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| B3-214  | Application of new asset management methods to sub-transmission networks in Mexico | M. SCHWAN, M. ESQUIVEL, C. NABTE, S. SÁNCHEZ, E. ARROYO                    |
B3-215 GIS substation maintenance combined with uprating
A.V. MAYOROV, V.I. ROGOV, L.J. SHUR, G.M. VERULIDZE, I.V. BABKIN, A.S. PELTS

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B3-301 “Smart Switchgear” using IEC Standard 61850 - First experience gained with a pilot project in a 380/110 kV substation

B3-302 Intelligent compact substation of power distribution
J.M. BYEON, I.G. LEE, S.W. LEE, Y.G. KIM

B3-303 Verification and maintenance procedures for IEC 61850 substations
N. ETHERDEN, G. KIMSTEN, V. TIESMÄKI

B3-304 Case study: implementation of IEC 61850 in Java-Bali transmission system
F. TRAFIANTO, N. ERDIANSYAH

B3-305 Innovative revenue metering with existing protection rated instrument transformers to enable new metering challenges
M. VAN DER MEIJDEN, M. VAN RIET, G. RIETVELD, F. BALDINGER

B3-306 Impact of the IEC 61850 process bus on substation design
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T. WESTERWELLER, U. ARMONIES, A. ORINI, D. LORDMAN, R. HILLMAN, B. RAILING

B4-102 The Xiangjiaba-Shanghai 800 kV UHVDC project - Status and special aspects
V.F. LESCALE, U. ÅSTRÖM, W. MA, Z. LIU

B4-103 Concept to design – Multi-terminal at 800 kV HVDC: NER/ER – NR/WR interconnector - I project in India
A. KUMAR, V.F. LESCALE, L-E. JUHLIN, R.K. CHAUHAN

B4-104 Characteristics and benefits of modular multilevel converters for FACTS
M. PEREIRA, A. ZENKER, M. CLAUS

B4-105 Technical feasibility and research and development needs for ± 1000 kV and above HVDC system
R.N. NAYAK, R.P. SASMAL, Y.K. SEHGAL, M. RASHWAN, G. FLISBERG

B4-106 Viklandet and Tunnjsjødal SVCs – Design, project execution and impact on grid utilization
M. MEISINGSET, O. SKOGHEIM, B. EKEHOV, K. WIKSTROM

B4-107 The use of a static synchronous series compensator (SSSC) for power flow control in the 220 kV Spanish transmission network

B4-108 Reliability study methodology for HVDC grids
K. LINDÉN, B. JACOBSON, Y. YANG, J. LUNDQUIST

B4-109 Continental overlay HVDC-grid
G. ASPlund, B. JACOBSON, B. BERGGREN, K. LINDÉN

B4-110 HVDC VSC transmission with cascaded two-level converters
B. JACOBSON, P. KARLSSON, G. ASPlund, L. HARNEFORS, T. JONSSON

B4-111 A new hybrid voltage-sourced converter topology for HVDC
C.C. DAVIDSON, D.R. TRAINER, D.M. OATES, R.W. CROOKES, N.M. MACLEOD

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B4-202 Aysén-SIC HVDC transmission system: planning studies
G. OLGUIN, J.C. ARANEDA, R. LA FUENTE

B4-203 HVDC VSC (HVDC Light) transmission – operating experiences
S. DODDS, B. RAILING, K. AKMAN, B. JACOBSON, T. WORZYK, B. NILSSON

B4-204 The Rómulo project, Spanish peninsula – Mallorca (243 km, 250 kV, 2x200 MW): first Spanish HVDC link
J. PRIETO, R. GRANADINO, E. BETTEN, G. CURTOTTI, H. WEINKAUF, C. VELÁZQUEZ

B4-205 FACTS for enabling wind power generation
P. MUTTIK, J. HADDOW, C. CHALMERS, G. GUM GEE, N. PAHALAWATTHA
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M. LAHTINEN, T. RAUHALA, H. KUISTI, J. PELTOLA, P. HALONEN

**B4-207** 450 MVA Statcom installation plan for stability improvement
T. AKEDANI, J. HAYASHI, K. TEMMA, N. MORISHIMA

**B4-208** Design studies for the 3150 MW, ±600 kV UHVDC Bipole 2 of the Rio Madeira long distance transmission project in Brazil
N.M. MACLEOD, B.T. BARRETT, S. CHAKRABORTY

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N.S. DHALIWAL, A. LEIRBUKT, M.G. BENNETT

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T. SAKAI, K. TAKAHASHI

**B4-302** Caprivi Link HVDC Interconnector: Site selection, geophysical investigations, interference impacts and design of the earth electrodes
T.G. MAGG, H.D. MUTSCHLER, S. NYBERG, J. WASBORG, H. THUNEBED, B. SANDBERG

**B4-303** Power quality assessment when integrating an HVDC link to existing power grids
X. YANG, Y. XIAO, S. NGUEFEU

**B4-304** HVDC-interaction-strength index for systems with multiple HVDC infeeds
X.M. JIN, B.R. ZHOU, L. GUAN, X. CHENG, Y. ZHANG

**B4-305** Multi-terminal HVDC grid for network interconnection and renewable energy integration
L. YAO, L. XU, M. BAZARGAN, R. CRITCHLEY

**B4-306** HVDC Madeira transmission system - planning development and final design
P.C.V. ESMERALDO, E.M.A. ARAUJO, D.S. CARVALHO JR.

