycle assessment of the UGC transmission system in Iceland**

H. HROLFSDOTTIR, M. PALSSON, I. HJARTARSON, A. KJELD, G.M. INGOLFSDOTTIR, H.J. BJARNADOTTIR - *ICELAND*

C3-210 **Environmental Impact and Prevention analysis for urban Substations**

J. WANG, W. HUANG, Y. QIANG - *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, A.L. MUSTAFA - *BRAZIL*

C3-302 **Enhancing resilience of the North Indian Power System against pollution and foggy weather - An Experience**

R.K. PORWAL, V.K. AGRAWAL, K.V.S BABA, S.R. NARASIMHAN, N. YADAV, ANKIT GUPTA, S.S. GOYAL - *INDIA*

C3-303 **An approach to dealing with visual impact of existing high voltage transmission lines**

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, M.P. CARLI, P.F. RIBEIRO - *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**

A. DÍAZ, L. SOTO, L.F. BEITES, M. ÁLVAREZ - *SPAIN*

C4-109 **STORE: A Comprehensive Research and Demostration Project on the Application of Energy Storage Systems in Island Power Systems**

L. ROUCO, I. EGIDO, E. LOBATO, L. SIGRIST, A. BARRADO, P. FONTELA, J. MAGRIÑÁ - *SPAIN*

C4-110 **Power Intensive Energy Storage and Multilevel STATCOM for frequency and voltage grid support**

E. SPAHIC - *GERMANY*

C4-111 **Challenges in harmonic assessments of non-linear load connections**

L KOO, Z EMIN - *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/CIRED JWG C4.24**

F. ZAVODA, M.H.J. BOLLEN, S.K. RONNBERG, P. CIUFO, R. LANGELLA, G.C. LAZAROIU, J. MEYER - *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**

N. DI PIETRO, R. BENATO, S. DAMBONE SESSA, R. POLITO, M. ANDRIOLLO - *ITALY*

C4-116 **Electrochemical Energy Storage Systems and ancillary services: the Italian TSO's experience**

G BRUNO, E.M. CARLINI, S. GIONCO, C. MARTARELLI, L. ORTOLANO, M. PETRINI, L. ZARETTI, R. POLITO - *ITALY*

C4-117 **Impact of Photovoltaic Power Systems Control on Romanian Power Quality as Measured in the Connection Common Points**

D. ILISIU, D. STANESCU, P. POSTOLACHE - *ROMANIA*

C4-118 **Assessing Inverter Based Generation Exposure to Voltage Sags**

A. SANTOS, M.T. CORREIA DE BARROS - *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, D.M. CORREIA, A.C. CARVALHO - *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, CLAUS LETH BAK, FILIP FARIA DA SILVA, B. ENDAHL, J. HOLBØLL - *DENMARK*

C4-206 **CANCELLED - Numerical investigations of transient voltages in high voltage networks related to Insulation Coordination**

C4-207 **Analysis of opportunities to improve the HVDC SwePol Link operation due to commutation failures**

M PRZYGRODZKI, 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 measurements on the 230 kV malta-Sicily Interconnector**

F PALONE, M. REBOLINI, S. LAURIA, M. MACCIONI, M SCHEMBARI, J.P. VASSALLO - *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 Techniques on Transient Process of Lightning Striking Overhead Transmission Lines**

S.J. XIE, J.M. LI, R. ZENG, Y. ZHANG, C. J. ZHUANG, H. WANG - *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. KHALILNEZHDAD - *NETHERLANDS*

C4-305 **HVDC system modeling coherence between EMT and phasor domain tools**

S DENNETIERE - *FRANCE*

C4-306 **SOME MEANINGFUL EXAMPLES OFSEQUENCE THEORY USE LIMITATION**

R BENATO, S DAMBONE SESSA - *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 Markets**

