



IEEE INTERNATIONAL SYMPOSIUM ON ELECTRICAL INSULATION
8 – 11 June 2008

Renaissance Vancouver Hotel
Vancouver, BC, Canada

FINAL PROGRAM

SUNDAY, JUNE 8, 2008

- 08:00 - 17:00 Registration, *Harbourside Foyer*
- 09:00 – 16:00 Tutorials
Preventing Power Cable Failures, H. Orton, *Port of Singapore*
Introduction to UL 1446, N. Frost, *Port of Hong Kong*
Partial Discharge Testing, G. Stone, *Port of New York*
- 19:00 - 21:00 Welcome Reception & Poster Session A
Vistas Restaurant (19th Floor)

Poster Session A

Cables - Session Chairs: Paul Wagenaars, Eindhoven University of Technology, The Netherlands & Svein Magne Hellesø, SINTEF Energy Research, Norway

- A-1 The Chaos Characteristics Analysis for Electrical Treeing Propagation in XLPE Power Cables**
L. Liu, Q. Zhou, R. Liao, K. Ye, The State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, China
- A-2 Measurement of Solubility and Water Content of Insulating Oils for HV XLPE Cable Terminations**
K.B. Liland and S. Hvidsten, SINTEF Energy Research, Norway, K. Eidnes, Norwegian University of Science and Technology, and K. Bjørneklett, BKK, Norway
- A-3 Integral Condition Assessment by Dielectric Response Diagnosis of Service Aged External Gas Pressure HV Power Cables**
P. Cicek, E. Gulski, J.J. Smit, Delft University of Technology, and F. de Vries, NUON, The Netherlands
- A-4 Interpretation of MV Power Cables PD Diagnostic Data Using Statistical Analysis**
P. Cicek, E. Gulski, J.J. Smit, R. Jongen, Delft University of Technology, The Netherlands and F. Petzold, SebaKMT, Germany
- A-5 Approximation of Transmission Line Parameters of Single-Core XLPE Cables**
P. Wagenaars, P.A.A.F. Wouters, Eindhoven University of Technology, The Netherlands and P.C.J.M. van der Wielen, E.F. Steennis, The Netherlands
- A-6 Diagnostics and Prognostics of Electric Cables in Nuclear Power Plants via Joint Time-Frequency Domain Reflectometry**
J. Wang, P. Crapse, Y. Shin, and R. Dougal, Department of Electrical Engineering, University of South Carolina, USA
- A-7 Diagnosis Using Partial Discharge Mapping and Dielectric Spectroscopy for Assessment of PILC Cables**
M.A. Abdul Rahman, Tenaga Nasional Berhad, Wisma TNB, Malaysia, and P. Ghosh, ESPS Electrical Program Solutions Inc, Canada

- A-8 Condition Assessment of Medium Voltage Underground PILC Cables Using Partial Discharge Mapping and Polarization Index Test Results**
H. Shafi Abd Halim, TNB Research Sdn. Bhd, Malaysia, and P. Ghosh, ESPS Electrical Program Solutions Inc, Canada
- A-9 Thermal Stability in HVDC Cables: Whether it is Internal or External?**
Ch. Chakradhar Reddy and T. S. Ramu, Indian Institute of Science, India
- A-10 On the DC Conductivity of HV DC Cable Insulation - Cautions in using the Empirical Models**
Ch. Chakradhar Reddy and T. S. Ramu, Indian Institute of Science, India
- A-11 Effect of Voltage Stress on Diagnostic Parameters of Low Voltage Cables**
Z.A. Tamus, B. Nemeth, I. Berta, Budapest Univ. of Technology and Economics, Department of Electric Power Engineering, Budapest, Hungary
- A-12 Complex Examination of a Cable Terminal Failure**
Z. A. Tamus, B. Nemeth, I. Kiss, R. Cselko, I. Berta, Budapest Univ. of Technology and Economics, Department of Electric Power Engineering, Budapest, Hungary
- Outdoor Insulation - Session Chairs: Manuel Luís Barreira Martinez, Universidade Federal de Itajuba, Brazil & Prathap Basappa, Norfolk State University, USA**
- A-13 Simulation of Electric Field distribution around water droplets on outdoor insulator surfaces**
P. Basappa, A. Mishra, Norfolk State University, Virginia, USA, and V. Lakdawala, B. Sarang, Old Dominion University, Virginia, USA
- A-14 Electromagnetic Field Radiated by Lightning Calculated by a Hybrid Method Experimental Validation**
N. M'ziou, Mohamed Khider University, Biskra, Algeria; L. Mokhnache, Hadj Lakhdar University, Batna, Algeria, and A. Boubakeur, LRE, Ecole Nationale Polytechnique, Algeria
- A-15 Modeling Electromagnetic Field Radiated by Lightning Coupling to Overhead Transmission Lines**
N. M'ziou, Mohamed Khider University, Biskra, Algeria; L. Mokhnache, Hadj Lakhdar University, Batna, Algeria, and A. Boubakeur, LRE, Ecole Nationale Polytechnique, Algeria
- A-16 Study of Full Scale UHV DC Transmission Line Corona Performance in Corona Cage**
W. Wang, C. Li, Y. Liu, Y. Jiang, B. An, Y. Wang, Beijing Key Laboratory of High Voltage & EMC, North China Electric Power University, China, and B. Luo, X. Li, China Southern Power Grid Corporation, China
- A-17 The Effect of Temperature and Humidity on Corona Performance of UHV DC Transmission Line**
W. Wang, C. Li, Y. Jiang, Beijing Key Laboratory of High Voltage & EMC, North China Electric Power University, China, and J. Fan, C. Gu, J. Zhou, China EPRI, China
- A-18 Improvement of Contamination Flashover Voltage Performance of Cylindrical Porcelain Insulators**
K. Yamada, A. Hayashi, C. Saka, K. Sakanishi and R. Matsuoka, Chubu University, Japan
- A-19 Effect of Internal Electrodes on Ageing Deterioration of Polymer Bushing Shells**
M. Yoshikawa, T. Mizuno, A. Muto, T. Kawaguchi and R. Matsuoka, Chubu University, Japan
- A-20 Long-term Ageing Test Results of Various Kinds of Semi-conducting Glaze Insulators**
A. Muto, M. Yoshikawa, T. Mizuno, T. Kawaguchi and R. Matsuoka, Chubu University, Japan
- A-21 Experience with Preventing External Flashovers in HVDC Converter Stations**
W. McDermid and T. Black, Manitoba Hydro, Canada
- A-22 Discussion on the Application of Leakage Current and Optical Sensor Online Monitoring Equipment**
H. Li, G. Liu, Z. He, S. Hu, School of Electric Power, South China University of Technology, China and X. Liu, Guangzhou Power Supply Bureau of Guangdong Power Grid Corporation, China
- A-23 Study on Insulator Natural Contamination Trend under Different Physiognomies of Local Area**
H. Wang, G. Liu, School of Electric Power, South China University of Technology, China