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**B5-102** New solutions for substation automation, protection and control based on IEC 61850 in cogeneration plants with integration to process automation
L.F. SANTOS, K.P. BRAND, P. REINHARDT

**B5-103** Study on data transmission standard for RTDMS for power systems
Y. WANG, D. ZHANG, Y. YU, X. XIE

**B5-104** Scenarios for future substation automation systems
L. HOSSENLOPP

**B5-105** Future developments in protection, control and monitoring from a manufacturer perspective
N. SCHUSTER, H-J. HERRMANN, T. JACHMANN, J. HOLBACH

**B5-106** Current differential protection over ethernet
G. BABER, P. BEAUMONT, F. KAWANO

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A. WISZNIEWSKI, W. REBIZANT, A. KLIMEK

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P. CROSSLEY, R. LOKEN, J. FITCH, B. GWYN, C. MEMPEL, D. NOVOSEL, N. CASTRO MARTINS, J. CARDENAS

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F. GONZALEZ, J. NIZHOVOY

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J.M. ORDACCI FILHO, R.B. SOLLERO, W. BAASS, K.P. BRAND, I. DE MESMAEKER, T. WERNER

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M.A. EL-HADIDY, D.H. HELMI, M.S. ABDELHADY

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M. PETRINI, C. SABELLI, E. CASALE

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Intelligent relay protection development concept
A.F. DYAKOV, Y.Y. LIAMETS, G.S. NUDELMAN, A.N. PODSHIVALIN, J. ZAKONJSEK, A.V. ZHUKOV

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P.T. MYRDA, M. KEZUNOVIC, S. STERNFELD, D.R. SEVCIK, T. POPOVIC

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I. IVANKOVIC, S. SKOK, R. MATICA, I. ŠTURLIĆ

BHEL experience in implementation of IEC 61850 based substation automation system in India
A. SINHA, R. SINGH, G. CHAKLADER, D. DATTA

Practical experience with IEC 61850 multivendor systems and foreseeable future applications – a system integrator and end-user perspective
R. PAULO, F. MATOS

Performance considerations in wide area monitoring and control systems
M. CHENE, L. NORDSTRÖM

Substation-control centres communication
C. BRUNNER, W. BRODT, H. ENGLERT, K. RIAN, A. WEST, P. LHUILLIER

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E. GOUTARD, T. RUDOLPH, M. MESBAH

Specifications, requirements and experiences using IEC 61850 in the Iberoamerican region
C. SAMITIER, R. PELLIZZONI ON BEHALF OF RIAC JWG 61850

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J. ARRIOLA ALCIBAR, L. ANDERSSON, T. BERNSTEIN

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V. TERZIA, D. CAI, A. VACCARO, J. FITCH

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I.S. JHA, O. CHANDY, K. RATHORE, R. SRIVASTAVA

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B. AYUEV, P. EROKHINE, Y. KULIKOV

Ethernet network performance analysis and RSTP protocol behaviour in a complex topology proposed by Endesa for IEC 61850 substations
A. ARZUAGA, M. ZAMALLOA, B. GALLASTEGI, J. BADIA, R. MARTIN, A. HILAZO

Engineering approach for the end user in IEC 61850 applications
N. NIBIO, M. GENIER, C. BRUNNER, E. COTTENS, D. MULLER, J. REUTER

Deployment and interconnection of IEC 61850 islands
K.P. BRAND, A. MENON, H. SPIESS, P. SCHWYTER, W. WIMMER

Experience of protection system for distributed generator and grid-interconnection code in Japan
M. KAMINAGA, M. USUI, K. SEKIGUCHI, H. ITO, C. KOMATSU

Hydrogenerator as a black-starter for a power plant. Protection requirements
H. DYTTRY, M. NIEDZWIEDZIK, W. SZWEICER, S. WROBLEWSKA

Essential on cogeneration units protection
F. BALASIU, G. MORARU

Impact on the power system protection of high penetration of wind farms technology
I. DE LA FUENTE DEL CASTILLO, M.A. ORDUÑEZ DEL PINO, G. MOLINA ZUBIRI, S. LÓPEZ BARBA

Protection security assessment – going along with the development of today’s networks to smart grids
J. JÄGER, R. KREBS, F. BALASIU, F. BALASIU, F. LAZAR, P. LUND

The impact of renewable energy sources and distributed generation on substation protection and automation
J.A. GONZÁLEZ, A. DYŠKO, G. LLOYD

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Optimal control of microgrid resources
M. KROK, A. PALIZBAN, S. ALLEN, C. YIU, D. FINNEY, M. ADAMIKA

Impact of renewable generation on protection and disconnecting solutions – German practice and experiences
H.-J. HERRMANN, H. KÜHN, H. FÖHRING, A. LUDWIG, P. SCHERGNER

Islanding detection using an accumulated phase angle drift measurement
R.M. TUMILTY, H.T. YIP, A. DYSKO, G.M. BURT

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C1-101 Bilateral electric energy control; a new control concept of the grid for low carbon energy future
T. NITTA, Y. SATOH, Y. MITANI, H. SAITO, N. HIGUCHI, H. OHASHI

C1-102 First transmission grid plan with strategic environmental assessment in Portugal: added value to the electric system
M. PARTIDARIO, J. RICARDO, J. PERALTA, M. PINTO, B. AUGUSTO