X. VIEIRA FO., R. HOCHSTETLER, J.C. MELLO, L.A. BARROSO - *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, A DALLAGI, R BELHOMME, M TROTIGNON, R JOVER, L GLORIEUX - *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. HANSEN, R. CABRAL, H. LEME, L.F.S ROSA, R. SACCHI, D. MACIEL, L. BARROSO - *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, V.K. AGRAWAL, S.S. BARPANDA, S.C. SAXENA, K. DEY, K.V.N PAWAN KUMAR - *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 STUCTURE 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, K BELL, S GILL - *UNITED KINGDOM*

C5-213 **Capacity Mechanisms: Results from a World Wide Survey**

H. HÖSCHLE ON BEHALF OF CIGRE WG 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 **Techno-economic analysis and simulations of the transmission and distributions systems interactions in different regulatory frameworks**

G. PETRETTO, M. CANTU', G. GIGLIUCCI, N. NATALE, F. PILO, G. PISANO, G.G. SOMMA, M. COPPO, R. TURRI - *ITALY*

C5-216 **Implementation of a Strategic Reserve in Belgium: Product Design and Market Results**

H. HOSCHLE - *BELGIUM*

C5-217 **Study on Key Issues of Direct Trading between Power Users and Plants**

X. ZHANG, B. PANG, L.J. SHI, J. GENG, Y. X. ZHENG - *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, S. RAMYAR, M.P. ARABANI - *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, E. NEVES, L. BARROSO, J. MELLO, J.W.M LIMA, J. DUTRA, A. PIMENTA, H. SOUSA - *BRAZIL*

C5-302 **Experiences and Lessons Learned based on Distributed Generator of EGCO in Thailand Power Grid**

W SINSUKTHAVORN, G BUMROONGGIT, S POCHANART - *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 wthin the ADVANCED project**

M. LOMBARDI, S. DI CARLO, S. DE FRANCISCI, S. BRAMBILLA, O. FRANZ, P. FRIAS, M. VALLES, M. SEBASTIAN VIANA - *ITALY*

C5-306 **Project SMART – lessons learned from the emergency DSR programmes involving residential consumers and the aggregator**

M KRUPA, M SOBCZAK, K KULA - *POLAND*

C5-307 **DSO-TSO Interactions in Flexibility Contracting**

A. RAMOS - *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: IMPACTS, OPPORTUNITIES AND DIFFICULTIES FOUND**

P.H.R GAMA, A.R. AOKI, A.R. DONADON, F.S. RETORTA, E. VICENTINI, E. SILVA, L.H.M LEITE, M.E.M SOUZA, M. LOURENÇO - *BRAZIL*

C6-102 **Messaging for Enterprise Distributed Energy Resources**

J SIMMINS - *USA*

C6-103 **Learning from a 3.275 MW Utility Scale PV Plant Project**

T SAHA - *AUSTRALIA*

C6-104 **Dynamic distribution system planning considering distributed generation and uncertainties**

D FRANCO, A VARGAS, 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, N. H. CHO, S. W. LEE, I. H. LIM - *KOREA*

C6-107 **Impact of Distributed Energy Resources and Normally Open Switches on the Operational Performance of Low Voltage Distribution Networks**

E.N. DIALYNAS, L.G. DAOUTIS - *GREECE*

C6-108 **An Adaptive Protection Infrastructure for Modern Distribution Grids with Distributed Generation**

G. KORRES, V. PAPASPILIOTOPOULOS, N. HATZIARGYRIOU - *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**

R. GONZÁLEZ, M. BOCOS, J. Mª MAZA, E. ROMERO, I. DÍAZ, A. GASTALVER - *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**

G. MAJSTROVIC, T. BARICEVIC, M. SKOK, W. POLEN, A. DOUB, G. STRMECKI - *CROATIA*

C6-114 **Key findings of a study into the development of future GB systems integrating low carbon technologies and smart solutions**

J KING, G WILLIAMSON, V LEVI - *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, A. TRAORE, S. RAPOPORT - *IVORY COAST*

C6-117 **Prosumers' Battery Electrical Storage Systems: new ancillary services, impact on network planning and operation**