- A-24 Study on the Prevention of Pollution Flashover in Dongguan Region Using the Prediction of Contamination Deposit of Insulators Method**
Y. Li, G. Liu, School of Electric Power, South China University of Technology, China, and X. Chen, Dongguan Power Supply Bureau of Guangdong Power Grid Corporation, China
- A-25 Application of Pattern Recognition Techniques to non Invasive Insulation Monitoring**
J. M. B. Bezerra, R. R. B. Aquino, J. B. Oliveira, T. M. A. Silveira E. G. Costa, M. G. G. Néri, T. V. Ferreira, J.L. P. Dantas, P. L. Mendonça, UFPE- Pernambuco Federal University, Brazil
- Transformers - Session Chair: Ali Naderian, Kinectrics, Canada**
- A-26 Development of an UHF Detection System for Partial Discharge Measurement in Transformer Insulation**
S. Rengarajan, R. N. Parmar, A. Bhoomaiah and J.S. Kuntia, Bharat Heavy Electricals Limited, India
- A-27 Application of Artificial Intelligence for the Assessment of the Status of Power Transformers**
K. V. Satyanarayana, Ch. Charkradhar Reddy, and T. S. Ramu, Indian Institute of Science, India, and T. P. Govindan, Manoj Mandlik, Global R&D Centre, Crompton Greaves Ltd, India
- A-28 The Characteristics of Hardware and Software Modules for PD Localization in Power Transformers Using Winding Modeling**
A. Mazhab Jafari^{1,2}, A. Akbari¹, H.R. Mirzaei^{1,3}, M. Kharezi³ and M. Allahbakhshi¹
¹K.N.Toosi University of Technology, Iran, ²Iran Grid Management Company, Iran, ³Iran Transfo Company, Iran
- A-29 Fault Diagnosis of Power Transformer Using SVM and FCM**
D. Lee, J. Lee, Chungbuk National University, Korea; P. Ji, Chungju National University, Korea; and J. Park, J. Lim, Daeduk College, Korea
- A-30 Transformer Overload Management and Condition Monitoring**
M. Khederzadeh, Power & Water University of Technology, Iran
- A-31 Reliability Centered Asset Management for Power Distribution Systems**
X. Zhang and E. Gockenbach, Institute of Electric Power Systems, (Schering-Institut), Leibniz Universität Hannover, Germany
- A-32 A Software Implementation of the Duval Triangle Method**
A. Akbari, A. Setayeshmehr, H. Borsi, E. Gockenbach, Institute of Electric Power Systems, (Schering-Institut), Leibniz Universität Hannover, Germany
- A-33 Transformer Diagnostic and Assessment Methodology**
X. Zhang and E. Gockenbach, Institute of Electric Power System (Schering-Institut) Leibniz Universität Hannover, Germany
- A-34 Complex Diagnostic Methods for Lifetime Extension of Power Transformers**
B. Németh, T. Benyó, A. Jáger, Ovit Ltd., and G. Csépes, G. Woynárovich, MAVIR Ltd., Hungary

MONDAY, JUNE 9, 2008

- 07:00 – 17:00 Registration, *Harbourside Foyer*
- 07:00 – 08:00 General Breakfast, *Harbourside Foyer*
- 07:00 – 08:00 Monday Oral Presenters and Session Chairs, *Port of Vancouver*

Plenary Session, Harbourside Ballroom

- 08:00 – 08:10 Welcome by Symposium Chair
Resi Lloyd
- 08:10 – 08:20 Dakin Award History
Ray Bartnikas, 1976 ISEI General Chair
- 08:20 – 08:30 Introduction & Award Presentation
Bill McDermid, IEEE DEIS President
- 08:30 – 09:15 Address by 2008 Dakin Awardee
**Fundamental Research in Electrical Insulation and Electrical Asset Management:
Is There Any Link?**
G. C. Montanari, University of Bologna, Italy
- 09:15 – 09:40 Coffee Break, *Harbourside Foyer*

SESSION 1 – ROTATING MACHINES – PART 1 (ORAL)