C1-103 Grid integration of offshore windfarm Côte d’Albatre to the French transmission grid

C1-104 European wind integration study EWIS – towards a successful integration of wind power into European electricity grids
L. DALE, L. FISCHER, D. KLAAR, J-M. RODRIGUEZ, H. VANDERBROUCKE, W. WINTER

C1-105 Prospects for the transmission planning in Europe towards a sustainable energy future: the REALISEGRID project

C1-106 Multi-energy transmission – an option for system development?
H. PAVRE-PERROD, T. KRAUSE

C1-107 The Brazilian market-based expansion and low carbon energy future - issues and solutions
J.C. MELLO, M.R. SOUZA, F.V. MOREIRA, T.M. PRANDINI, S. ARECO

C1-108 Reliability assessment and planning of power generation systems for low emission energy performance
E.N. DIALYNAS, L.G. DAOUTIS, J. KABOURIS

C1-109 An innovative methodology of network planning within the national grid transmission system
B. TAN, L. FU

C1-110 A comprehensive approach for studying the economic and reliability impacts of greenhouse gas policies
S. VENKATARANAM, H. ELAHI, A. CHAHAL, J. LOVE

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C1-201 Research on large-scale wind power exploitation and long distance transmission planning method
J. DEXIANG, B. JIANHUA, X. SONGXU

C1-202 A novel transmission system planning method combining market simulations and load flow calculations for identifying bottlenecks in systems with large RES penetration

C1-203 Spatio-temporal correlations of available wind power and impact on transmission power flows

C1-204 Feasibility aspects of a synchronous coupling of the IPS/UPS with the UCTE
M. LUTHER, A. MENZE, J.M. RODRIGUEZ-GARCIA, D. PREOTESCU

C1-205 Grid Asset Management Suite (GAMS) for improved control of network cost and quality of supply
M. SCHWAN, T. GLÜCKSELIG, C. HEUER, S. MAUSER, B. BECKETT

C1-206 A mathematical structure for the assessment of transmission system augmentation in the Australian national electricity market
N. HOSSEINZADEH, M.R. HESAMZADEH, D. BIGGAR

C1-207 Assessing the market benefits of network augmentations in the presence of wind farms
D. BONES, L. STEEN, S. CLARK, T. MILLER, C. PARKER, D. SWIFT, J. SPURIO

C1-208 Wind farms as a source of uncertainty in a process of power system development planning – causes and effects
K. LIPKO, W. LUBICKI, M. PRZYGORODZKI

C1-209 Optimal storage location and layout in power supply systems
F.J. ADAMEK
C1-301 On uncertainties of reliability indices  
F. CAMARA NETO, M.TH. SCHILLING, A.M. LEITE DA SILVA, M.A.N. SILVEIRA, A.M. REI

C1-302 Large scale integration of renewable sources in the Brazilian bulk power system  
I. GARDOS, R.D. FURST, P. GOMES, A. BIANCO

C1-303 Long-term grid planning in the Netherlands  
P.G.H. JACOBS, M.A.M.M. VAN DER MEIJDEN, F.J.C.M. SPAAN, I. J. TIGCHELAAR

C1-304 The connection procedures for renewable generation within the transmission grid planning process. Situation and prospects in the Iberian power systems  
J. F. ALONSO LLORENTE, A. REIS RODRIGUES

C1-305 Analysis on integrating large scale wind power into power grid  
J. ZHAO

C1-306 The challenge of reducing energy losses in the electricity transmission system – RTE’s approach and objectives  
E. JAUSSAUD, F. CLERC, D. COISNARD

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K. MEISA, T. PAULUN, H-J. HAUBRICH, F. BERGER

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F.R.M. ALVES, R.M. HENRIQUES, J.A. PASSOS FILHO, A.P. GUARINI, D.M. FALCÃO

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C. LU, Y. HAN, X. WU, L. LI, J. WU

C2-103 Performance evaluation for K-WAMS under field operating condition of Korea power grid  
S.T. KIM, Y. KIM, S. SONG, Y.H. MOON, H. KIM, S.H. JANG, S.W. HAN, B. LEE

C2-104 Enhancing operational reliability of the UPS of Russia using automatic emergency control  

C2-105 Low frequency oscillations in the Colombian power system - identification and remedial actions  
O.J. ARANGO, H.M. SÁNCHEZ, D.H. WILSON

C2-106 Experience of the Belgian and French TSOs with the use of a real-time dynamic rating system called “Ampacimon”  
E. CLOET, J-L LILIEN, P. FERRIÈRES

C2-107 Design and implementation of a tool for assessment of secure level of wind on the Irish power system  
R. AHERNE, J. CONROY, D. CONNOLLY, R. DOYLE, I. DUDURYCH, H. JONES, A. ROGERS

C2-108 Design criteria for a load-shedding scheme: an extensive simulation approach in a Dynamic Security Assessment (DSA) environment  
G. GIANNUZZI, C. SABELLI, R. SALVATI, R. ZAOTTINI, C. CANDIA, M. CIGNATTA, A. DANELLI, M. POZZI

C2-109 Real time dynamic security assessment and control by combining FACTS and SPS  
K. SUZUKI, H. NISHIHIRI, T. KAWAHARA, T. MAEDA

C2-110 International power grid interconnections in Mexico  
M.A. AVILA, H.G. SARMIENTO, D. LEON