F. CAZZATO, M. DI CLERICO, L. COCCHI, C. NOCE, C. PEZZATO, G. CANEPONI, V. BUFANO - *ITALY*

C6-118 **Real field testing results of the innovative Medium Voltage control system developed in the Italian Demonstrator of GRID4EU**

D. STEIN, L. CONSIGLIO, G. VIGANO', C. MICHELANGELI, C. CARLINI, D. MONETA - *ITALY*

C6-119 **Linear Optimization for Active Distribution Systems Operation Considering Demand Response Mismatch**

Y. WANG, Q.X. CHEN, C.Q. KANG, J.Q. MIAO, J.H. BAI, M. MIAO - *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, IKER DIAZ DE CERIO MENDAZA, B. BAK-JENSEN, J. RADHAKRISHNA PILLAI - *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, S.A. KHAPARDE - *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, A. GONZÁLEZ, A. ARZUAGA, C. MARTÍNEZ, L. MARRON, M. PINTADO, S. RIAÑO - *SPAIN*

C6-207 **CANCELLED - Navigating the complex world of Energy supply and demand**

C6-208 **Planning studies for active distribution grids in presence of EVs charging stations: simulation on areal test network**

M. DI CLERICO, G. CANEPONI, F. CAZZATO, S. COCHI, M.C. FALVO, M. MANGANELLI - *ITALY*

C6-209 **The Integrated Model for Marketing and Distribution Information - Integration Architecture, Implementation and Validation**

L. GE, L.Y. PENG, H.B. ZHONG, T. F. KANG, F.Q. ZHAO, M. J. QI, H. LENG - *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 and Management to Interconnect Distributed Energy Resources into Distribution Networks**

H.K KANG, S. S. CHO, B.N HA - *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 Optimal Hybrid Multi-Generation sets**

E. GHIANI, G. CELLI, S. MOCCI, G.G: SOMA, C. VERTUCCIO, F. PILO - *ITALY*

C6-310 **The Hybrid Energy Storage System based on lithium-ion batteries and supercapacitors**

A.N. NOVIKOV, A.Z. ZHUK, K.K. DENSCHIKOV, N.L. NOVIKOV, T.YU, ZHORAEV, YU.N. KUCHEROV, E.A. BUZOVEROV - *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 higher altitudes**

L. DONZEL - *SWITZERLAND*

D1-108 **DIELECTRIC PERFORMANCE BY ELECTRODE SURFACE PRETREATMENT AND MULTI-LAYER COATINGS IN GIS**

J. H. SON, J. Y. SHIM, D. J. PARK - *KOREA*

D1-109 **Tracking and Erosion Tests for SR Composite Insulators under DC Voltage**

X.D. LIANG, S.H. LI, Y. CHEN, Y. YIN, Z.Y. LI - *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, Z WANG, P JARMAN, G WILSON, R HOOTON, D WALKER, P DYER, CH KRAUSE, PWR SMITH, A GYORE, R MARTIN, P MAVROMMATIS, J NOAKHES - *UNITED KINGDOM*

D1-202 **Preliminary study for use of vegetable esters in big power transformers**

F SCATIGGIO, M. REBOLINI, C. SERAFINO, A. VALANT - *ITALY*

D1-203 **Molecular Simulation and Experiment of Transformer Cellulose Insulation Paper Modified by Nano Al2O3**

C. TANG, S. ZHANG, Q. ZHOU, X. LI - *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 **Thermoplastics for LV Switchgear Application**

BEEMA THANGARAJAN R, S.H. CHETWANI - *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 Frequency Response Analysis Automation**

D TUSEK - *AUSTRALIA*

D1-302 **Diagnostic control of oil-paper insulation based on method of “direct” measurement of paper moisture content**

L.A. DARIAN, A.A. KOZLOV, A.V. KOZLOV, V.P. POLISTCHOOK, A.V. SHURUPOV, N.A. MATVEEV - *RUSSIA*

D1-303 **Development of a brand new spectrophotometric method for analysis of 2-furfuraldehyde in transformer oil as an indicator of paper degradation. An easy, rapid and inexpensive method to analyse furans**