09:40 – 12:00, Harbourside 1

Session Chair: Meredith Stranges, GE Consumer & Industrial, Canada

- 9:40 – 10:20 Keynote Address:
Vibration Sparking and Slot Discharge in Stator Windings**
G.C Stone, Iris Power LP, Canada and C. Maughan, Maughan Engineering, USA
- 10:20 – 10:40 Evolution of Slot Partial Discharges under Electrical, Thermal and Mechanical Stresses**
M. Lévesque², C. Hudon¹, M. Bélec¹, E. David²
¹ Institut de recherche d'Hydro-Québec, IREQ, Canada; ²École de technologie supérieure de Montréal, Canada
- 10:40 – 11:00 Evaluation of Grading System of Large Motors AC Stator Windings**
R. Omranipour, S. U. Haq, GE Consumer & Industrial, Canada
- 11:00 – 11:20 High Voltage Insulation Failure Mechanisms**
R. Bruetsch, Von Roll Switzerland Ltd., Switzerland; M. Tari, Von Roll Isola Japan; K. Froehlich, T. Weiers and R. Vogelsang, High Voltage Laboratory, Swiss Federal Institute of Technology Zurich, Switzerland
- 11:20 – 11:40 Experience with DC Ramped Voltage Tests Performed on Asphalt Insulated Hydraulic Generators**
A. Nair, École de technologie supérieure de Montréal, Canada
- 11:40 – 12:00 Temperature and Load Correlated On-Line PD Measurements on a Danish 6,4 MVA Power Generator**
M. Erlandsson Lunow, DONG Energy, Denmark and J. Holboell and M. Henriksen, Technical University of Denmark

SESSION 2 – TRANSFORMERS – PART 1 (ORAL)

09:40 – 12:00, Harbourside 2

Session Chair: Bal Gupta, AOK Technologies, Canada

- 9:40 – 10:20 Keynote Address:
Production of Corrosive Sulphur Free Transformer Fluids**
S. Krawiec, Petro-Canada
- 10:20 – 10:40 Experimental Investigations on Mineral and Ester Oils for Power Transformers**
C. Perrier, AREVA T & D, Technology and Innovation Center, France and A. Beroual, Ecole Centrale de Lyon, Laboratoire, France
- 10:40 – 11:00 Feasibility of Free Radical Detection for Condition Assessment of Oil/Paper Insulation of Transformers**
K. Abdolali and A. J. Vandermaar, Powertech Labs Inc., Canada

- 11:00 – 11:20** **An Advanced Model-Based Diagnosis System for Online Detection of the Moisture Content of Power Transformer Insulations**
W. Hribernik, G. Pascoli, Arsenal Research Monitoring, Energy and Drives, Austria and K. Fröhlich, High Voltage Laboratory, ETH Zurich, Switzerland
- 11:20 – 11:40** **An Approach to Determine the Health Index of Power Transformers**
A. Naderian, S. Cress, R. Piercy, F. Wang, J. Service, Kinectrics Inc., Transmission and Distribution Technologies, Canada
- 11:40 – 12:00** **Large Power Transformer Condition Assessment and Life Extension**
G. Ofualagba, E.U. Ubeku, and C.E. Mesharun, Department of Electrical and Electronics Engineering of Delta State Polytechnic, Otefe, Oghara, Delta State, Nigeria

SESSION 3 – NANOMATERIALS (ORAL)

09:40 – 11:40, Harbourside 3

Session Chair: Lamarre Laurent, IREQ, Canada

- 9:40 – 10:20** **Keynote Address:**
Improving Epoxy-based Insulating Materials with Nano-fillers toward Practical Application
T. Imai¹, G. Komiya¹, K. Murayama¹, T. Ozaki¹, F. Sawa², T. Shimizu², M. Harada³, M. Ochi³, Y. Ohki⁴ and T. Tanaka⁵
¹Power and Industrial Systems R&D Center, Toshiba Corporation, Fuchu-shi, Japan
²Power and Industrial Systems R&D Center, Toshiba Corporation, Yokohama, Japan
³Department of Chemistry and Materials Engineering, Kansai University, Suita-shi, Osaka, Japan
⁴Department of Electrical Engineering and Bioscience, Waseda University, Shinjuku-ku, Tokyo, Japan
⁵Graduate School of Information, Production and Systems, Waseda University, Wakamatsu-ku, Kitakyushu, Japan
- 10:20 – 10:40** **Surface Degradation of Nanostructured Polypropylene Compounds Caused by Partial Discharges**
M. Takala¹, T. Sallinen¹, P. Nevalainen¹, J. Pelto² and K. Kannus¹
¹Tampere University of Technology, Department of Electrical Energy Engineering, Finland
²Technical Research Centre of Finland, Finland
- 10:40 – 11:00** **A Model for the Initiation and Propagation of Positive Streamers in Transformer Oil**
F. O’Sullivan, J. G. Hwang and M. Zahn, Massachusetts Institute of Technology, USA; O. Hjortstam, L. Pettersson and R. Liu, ABB Corporate Research, Sweden; and P. Biller, ABB S’echeron Ltd., Switzerland
- 11:00 – 11:20** **Calculation of Dielectric Constant of Two-Phase Disordered Composites by Using FEM**
X. Chen^{1,2}, Y. Cheng¹, K. Wu¹, Y. Meng¹, S. Wu¹
¹State Key Laboratory of Electrical Insulation and Power Equipment, Xi’an Jiaotong University, P.R.China
²DIE-LIMAT, University of Bologna, Italy
- 11:20 – 11:40** **Impact of Sonication on the Electrical Properties of Epoxy-Clay Composites**
T. N. Matheson, A.S. Vaughan, School of Electronics & Computer Science, University of Southampton, UK, J. Cooper, National Grid, UK, and A. Minigher, Cimtec Lab, Italy

12:00 - 14:00 **Lunch Break (on your own)**

SESSION 4 – ROTATING MACHINES – PART 2 (ORAL)

14:00 – 15:20, Harbourside 1

Session Chair: Hugh Zhu, Powertech Labs, Canada

- 14:00 – 14:20** **A Comparison of Dielectric Characteristics and Voltage Endurance Life for Two High Voltage Coil Designs**
M.K.W. Stranges, R. Omranipour, N. Stranges, GE Consumer & Industrial, Canada