C2-111 Digital model power systems of real time for information support of dispatcher power systems  
M.A. RABINOVICH, JU.I. MORIN, S.P. POTAPENKO

C2-112 The application of wide area monitoring to the GB transmission system to facilitate large-scale integration of renewable generation  

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R. MOXLEY, G. ZWEIGLE

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C2-202 *Powergrid’s experience in evolving architecture needs in system control and operation; present and future prospects*
N.S. SODHA, A.S. KUSHWAHA, A.K. MISHRA, S. CHOHA

C2-203 *Lessons after few months running of a coordination centre in the Central Western Europe*
O. ARRIVE, F. BOULET, P. DE LEENER

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F. ILICETO, A. GUBERNALLI, H. ALIS, Y. DURUKAN

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C. NORLANDER, F. NILSSON, A-K. NYSTAD, J. SILTALA, S. RICHARD HANSEN

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O. BROCKART, J. VAN HECKE, J-L. LEONARD, J. RIMEZ

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C2-209 *Development of a Chinese standard on WAMS main station for further enhancement of real-time dynamics monitoring capability*
Y.J. FANG, D.N. ZHANG, D. YANG, Y. XIU, T.S. XIU

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M. KRAHOLD, R. PAPROCKI, Z. STYCZynski, O. ZIEMANN, M. MULLER-MIENACK, C. BÄCK, O.J. OLESEN

C2-211 *Voltage management system using hybrid voltage control to enhance voltage stability in Jeju power system*

C2-212 *Risk assessment methodology for operations applied to the Portuguese transmission system - the probabilistic model*
S.A.B. DE ALMEIDA, R. PESTANA, F.P. MACIEL BARBOSA

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S. MARTIN, B. YEP, M. ABEL

C3-102 *Environmental studies for power transmission corridors selection: how AHP (analytical hierarchical process) can help*

C3-103 *Evolution of environmental transmission lines in Brazil - improvements, challenges and prospects*

C3-104 *RTE’s actions and agreements with stakeholders aiming at promoting biodiversity in forests channels*
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S.V. DESHMUKH, D. RAINA, P. MURUGAN, S.S. PATHAK, A.F. JACHIM, H.E. DEVE

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S. ABE, M. NASHIMOTO

C3-107 *How can stakeholders’ specific information needs for potential health risks from chemicals be identified?*
H. KUBOTA, M. KOSUGI, T. TSUCHIYA

C3-108 *Camouflage of power lines to reduce visual impacts and enhance public acceptance*
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C3-109 *Management of safety corridor for Transselectrica 220 – 400 kV OHL transmission lines*
I. MERFU, P. STROICA
C3-110 Reduction of the electrical potential of interfered pipelines due to currents of high voltage power lines and electric railways comparison of simulations and measurements
L. FICKERT, E. SCHMAUTZER, M. LINDINGER, R. BRAUNST

C3-111 Contribution of hydro-generation to the Egyptian energy need and environment
R.M. RADWAN, M.M. AWAD, M.M. FARAG ALLAH

C3-112 Regularly cleared right-of-way; an important habitat for grassland and bog butterflies and vegetation
A. LEVULA, T. LENSU

C3-113 Innovative approach of the potential impact of HV lines on their environment: the experimental farm
F. DESCHAMPS , L. DEVEAUX, K. RIGALMA, C. DUVEAUX-PONTER

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C3-202 Analysis of socio-environmental costs in the operational phase of hydropower projects in Brazil
A.L. MUSTAFÁ, M.R. NUTI

C3-203 Procedures to evaluate socio-environmental costs during the planning phase of transmission systems
F.P. SERRAN, H.M. VIEIRA, K. MATOSINHO, R.C. FURTADO

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C3-205 External costs of transmission: State of RTE’s knowledge and practical experience
E. SERRES, J. ISOARD

C3-206 The external costs evaluation for power transmission: focus on overhead lines
P. GIRARDI, S. MARAN, C. BRAMBILLA

C3-207 Environmental and social cost experiences on large transmission line projects in California
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C4-102 Considerations about the energy absorbed by non gapped line arresters applied on 230 kV overhead transmission lines
J.L. DE FRANCO, J. PISSOLATO FILHO, A. DA C.O. ROCHA

C4-103 3D numerical computation of the induced potential distribution on buried pipelines by neighbour HV lines working on normal and fault conditions
C. MUNTEANU, G. VISAN, C. DIACONU, I.T. POP, V. CHATZIATHANASIOU, L. BORTELS, V. TOPA

C4-104 Harmonic spectrum assessment for low voltage customers in IDECO with a focus on variable harmonic filter design
M.H. ABDERRAZZZAQ, M.M. KASSAWNH, A.R. ALWEDIAN

C4-105 Novel multi-port equivalent including several detailed subsystems for EMTP-simulation
G.S. BYEON, C.S. SONG, G.S. JANG

C4-106 Allocation of emission limits for individual emitters at different voltage levels: flicker and harmonics
M. BOLLEN, M. HÄGER, M. OLOFSSON

C4-107 CIGRE/CIRED/UIE joint working group C4.110, voltage DIP immunity of equipment in installations – main contributions
M. BOLLEN ON BEHALF OF JWG C4.110

C4-108 Fault location in active distribution networks by means of the continuous-wavelet analysis of fault-originated high frequency transients
A. BORGHETTI, M. BOSETTI, C.A. NUCCI, M. PAOLONE, A. ABUR