J. JIMÉNEZ, B. REMARTÍNEZ - *SPAIN*

D1-304 Dissolved Gas Analysis Applied to on Load Tap-Changers

C.D. SESSA, A.C.P MARTINS, L.M.M CHAVES, D.J. VASSALO, M.J. PROENÇA - *BRAZIL*

D1-305 A study of liquid-immersed transformer reference insulation systems used to determine thermal class

H.M. WILHELM, L. LANGER, G. DAL PONT, P.O. FERNANDES, L.G. FEITOSA, R.P. MAREK, L. GALHARDO, E. WANG - *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

I. J. SEO, Y. J. LEE, W CHOI, B. W. LEE, J. Y. KOO, J.T KIM - *KOREA*

D1-307 Signal processing and study of the ripple influence in PD patterns for measurements under HVDC stress

M.A. SÁNCHEZ-URÁN, F. GARNACHO, F. ÁLVAREZ, G. DONOSO, J. ORTEGO - *SPAIN*

D1-308 A Review of Dielectric Strength with Distorted Lightning Impulses

R. DÍAZ, J.N. SILVA - *ARGENTINA*

D1-309 Insulation Evaluation of High-voltage Insulation Systems for Actual Overvoltage Waveforms and Practical Field Conditions

S. OKABE - *JAPAN*

D1-310 Correcting the Errors of Large Impulse Ultra High Voltage Dividers with the Deconvolution Method

Y LI - *AUSTRALIA*

D1-311 Investigation of mechanical strength for station post composite insulators subjected to variable loads

J WANKOWICZ, J BIELECKI - *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., R. ALMEIDA, L. VENTURA, A.S. ARAUJO, D. SANTOS, J.P. SAUVE, N. MELO - *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

H.J KIM, Y.I KIM, C.S SONG, M.H LEE, B.S KIM, Y.H SHIN, Y.S CHO, G JANG - *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

I. BENÍTEZ, A. QUIJANO, I. DELGADO, J.L. DÍEZ - *SPAIN*

D2-109 COCO: Operational control of construction

A. CADENAS, A. SÁNCHEZ, S. SÁNCHEZ - *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 Portable 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, P. ANDERSSON, I. IVANKOVIC, K. ZUBRINIC-KOSTOVIC, D. PEHARDA, J.E. LARSSON - *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 solution adopted within the ENEL Info+project**

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 Load Flow Hybrid Method for Modern Power Systems Control Centers**

Y.Q. YAN, Y.Z. XIN, H.Z. TAO - *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, R TERRUGGIA, P. WYLACH, G. PUGNI, F. BELLIO - *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, H.K RATHOUR, P. MAURYA - *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**

A BABS, J SWIDERSKI, M TARASIUK - *POLAND*

D2-305 **MAGIC – A Microgrid AGent Intelligent Control Device**

N. HATZIARGYRIOU, A. DIMEAS, I. VLACHOS, I. KOUVELIOTIS-LYSIKATOS, D. KOUKOULA, S. MAKRYNIKAS, M. KOUVELETSOU - *GREECE*

D2-306 **PLC MV telecommunications: An evolution path for sustainable private telecom networks enabling smart grid applications**

T. ARZUAGA, D. GIL, J.A. MORENO, A. ARZUAGA - *SPAIN*

D2-307 **IT and OT integration to improve outage management**

M WILLSON, M CANTABRANA - *UNITED KINGDOM*

D2-308 Study on Evolution of Communication Infrastructure for Smart Grid Operation and Management
B.Y. HUANG, X. M. BAI, Q. S. CUI - *CHINA*

D2-309 MPLS-TP AS PACKET PLATFORM FOR CRITICAL SERVICES IN POWER TRANSMISSION
J. RAMIREZ, H. CABRERA, O. BAUTISTA - *VENEZUELA*

D2-310 Communication network toward the realization of a new power distribution automatic control system
H. DOI, K. SHIMOOSAKO, T. ITO, H. NAKAGAWA - *JAPAN*