14:20 – 14:40 Impedance Characterization Of Hydro Generator Stator Windings and Preliminary Results of FRA Analysis

L. Lamarre, P. Picher, IREQ - Hydro Quebec, Canada

14:40 – 15:00 Research of 3D Temperature Field of Hydrogenerator with Aging Insulation

Y. Fan, X. Wen, J. Seo, K.H. Jung, Wuhan University, China; Seoul National University, Korea

15:00 – 15:20 Influence of Stress-Grading Systems on Insulation Resistance and Polarization Index

T. Klamt and S. Noel, ALSTOM Hydro, Switzerland

SESSION 5 – TRANSFORMERS – PART 2 (ORAL)

14:00 – 15:20, Harbourside 2

Session Chair: Gian Carlo Montanari, University of Bologna, Italy

14:00 – 14:20 Diagnostic Practices Used For Instrument Transformers

B.K. Gupta, AOK Technologies Inc., Canada, J. Densley, Arborlec Solutions Inc., Canada and A. Narang, Kinectrics Inc., Canada

14:20 – 14:40 Estimation of Remaining Life of Power Transformers

D. Pandurangaiah¹, Ch. Chakradhar Reddy¹, T.P Govindan², M. Mandlik² and T. S. Ramu¹
¹Department of Electrical Engineering, Indian Institute of Science, India; ²Global R&D, Crompton Greaves India Limited, India

14:40 – 15:00 Abnormal Failure Rate on High Voltage Current Transformers Affected by Environmental Conditions

O. Reyes, V.R. Garcia-Colon, Instituto de Investigaciones Electricas, Mexico; H. Lara, E. Robles, CFE, Mexico, and M. Guzman, F. Elizarraraz, J.C. Martinez, LAPEM, Mexico

15:00 – 15:20 Advanced On-Site Diagnosis of Transformer On-Load Tap Changer

J. Erbrink, E. Gulski, Delft University of Technology, The Netherlands, P.P. Seitz, Seitz Instruments, Switzerland, and R. Leich, Nuon Tecno, The Netherlands

SESSION 6 – MATERIALS – PART 1 (ORAL)

14:00 – 15:20, Harbourside 3

Session Chair: James Han, Siemens Power Generation, USA

14:00 – 14:40 Keynote Address:

Insulation Systems for Rotating Low-Voltage Machines

M. Chapman, Von Roll Switzerland, N. Frost, Von Roll USA, R. Bruetsch, Von Roll Switzerland

14:40 – 15:00 Investigation of the Electrical Properties of Elastic Syntactic Foam

M. Kessler, a. Troeger, B. Heil, A. Schnettler, RWTH Aachen University, Germany

15:00 – 15:20 Fabrication of Permittivity Graded Materials for Reducing Electric Stress on Electrode Surface

M. Kurimoto, A. Kai, K. Kato, H. Okubo, Nagoya University, Japan

15:20 - 15:40 Afternoon Break

SESSION 7 – ROTATING MACHINES – PART 3 (ORAL)

15:40 – 17:00, Harbourside 1

Session Chair: Thomas Klamt, Alstom Power, Switzerland

15:40 – 16:00 High Frequency Life Testing of Stator Coil Insulation

D. Manns, GE Consumer & Industrial, Large Motors and Generators, Canada, S. Galioto, K. Weeber, GE Global Research, USA, and J. Yagielski, GE Energy, Generator Technology, USA

- 16:00 – 16:20** **Power-Factor Fluctuation of Directly Water-Cooled Generator-Bar after Water-Penetration inside the Groundwall Insulation**
M. R. Naghashan, M. Farrokhi, Power and Water University of Technology, Iran
- 16:20 – 16:40** **Calculation of the Electrical Field Constraint and the Potential Breakdown Risk in Partially Humid High Voltage Generator Stator Bar Insulation**
P. Schlupp, D. Vizireanu, J. P. Ducreux, EDF R&D, France
- 16:40 – 17:00** **Temperature Effect on Dielectric Characteristics of Large Rotating Machines Insulation**
R. Soltani, E. David, École de Technologie Supérieure, Canada, and L. Lamarre, Institute of Research of Hydro-Quebec, Canada

SESSION 8 – TRANSFORMERS – PART 3 (ORAL)

15:40 – 17:00, Harbourside 2

Session Chair: Alexander Winter, HIGHVOLT Prueftechnik GmbH, Germany

- 15:40 – 16:00** **In Service Reduction of Corrosive Sulfur Compounds in Insulating Mineral Oils**
V. Tumiatti¹, R. Maina¹, F. Scatiggio², M. Pompili³, and R. Bartnikas⁴
¹Sea Marconi Technologies, Collegno, Italy, ²Terna Spa, Venezia, Italy, ³Department of Electrical Engineering, University of Roma, Italy, ⁴Institut de Recherche d'Hydro-Quebec, Canada
- 16:00 – 16:20** **Diagnosis of EHV and HV Transformers through an Innovative Technique: Perspectives for Asset Management**
A. Cavallini, G.C. Montanari, University of Bologna, Italy, F. Ciani, TechImp Systems Srl, Italy
- 16:20 – 16:40** **Study on the Thermal Aging Characteristics and Bond Breaking Process of Oil-paper Insulation in Power Transformer**
R. Liao, X. Bin, Y. Li-jun, T. Chao, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, China, Hui-gang Sun, ABB Corporate Research, China
- 16:40 – 17:00** **Study of the Characteristics and Field Performance of a Novel PTFE - Silicone Gel High Voltage Insulation System**
SiHui Hu, Harbin Engineering School, China; E. Euvrard, RHM International, USA; X. Wang and R. Wang, TR Electric, China