C4-109 Steady-state and transient EHV AC cable shunt reactive compensation assessment
R. BENATO, S. LAURIA, F.M. GATTA, L. COLLA, F. RENAUD

C4-110 Power quality monitoring in the Romanian power grid
C. STANESCU, S. PISPIRIS, P. POSTOLACHE, J. WIDMER

C4-111 Harmonic analysis using wavelet technique in a large scale power quality monitoring system
M.A. EL-HADIDY, D.H. HELMI, A.A. ALOKABI
PS2: Advances in insulation coordination and lightening knowledge for improved performance of electric power systems

C4-201 Lightning shielding failure analysis of 1000 kV ultra-high voltage AC transmission line
J. HE, R. ZENG

C4-202 Research on the wave-front correction coefficient used in the discharge of switching surge in 1000 kV and 750 kV transmission line
Y.C. YUAN, J.Y. GUO, L. LIU, C. DENG

C4-203 Modelling of overhead power line insulation using modern numerical tools - advantages and limitations in practical application
P.H. PRETORIUS, R.G. STEPHEN, D. MUFTIC, S. SADOVIC, K. SOKOLIJA

C4-204 Large-scale experimental field tests of practical earthing systems under transient conditions
H. GRIFFITHS, N. HARDI, D. GUO, A. HADDAD, A. AINSLEY

C4-205 Lightning current measurement on an overhead line equipped with line arresters
A. XEMARD, S. SADOVIC, T. SADOVIC, M. MESIC, M. PUHARIC, A. GUERRIER

C4-206 An investigation into lightning exposure of massive structures
F.A.M. RIZK

C4-207 Observation results of lightning shielding and improvement in the prediction method for the lightning failure rate with large-sized transmission lines
S. OKABE, S. TANIGUCHI, T. TSUBOI, H. OHTA, E. ZAIMA

PS3: Techniques and tools for power balancing assessments and risk-based security assessment

C4-301 Cancelled - Using adaptive control techniques for the secondary frequency controller design
S. STERPU, R. RICHARD

C4-302 Risk evaluation in power system contingency analyses
E. CIAPESSONI, D. CIRIO, E. GAGLIOTI, S. MASSUCCO, A. PITTO, F. SILVESTRO

C4-303 A method for reliability assessment of active distribution networks
G. CELLI, E. GHIANI, S. MOCCHI, F. PILO, G. PISANO, G.G. SOMA

C4-304 Development of load frequency control simulation tool
T. INOUE, H. AMANO, K. HANAMOTO, W. WAYAMA, H. MATSUMOTO, Y. ICHIKAWA

C4-305 IEA ENARD: international collaboration on developments in transmission systems R&D
K. UHLEN, D. CIRIO

C4-306 Application of wind generation capacity credits in the Great Britain and Ireland systems
C.J. DENT, B. HASCHE, A. KEANE, J.W. BIALEK

C4-307 Methods and software tools for evaluation, forecasting and analysis of electric power and energy balances in electric power companies of Russia
P.S. ABAKHSHIN, V.E. VOROTNITSKI, M.V. EGOROV, M.A. KALINKINA, B.I. MAKOKLYUEV, A.S. POLIZHAROV, T.N. PROTOPOPOVA, O.V. TURKINA

SC C5 ELECTRICITY MARKETS AND REGULATION

PS1: Challenges of national or state regulations of transmission and system operators in regional markets

C5-101 Experience of India’s first power exchange and challenges ahead
RAVINDER, A. AWASTHY

C5-102 Harmonization of cross border transmission capacity allocation within the Central West Europe region
B. NEUPONT ON BEHALF THE TSOS OF CWE REGION

C5-103 Interregional market coupling - a challenge for the NorNed cable
R. BEUNE, J. VAN PUTTEN, K. ARNE BARMSNES, O. GJERDE

C5-104 Harmonization and integration of national balancing markets in Europe – regulatory challenges

C5-105 Experiences and challenges of the Brazilian transmission system in search of efficiency
S.J.N. CISNEIROS, F. M.C. FERREIRA

C5-106 Czech and Slovak spot electricity market coupling on the basis of implicit capacity allocation
P. ŠOLC, B. NĚMEČEK
C5-107  Multiple power exchanges in India – a case study  

C5-108  Approaches and accomplishments to enhance multi-regional markets taking into account reliability in Japan  
H. OKAMOTO, J. NAITO, A. YOKOYAMA

PS2: Impact of intermittent resources or demand response on market designs

C5-201  Role of storage systems and market based ancillary services in active distribution networks management  
F. BIGNUCOLO, R. CALDON, L. CARRADORE, A. SACCO, R. TURRI

C5-202  Experience of reliability-based demand response implementation in Korea  

C5-203  User acceptance of ancillary service markets  
W.L. KLING, J. FRUNT, J.M.A. MYRZIK

C5-204  A commercial architecture for the aggregation and trade of active demand services  
R. BELHOMME, F. BOUFFARD, A. DIOP, M. SEBASTIAN, C. YUEN, R. CERERO, G. VALTORTA

C5-205  Impact of a high concentration of wind generation in the Australian electricity market – experience to date and expected future performance  
D. SWIFT, D. BOWKER

C5-206  Market designs for a better integration of intermittent generation: European experience and future trends  
M. DUPUY, B. PEYRON

C5-207  Impact of wind generation on the voltage control ancillary service and the development of the Italian transmission system  
E.M. CARLINIA, P.P. PERICOLOA, P. MARANNINOB, I. SIVIEROB, R. VAILATIC

C5-208  Customer involvement in load control via capacity market mechanisms  
F.Y. OPADCHIY, A.M. KATAYEV

C5-209  Impact of high levels of wind and other variable renewable generation on the grid operation: summary of major US studies  

C5-210  Integration of advanced storage technologies in the New York wholesale electricity market  
R. MUKERJI, R. PIKE, J. HICKEY

PS3: Interactions of environmental incentives and markets (e.g. carbon) with electricity markets

C5-301  Key issues on the design of China’s SO2 emission trading scheme of power sector  
Z. YAN, J. LIPING, M. LI, F. RONG

C5-302  Impact of CO2 reduction targets on transmission capacity expansion dictated by the power market clearing: application to the Italian and French systems  
E.M. CARLINIA, P.P. PERICOLOA, F. VEDOVELLIA, B. COVAB, A. VENTURINIB, S. LEPY, E. MOMOT

C5-303  Potential impact of expanded renewable target and emission trading scheme on Australian electricity market  
T. BAKER, M. YORK

C5-304  Market issues for generation expansion accounting for energy security and environmental aspects  
X. VIEIRA, J.L. ALQUERES, M. VEIGA, P. BORN

SC C6 DISTRIBUTION SYSTEMS AND DISPERSED GENERATION

PS1: Planning and operation of distribution networks incorporating dispersed energy resources (DER) and renewables energy sources (RES)

C6-101  New automation functions under development to enable French distribution networks to integrate efficiently large share of Dispersed Energy Resources (DER) and Renewable Energy Sources (RES)  
S. GRENAUD, O. DEVAUX, J. MAIRE

C6-102  The IPES project: a new challenge for RTE to cope with fast expanding of wind power energy and the integration in its transmission system  
J-P. GONOT, R. CHERAMY, G. VINCENT, R. LOPEZ

C6-103  A multi-objective approach to investigate active distribution network impact on the contrasting goals of the distribution system stakeholders  
G. CELLI, F. PILO, G.G. SOMA, M. GALLANTI, R. CICORIA

C6-104  Evaluation of power supply quantity in microgrid islanded operation with demand side control method  
T. SHINJI, S. TAGAMI

C6-105  Towards the wide implementation of standards IEC 61970 (CIM) and IEC 61850  
Z. STYCZYNSKI, H. RIIS, A.M. GELFAND, Z. DO VALLE, M.B.M. BUCHHOLZ
C6-106  A fast-switching load for frequency stability
R. HOLLAND, H. KLEY, O. PACIFIC, T. LUND

C6-107  Improving network reliability by minimising the impact of renewable energy uncertainties
K. ZOU, A.P. AGALGAONKAR, K.M. MUTTAQI, S. PERERA, A. BAITCH

C6-108  Distributed energy resource equipment development and testing on a full scale distribution network test line
C. ABBEY, Y. BRISSETTE, L. DIGNARD, G. JOOS

C6-109  Reactive power control with CHP plants - A demonstration
P. NYENG, J. ØSTERGAARD, C.A. ANDERSEN, J. DALL, C. STRUNGE

C6-110  Development of new islanding detectors and voltage control systems by experimental studies supported by NEDO
S. MOROZUMI, K. WATANABE, K. YOSHIDA, K. KOUCHI, Y. NAKANISHI, H. OTA

C6-111  Operating experiences and voltage control issues in distribution network with large scale integration of both wind and small-scale hydro power generation
T. TOFTEVAAG, A. PETTERTEIG, A.V. HANSEN, H. FADUM

C6-112  Joint action of DG units to reduce flow of reactive power in the distribution network
A. PETTERTEIG, O. GJERDE, R. PAULSEN

C6-113  Functional model of virtual power plant (VPP)
S. LUKOVIC, I. KAITOVIC, M. MURA, U. BONDI, F. KULIC, D. POPOVIC

C6-114  Experiences of introducing new regulatory policies to electricity supply
P. PUNJAD, R. MUENYA

C6-115  Smart grid demos provide guidance on integrating DER and RES into the distribution system with consideration of transmission impacts, market signals, and technology characteristics
M. WAKEFIELD, G. HORST, S. HAMILTON

C6-116  Provision of ancillary services by RES
B.M. BUCHHOLZ, V. BÜHNER

PS2: Demand side integration

C6-201  Practical experiences of demand side integration through pricing
B. FENN, D. ERMERT, H. FREY

C6-202  Optimal demand side response for electricity balance control in microgrid
M. KOSHO, M. NONAKA, S. NAKAMURA, K. NAKAO, D. SATO

C6-203  Active demand side management operator tool (SGCLOS) and new communications architecture in the XXI century electrical grid

C6-204  Prospective study on the impact of electrical vehicles on the winter load peak in a village of East of France
C. BATHANY, H. BOUIA, V. MURIN, D. OSSO, J. MAIRE

C6-205  Integration of active customers into smartgrids: experimental test facility and results
G. MAURI, D. MONETA, J. SILVA DE ASSIS CARNEIRO

C6-206  DSM in Spain, GAD project. Aims, developments and initial results
F. NAVALON BURGOS, S. BANARES, L. MORENO SARRION, A. QUIJANO LOPEZ