SESSION 9 – MATERIALS – PART 2 (ORAL)

15:40 – 16:40, Harbourside 3

Session Chair: Douglas Conley, Siemens Power Generation, USA

- 15:40 – 16:00** **Oxidation of Cellulose**
K.B.Liland, M.H.Ese, L.Lundgaard, SINTEF Energy Research, Norway and M.Kes, NTNU, Department of Biotechnology, Norway
- 16:00 – 16:20** **Optimization of Complex Electrode System for Use in Electrical Measurements**
V. Lakdawala¹, M.M. Noel², P. Basappa² and A. Jambula¹
¹Electrical & Computer Engineering Department, Old Dominion University, VA, USA
²Electronics Engineering Department, Norfolk State University, VA, USA
- 16:20 – 16:40** **Effect of Interfacial Modification on Electrical Properties of Laminated Organic-Inorganic Composite Insulators**
P. Tewari, E. Furman, R. Rajagopalan, and M.T. Lanagan, Materials Research Laboratory, Pennsylvania State University, USA

19:00 - 21:00

Reception & Poster Session B

Vistas Restaurant (19th Floor)

Poster Session B

Materials - Session Chair: Nicolay Kuzishin, Darmstadt University of Technology, Germany

B-1 **Flow Properties of Liquid Circulatory System with Coaxial Cone to Rod Electrode Type EHD Pumps**
I. Takahashi, R. Hanaoka, S. Takata and T. Fukami, Department of Electrical and Electronic Engineering,
Kanazawa Institute of Technology, Japan

B-2 **Investigation of the Influence of the ZnO Varistor Preparation Method on its Characteristics**
M.R.Meshkatodini, PWUT University of Technology, Iran

B-3 **Simulation of Two-Dimensional Streamer Discharge in Uniform Field in Low SF₆ Content Mixtures**
X.Wang, F. Wang, Hunan University, China and W. Pfeiffer, N. Kouzichine, TU Damstadt, Germany

Partial Discharge - Session Chair: Elizabeth Lindell, Chalmers University of Technology, Sweden
Greg Stone, Iris Power, Canada

B-4 **Experimental Investigations on Applicable Criterion for AC Corona Discharge Evolvment of Rod-plane Gap Based on UV Digital Image Processing**
B. Ma¹, W. Zhou¹, T. Wang², X. Yi¹, C. Zhu²
¹School of Electrical Engineering, Wuhan University, China; ²Electrical Power Test and Research Institute of Hubei Province, China

B-5 **A Neural Network Based System for Prediction of Partial Discharge Pulse Height Distribution Parameters**
M. M. Noel¹, P. Basappa¹, V. Lakdawala² and V. Nimbole²
¹Norfolk State University, Virginia, USA, ²Old Dominion University, Virginia, USA

B-6 **Partial Discharge Activity in Presence of Pulsed Waveforms**
F. Guastavino, A. Dardano, A. Ratto, E. Torello, Electrical Engineering Department, Università degli Studi di Genova, Italy

B-7 **Online PD Monitoring of Power Transformers and Rotating Machines**
M. Flubacher, HV Technologies, Inc., USA and T. Strehl, LDIC GmbH, Germany

B-8 **PDC and PD Pulse Burst Characteristics in Differently Aged Transformer Oils**
J. Li, W. Si, H. Bi, Y. Li, School of Electrical Engineering, Xi'an Jiaotong University, China

B-9 **A Subnanosecond High-voltage Pulse Generator Used in UHF PD Experiment for Power Transformer and GIS**
P. Yuan, J. Li, W. Si, Y. Li, School of Electrical Engineering, Xi'an Jiaotong University, China

B-10 **A New Approach to Extract PD Pulse Using Independent Component Analysis**
W. Si, J. Si, P. Yuan, Y. Li, School of Electrical Engineering, Xi'an Jiaotong University, China

B-11 **Study on Time-Frequency Characteristic of PD Pulse Using Wigner-Ville Distributions**
W. Si, J. Si, P. Yuan, Y. Li, School of Electrical Engineering, Xi'an Jiaotong University, China

B-12 **Pulse Shaped Interference Suppression From Partial Discharge Measurements**
H. Al-Marzouqi and B. Barkat, Department of Electrical Engineering, The Petroleum Institute, United Arab Emirates

B-13 **Time Domain Detection of Partial Discharge in Current Transformer**
M. Chen, C. Cheng, W. Chang and J. Chen, St. John's University, Taipei, Taiwan

B-14 **Light Emission Spectrum Depending on Propagation of Partial Discharge in SF₆**
S. Yoshida, H. Kojima, N. Hayakawa, F. Endo, Hitoshi Okubo, Nagoya University, Japan

- B-15** **Partial Discharge Diagnostics of Micro Cavities in Epoxy Insulating Materials and their Modelling**
M. Budde and M. Kurrat, Institute for High-Voltage Technology and Power Systems, Technische Universität Braunschweig, Germany
- B-16** **Identification of Partial Discharge Phenomena in HVDC Apparatus**
H. Q. Niu^{1,2}, A. Cavallini¹, G. C. Montanari¹
¹Department of Electrical Engineering of Bologna University, Italy; ²Electrical Power School of South China University of Technology, China
- B-17** **Development of a UHF PD Detection System to Estimate the Dielectric Condition of a Medium Voltage Switchgear**
W. Kang, D. Lee, S. Ham, J. Lee, J. Lee, LS Industrial systems, Korea; D. Kim, T. Kwon, Korea Electric Power Corporation (KEPCO), Korea
- B-18** **Time-Frequency Analysis of EM Waves Emitted from Consecutive PD Pulses Using the Constrained Interpolation Profile (CIP) Method and the In-Place Fast Haar Wavelet Transform**
M. Kawada and K. Isaka, Institute of Technology and Science, The University of Tokushima, Japan
- B-19** **The Combined Dielectric Spectroscopy Metering in a Wider Frequency Range**
T. Palai-Dany, K. Liedermann, Department of Physics, FEEC, BUT, Czech Republic
- B-20** **A Real-Time Processing System for Denoising of Partial Discharge Signals Using the Wavelet Transform**
H. O. Mota, N. D. O. Volpini, G. F. Rodrigues, Department of Exact Sciences and Technology, UNI-BH – Centro Universitário de Belo Horizonte, Brasil and F. H. Vasconcelos, Department of Electrical Engineering, UFMG – Universidade Federal de Minas Gerais, Brasil
- B-21** **Development of an Intelligent Spacer Built into the Internal-type UHF Partial Discharge Sensor**
D. Kim, C. Hwang, Y. Kim, J. Choi, PSD Tech; W. Seo, B. Han, S. Choi, Iljin Electric; Y. Jang, Hanyang University
- B-22** **UHF Partial Discharge Fixed and Portable Monitoring Systems for Prevent of the Failure in Gas-Insulated Switchgear(GIS)**
C. Hwang, J. Choi, C. Choi, I. Jung, Seongnam-city, Korea
- Rotating Machines - Session Chairs:** **Douglas Conley, Siemens Power Generation, USA & Dan Manns, General Electric, Canada**
- B-23** **Behavior of a Machine Insulation System During Accelerated Aging Tests**
M. Farahani, Leibniz Universität Hannover, Germany
- B-24** **Using of the Aging Models and Rotating Machine Insulation Evaluation**
V. Mentlik, P. Trnka, J. Pihera, University of West Bohemia in Plzen, Faculty of Electrical Engineering Department of Technologies and Measurement, Bohemia
- B-25** **Effect of Humidity on Charge and Discharge Current of Large Rotating Machines Bar Insulation**
R. Soltani¹, E. David¹, L. Lamarre², L. Lafortune³
¹École de Technologie Supérieure, Canada, ²Institute of Research of Hydro-Quebec (IREQ), Canada, ³GE Hydro, Lachine Bar Plant, Canada
- B-26** **Thermal Degradation of Insulating Systems Based on Dielectric Currents**
M. Celio Contin, R&D Department, WEG Equipamentos Eletricos S.A. . Motor Division, Brazil
- B-27** **The Development of Semiconducting Materials for Anti-Corona Protection Designs of Generator High Voltage Windings and their Testing at Cryogenic Temperatures**
R. Malamud, Consultant, USA, and G. Shumovskaya and T. Stepanova, State Enterprise Plant “Electrotyazhmash”, Kharkov, Ukraine

Switchgear - Session Chairs: **Lukas Graber, EEH High Voltage Laboratory, Switzerland**
 Neil Davies, EA Technology, UK

- B-28** **Dynamic Measurement of Surface Discharge under Different Gaseous Environments and Pressures**
T. N. Tran, P. L. Lewin, J. S. Wilkinson, S. G. Swingler, School of Electronics and Computer Science, University of Southampton, UK and P. F. Coventry, National Grid, UK
- B-29** **CFD Benchmark Validation Study on Simulation Based Breakdown Voltage Prediction in Capacitive Switching of High Voltage Circuit Breaker**
Y. Lee and X. Ye, ABB Switzerland Ltd, Switzerland
- B-30** **An Estimation Technology of Temperature Rise in GIS Bus Bar using Three-Dimensional Coupled-Field Multiphysics**
J. Yoon, H. Ahn, J. Choi, I. Oh, LS Industrial systems, Korea
- B-31** **Genetic Algorithm based Methodology for Optimisation of Innovative Switchgear Design**
M. Hinow, ETH High Voltage Laboratory, Switzerland
- B-32** **Improving SF6 Leakage Detection in Switchgear by Reducing the Influence of Solar Radiation on Density Measurement**
L. Graber, ETH High Voltage Laboratory, Switzerland, G. Bonfigli and S. Müller, ETH Institute of Fluid Dynamics, Switzerland
- B-33** **CFD Simulation of Heat Transfer and Gas Mixing in Exhaust Parts of High-Voltage Circuit Breaker**
X. Ye, A. Dahlquist, J. Abrahamsson, ABB Switzerland Ltd. Interrupter Development, and C. Franck, ABB Switzerland Ltd. Corporate Research, Switzerland
- B-34** **An Approach to Model Very Fast Transients in High Voltage Circuit Breakers**
P. Simka, High Voltage Laboratory, ETH Zürich, Switzerland

TUESDAY, JUNE 10, 2008

- 08:00 – 17:00 Registration, *Harbourside Foyer*
- 07:00 – 08:30 General Breakfast, *Harbourside Foyer*
- 07:00 – 08:30 Tuesday Oral Presenters and Session Chairs, *Port of Vancouver*

SESSION 10 – OUTDOOR INSULATION – PART 1 (ORAL)

08:30 – 09:50, Harbourside 1

Session Chair: William McDermid, Manitoba Hydro, Canada

- 08:30 – 09:10** **Keynote Address:**
Evaluating the Performance of Outdoor Apparatus in Harsh Environments
S. Clifford¹, H. Le², P. Mähönen³ and A. Krivda¹
¹ABB Switzerland Ltd., Baden-Dättwil, CH-5405, Switzerland.
²ABB Inc., Pinetops, NC 27864, U.S.A.
³ABB Oy, 65101 Vaasa, Finland.
- 09:10 – 09:30** **Evaluation Methods of Contamination Flashover Voltage Performance of Semi-conducting Glaze Insulators**
A. Hayashi, K. Yamada, C. Saka, K. Sakanishi, R. Matsuoka, Department of Electrical Engineering, Chubu University, Japan
- 09:30 – 09:50** **The Cost Effective Lightning Protection for Live Line Workers**
B. Nemeth, I. Kiss, I. Berta, Budapest Univ. of Technology and Economics, Hungary