PS3: New concepts and technologies for the electrification of rural and remote areas

C6-301  Unified power quality controller for the micro grid system
Y.H. CHUNG, H.J. KIM, J.W. CHOE

C6-302  New technology for the development of economic and sustainable rural electrification systems in the vicinity of EHV power lines
L.E. MELO, J.C. PITMAN, A. CASSINOTTI, G. CASSINOTTI

C6-303  Secondary control of microgrids: application of potential functions
A. MEHRIZI-SANI, R. IRAVANI

C6-304  Distributed intelligent control of DER and LV loads in microgrids

C6-305  Rural electrification project development, using auxiliary service voltage transformers. Location of Tubares, Chihuahua, Mexico
R. GOMEZ, A. SOLANO, E. ACOSTA

C6-306  European road map for microgrids
C. SCHWAEGERL, L. TAO, P. MANCARELLA, G. STRBAC, N. HATZIARYGRIYOU, B. BUCHHOLZ
Small-scale rural electricity providers - opportunities and challenges
A.N. ZOMERS, C.T. GAUNT ON BEHALF OF SC C6

SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

PS1: New materials for improved efficiency and sustainability of AC & DC power equipment

D1-101 Experience of the Egyptian electricity transmission company in up-rating existing extra high voltage overhead transmission lines
H. NEGM, N. HEGGY, A.S. IBRAHIM, I. AHMED, S. TAWFIK

D1-102 Comparison of characteristics between mineral and ester oils
C. PERRIER, M. RYADI, Y. BERTRAND, C. TRAN DUY

D1-103 Application of new solid insulating materials and new gas compositions to future advanced gas insulated systems
H. HAMA, S. OKAB, T. ROKUNOHE, H. OKUBO, M. NAGAO

D1-104 Experimental research on the feasibility of biodegradable polymeric insulating materials
Y. OHKI, N. HIRAI, S. OKABE, S. KANEKO

D1-105 Improved performance of silicone rubbers for the use in composite insulators
S. ANSORGE, F. SCHMUCK, S. AITKEN, K.O. PAPAILIOU, S.E. PRATSINIS

D1-106 Evaluation of conductivities and dielectric properties for highly stressed HVDC insulating materials
A. KÜCHLER, M. LIEBSCHNER, C. KRAUSE, U. PIOVAN, R. FRTSCHE, I. HOPPE, A. LANGENS, J. TITZE

PS2: Challenges for testing and diagnostics

D1-201 Flashover tests under wet conditions on full and section UHV insulators
O. OLIVEIRA FILHO, D.R. MELLO, J.A. CARDOSO, R.M. DE AZEVEDO, S.G. CARVALHO, W.A.S. CRUZ

D1-202 New approach of testing power transformers by means of static frequency converters
A. THIEDE, T. STEINER, R. PIETSCH

D1-203 A novel optical fiber sensor system for temperature monitoring of power transformers
M.H. SONG, J.K. LEE, J.H. LEE

D1-204 PD pattern classification system using image analysis for on-line PD monitoring of power equipment
V.R. GARCIA-COLON

D1-205 Condition assessment of transmission power cables

D1-206 Pulsed X-ray induced partial discharge measurements – a new testing technique for HV insulation
H. FUHRMANN, A. TRÖGERB, U. RIECHERT

D1-207 Combination of different techniques for improved interpretation of PD measurements
S. TENBOHLEN, A. PFEFFER, S. COENEN, A. WILSON, S. MARKALOUS, T. STREHL

D1-208 Dissolved gas analysis and partial discharge diagnosis of common fault types in bio-degradable oil transformers
B.T. PHUNG, N.A. MUHAMAD, T.R. BLACKBURN

D1-209 Challenges for obtaining asset management and diagnostic monitoring information from network businesses in a commercial world
P. MCMULLAN, P. RAMSAY

D1-210 Belgian experience with electrical testing and destructive material analysis for improved stator winding insulation diagnostics
J. VAN COTTHEM, G. PLATBROOD

D1-211 Furan derivatives in oil: assessment of the deterioration of winding insulation of a hermetically sealed power transformer. New results
J. NEJEDLY, H. HALBWIRTH

D1-212 Return of experience on UHF partial discharge monitoring of high voltage substation
A. GIRODET, G. LUNA, S. DUBOSCOQ, P. PRIEUR

D1-213 Diagnostic markers for oxidation condition of mineral oil and ester insulating substances
I. ATANASOVA-HOEHLEIN, T. HAMMER, M. SCHAFFER

D1-214 A development of diagnosis system employable to high voltage insulator considering leakage current
C.H. RYU, Y.J. LEE, B.W. LEE, J.Y. KOO

D1-215 Experiences on commissioning, failure analysis and on-line testing of gas insulated substations
C.G. AZCARRAGA, A. GARCIA, A. NAVA, O. ESCORSA

D1-216 Interpretation of dielectric spectroscopy results in time and frequency domains for power cables
S. BHUMIWAT
D1-217 Compact system for induced overvoltage tests in complete substations
E. IRABURU, E. PEREZ, F. GARNACHO, P. SIMON, T. GARCIA

PS3: Endurance of materials especially in harsh electrical and physical environments

D1-301 Deterioration of fiber reinforced material under chemical and coastal pollutions
N. HEGGY, B.A. ARAFA, M. SAMIR