SESSION 11 – TRANSFORMERS – PART 4 (ORAL)

08:30 – 10:10, Harbourside 2

Session Chair: Prathap Basappa, Norfolk State University, USA

- 08:30 – 08:50 Breakdown Testing of Standard Insulation Materials with High Frequency Voltages for an Assessment of Stresses Generated by Repetitive Pulses**
M. Nagel, P. Otte, T. Leibfried, University of Karlsruhe, Institute of Electrical Energy Systems and High Voltage Technology, Germany
- 08:50 – 09:10 Effects of Thermal Accelerated Ageing on a Medium Voltage Oil-Immersed Current Transformer**
D.M. Robalino Vanegas and S.M. Mahajan, Tennessee Technological University, USA
- 09:10 – 09:30 Advanced Applications of Polarisation / Depolarisation Current Analysis on Power Transformers**
S.A. Bhumiwat, Independent High Voltage Diagnostics Consultant, New Zealand
- 09:30 – 09:50 A New Generation of On-Site Test Systems for Power Transformers**
A. Winter, A. Thiede, HIGHVOLT Prüftechnik Dresden GmbH, Germany
- 09:50 – 10:10 Maintenance of Complex Machines in Electric Power Systems Using Virtual Reality Techniques**
B. Arendarski, W. Termath, Fraunhofer Institute for Factory Operation and Automation, and P. Mecking, RWE Rhein-Ruhr-Netzservice GmbH, Germany

SESSION 12 – MATERIALS – PART 3 (ORAL)

08:30 – 10:10, Harbourside 3

Session Chair: Michael Kessler, RWTH Aachen University, Germany

- 08:30 – 08:50 Prebreakdown Phenomena in Insulating Gas Mixtures under Very Fast Transients**
W. Pfeiffer, N. Kuzishin, Darmstadt University of Technology, Laboratory for Electrical Measuring Techniques, Germany, and M. Zhurkov, Tomsk Polytechnic University, High Voltage Research Institute, Russia
- 08:50 – 09:10 Environmentally Friendly Flame Retardant Epoxy For Electrical Insulation**
V. Tilliette, L.E. Schmidt, C. Ghoul, S. Schaal, ABB Switzerland Ltd Corporate Research, Switzerland
- 09:10 – 09:30 Thermal Properties of Composites Filled with Different Fillers**
J. Han, B. Wood, Siemens Power Generation, USA, and H. Herman and G.C Stevens, Gnosys UK, UK
- 09:30 – 09:50 Morphology, Thermal, Mechanical and Electrical Properties of Propylene-Based Materials for Cable Applications**
I. L. Hosier¹, S. Reaud², A. S. Vaughan¹ and S. G. Swingler¹
¹Electronics and Computer Science, University of Southampton, UK; ²Ecole de Mines de Douai, France
- 09:50 – 10:10 Thermal Aging Effect on Charging and Discharging Currents in Polymers Under DC Stress**
M. Moudoud, M. Megherbi, M. Mekious, O. Lamrous, Laboratoire des Technologies Avancées en Génie Electriques (LATAGE), Algérie

10:10 - 10:30 Morning Break

SESSION 13 – OUTDOOR INSULATION – PART 2 (ORAL)

10:30 – 12:10, Harbourside 1

Session Chair: Nicole Möhring, Darmstadt University of Technology, Germany

- 10:30 – 10:50 Characterization of Fast Flashover of External Insulation**
W. McDermid, Manitoba Hydro, Canada

- 10:50 – 11:10 Power Losses Due to Pipeline Cathodic Protection (CP) 6-Pulse Rectifier**
M. Al-Hajri, Power Distribution Department, Saudi Aramco, Saudi Arabia
- 11:10 – 11:30 The Survey of Insulation Problems of UHV Transmission System**
W. Jiang, G. N. Wu, S. X. Wang, School of Electrical Engineering, Southwest Jiaotong University, China and Z. Huang, Sichuan Electric Power Corporation, China
- 11:30 – 11:50 Inspection of Pin Insulators in Distribution Medium Voltage Lines & Outage Reductions**
H. R. P. M. de Oliveira, E. L. Batista, AES Sul - Distribuidora Gaúcha de Energia, Brazil and C. Lefort, C. de Salles, M. L. B. Martinez, Universidade Federal de Itajubá, Brazil
- 11:50 – 12:10 Natural, Rotationally Asymmetric Ageing of Composite Insulators**
E. da Silva and S. M. Rowland, The University of Manchester, UK

SESSION 14 – CABLES – PART 1 (ORAL)

10:30 – 12:10, Harbourside 2

Session Chair: Kal Abdolall, Powertech Labs, Canada

- 10:30 – 11:10 Keynote Address:**
Maximizing Cable Reliability at the Lowest Possible Cost
B.T. Lanz, B.E. Broussard, IMCORP –Power Cable Reliability Consulting & Diagnostics, CT, USA
- 11:10 – 11:30 Dielectrometry Measurements of Moisture Diffusion and Temperature Dynamics in Oil Impregnated Paper Insulated Electric Power Cables**
Z.M. Thomas, MA, USA and M. Zahn, Massachusetts Institute of Technology, MA, USA
- 11:30 – 11:50 An Investigation of Thermal Ratings for High Voltage Cable Joints through the Use of 2D and 3D Finite Element Analysis**
J.A.Pilgrim, D.J.Swaffield, P.L.Lewin, University of Southampton, UK and D.Payne, National Grid, UK
- 11:50 – 12:10 Simulation of UHF PD Wave Propagation in Plug-in Cable Terminations**
D. Denissov, W. Köhler, S. Tenbohlen, Universität Stuttgart, IEH, Germany and R. Grund, T. Klein, PFISTERER Kontaktsysteme GmbH, Germany