D1-302 Endurance of polymeric insulating materials in nuclear power plants and needs for condition monitoring of electrical cables
Y. OHKI, N. HIRAI, T. YAMAMOTO, T. SEGUCHI, H. KUDOH, T. OKAMOTO

SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION

PS1: Practical implementation of IEC 61850 in electric power systems (Common with B5)

D2/B5-101 Multipurpose architecture model of phasor data concentrator
I. IVANKOVIC, S. SKOK, R. MATICA, I. ŠTURLIČ

D2/B5-102 BHEL experience in implementation of IEC 61850 based substation automation system in India
A. SINGH, R. SINGH, G. CHAKLADER, D. DATTA

D2/B5-103 Practical experience with IEC 61850 multivendor systems and foreseeable future applications – a system integrator and end-user perspective
R. PAULO, F. MATOS

D2/B5-104 Performance considerations in wide area monitoring and control systems
M. CHENEINE, L. NORDSTRÖM

D2/B5-105 Substation-control centres communication
C. BRUNNER, W. BRODT, H. ENGLERT, K. RIAN, A. WEST, P. LHUILLIER

D2/B5-106 Impact of communication network impairments on wide area monitoring, control and protection applications in the IEC 61850 environment
E. GOUTARD, T. RUDOLPH, M. MESBAH

D2/B5-107 Specifications, requirements and experiences using IEC 61850 in the Iberoamerican region
C. SAMITIER, R. PELLIZZONI ON BEHALF OF RIAC JWG 61850

D2/B5-108 Communication issues using line protection schemes
C. SAMITIER ON BEHALF OF CIGRE JWG B5/D2.30

D2/B5-109 PRIME as open communication base for IEC 61850 on the distribution network
J. ARRIOLA ALCIBAR, L. ANDERSSON, T. BERNSTEIN

D2/B5-110 Architecture of wide area monitoring systems and their communication requirements
V. TERZIJA, D. CAI, A. VACCARO, J. FITCH

D2/B5-111 Pilot Project with IEDs IEC 61850 from different vendors in a 132/33/13.2 kV substation
R. PELLIZZONI, L. FUNES, R. DELORENZI, E. DUFOUR

D2/B5-112 Substation automation system based on IEC 61850 - present and future prospects in India
I.S. JHA, O. CHANDY, K. RATHORE, R. SRIVASTAVA

D2/B5-113 Communications needs for different applications of IPS/UPS wide area measurements (WAMS)
B. AYUEV, P. EROKHINE, Y. KULIKOV

D2/B5-114 Ethernet network performance analysis and RSTP protocol behaviour in a complex topology proposed by Endesa for IEC 61850 substations
A. ARZUAGA, M. ZAMALLOA, B. GALLASTEGI, J. BADIA, R. MARTIN, A. HILAZO

D2/B5-115 Engineering approach for the end user in IEC 61850 applications
N. NIBBIO, M. GENIER, C. BRUNNER, E. COTTENS, D. MULLER, J. REUTER

D2/B5-116 Deployment and interconnection of IEC 61850 islands
K.P. BRAND, A. MENON, H. SPIESS, P. SCHWYTER, W. WIMMER

PS2: Information and information technology (IT) security for electric power utilities

D2-201 A telecommunications mobile unit for transmission lines emergency scenarios
A. PINHEL SOARES, R. MEDEIROS, J.A. PAULA MOTT A

D2-202 Security countermeasures for office system in Japanese electric power companies
H. IWAMOTO, S. SUZUKI, H. MISHIMA, A. FUTAKATA, Y. TOMITA, H. HAZAKI

D2-203 Outline of telecommunications networks for electric power systems and security measures and evaluation examples in Japanese electric power companies
K. SAKASHITA, K. YAMAOKA, M. KIUCHI, K. DEZAKI, K. ADACHI
D2-204  Design of a physical and logical secure IP telecommunication network architecture in the Spanish TSO Red Eléctrica de Espana
J.R. FEIJOO MARTINEZ, M. CÁRDENES, J. ÁLVAREZ, J.A. GARCÍA LÓPEZ, J.J. ROMERA VALERO

D2-205  Identifying cyber security events in IEC 61850 substations by analysing different traffic patterns
T. ARZUAGA, A. ARZUAGA, R. URIBEETXEBERRIA, I. ARENAZA, I. ROMAN

D2-206  Information security for electric power utilities – results of Cigré WG D2.22
G. ERICSSON, Å. TORKILSENG, G. DONDOSSOLA, M. TRITSCHLER, L. PIETRE-CAMBACEDES

D2-207  Implementation of security management system in period of SCADA/AGC/EMS refurbishment in Croatian TSO
N. BARANOVIC, A. CERNICKI MIJIC, J. BUJAK

D2-208  Impact of cyber-security requirements on the security policy and access control between the SCADA and the substations
D. GIARRATANO, S. XIA

D2-209  Reducing the obscurity in cyber security - trends, challenges and advances in Brazil
E.B. BANDEIRA DE MELO

D2-210  Strategies regarding the IT security and vulnerability of automation systems
I. MERFU, S. MARINESCU, S. NICULESCU

D2-211  A case study applying the cyber security modelling language
T. SOMMESTAD, M. EKSTEDT, L. NORDSTRÖM

D2-212  IEC 61850, tools and cyber-security. A perfect mix or a recipe for disaster?
S. THOMPSON