SESSION 15 – PARTIAL DISCHARGE – PART 1 (ORAL)

10:30 – 12:10, Harbourside 3

Session Chair: Michael Danikas, Democritus University of Thrace, Greece

- 10:30 – 11:10 Keynote Address:**
Case Studies Using an Additional Neutral Point PD Sensor for Generator Stator Monitoring
R. Stein, C. Watters, TTTVE Monitoring, ALSTOM Power Ltd., Switzerland, and T. Laird, I&C and Diagnostic Operations, ALSTOM Power Inc., USA
- 11:10 – 11:30 Identification of Defects Generating PD in AC Rotating Machines by Means of Fuzzy-Tools**
A. Contin and A.Tessarolo, DEEI, University of Trieste, Italy
- 11:30 – 11:50 Study of Partial Discharges at the Positive and Negative Voltage Flanks of Semi-Square Voltages**
E. Lindell, T. Bengtsson and J. Blennow, High Voltage Engineering Department of Materials and Manufacturing Technology, Chalmers University of Technology, Sweden
- 11:50 – 12:10 An Investigation into Electromagnetic Radiation due to Partial Discharges in High Voltage Equipment Based on Non-Contact Measurements**
S. Xiao, P.J. Moore, M.D. Judd, University of Strathclyde, UK, and I. Portugués, Elimpus Ltd, UK

12:10 - 14:00 Lunch Break (on your own)

SESSION 16 – MOTORS – PART 1 (ORAL)

14:00 – 15:20, Harbourside 1

Session Chair: Alexander Rocks, Darmstadt University of Technology, Germany

- 14:00 – 14:40 Keynote Address:**
Considerations for Rotating Low-Voltage Machine Insulation Designs
N. Frost, Von Roll USA, M. Chapman and R. Bruetsch, Von Roll Switzerland
- 14:40 – 15:00 Pulse Voltage and its Aging Effect on PD Characteristics of Slot Insulation**
V. Mentlik, J. Pihera, P. Trnka, Turecek Oldrich, University of West Bohemia in Pilsen, Bohemia
- 15:00 – 15:20 Thermo-Mechanical Stresses of the Squirrel Cage Rotors in Adverse Load Conditions**
C.D. Pitis, BC Hydro – Power Smart, Canada

SESSION 17 – CABLES – PART 2 (ORAL)

14:00 – 15:20, Harbourside 2

Session Chair: Mark Easter, General Cable, USA

- 14:00 – 14:20 Determination of Diffusion Constants for Peroxide Byproducts Formed During the Crosslinking of Polyethylene**
A. Smedberg, Borealis AB, and D. Wald, Borealis Polymers, Belgium
- 14:20 – 14:40 Water Diffusion in High Voltage Subsea Cable Outer Sheath Materials**
S. Nordås and S. Hvidsten, SINTEF Energy Research, Norway
- 14:40 – 15:00 Simulation of Water Diffusion in Polymeric Cables Using Finite Element Methods**
S. M. Hellesø, S. Hvidsten, SINTEF Energy Research, Norway and V. C. Henøen, Norwegian University of Science and Technology, Department of Physics, Norway
- 15:00 – 15:20 Suppression of Electrical Tree in Silicone Rubber by Gas Impregnation**
N. Shimizu, Y. Muramoto and Y. Kamiya, Dept. of Electrical & Electronic Eng. Meijo University, Japan

SESSION 18 – PARTIAL DISCHARGE – PART 2 (ORAL)

14:00 – 15:20, Harbourside 3

Session Chair: Jitka Fuhr, ABB Switzerland

- 14:00 – 14:20 Impact of the aeronautic environment on the Partial Discharges Ignition: A basic study**
F. Koliatene, Th. Lebey, J.P Cambronne, S. Dinculescu, Laboratoire Plasma et Conversion d’Energie, France
- 14:20 – 14:40 Detection and Recording of Partial Discharges Below the So-called Inception Voltage with Point-Plane Electrode Arrangements in Air**
M.G. Danikas, Democritus University of Thrace, Department of Electrical and Computer Engineering Power Systems Laboratory, Greece
- 14:40 – 15:00 Separation of Superposed PD Faults and Noise by Synchronous Multi-Channel PD Data Acquisition**
K.Rethmeier, A.Kraetge, OMICRON Electronics, Austria; B.Vandiver, OMICRON Electronics Corp.USA, C.Balkon, W.Kalkner, Technical University of Berlin, HV Engineering, Germany, and R.Plath, OMICRON Electronics GmbH, Germany
- 15:00 – 15:20 Partial Discharge Measurement and Cable Length: Meaning and Limits**
A. Cavallini, G.C. Montanari, M. Tozzi, Dept. of Electrical Engineering, University of Bologna, Italy

15:20 - 15:40 Afternoon Break

SESSION 19 – MOTORS – PART 2 (ORAL)

15:40 – 17:00, Harbourside 1

Session Chair: **Constantin D. Pitis, BC Hydro, Canada**

- 15:40 – 16:00 Induction Motor Electrical Fault Diagnosis Using Voltage Spectrum of an Auxiliary Winding – Part II**
L. El Menzhi, Faculty of Sciences Ben M'sik Casablanca Morocco, and A. Saad, Department of Electrical Engineering, ENSEM Casablanca Morocco
- 16:00 – 16:20 Effect of Varistors for Overvoltage Protection in Inverter-Fed Drives on the Voltage Distribution in the Stator Winding**
A. Rocks, V. Hinrichsen, TU Darmstadt, Germany
- 16:20 – 16:40 Diagnostic Based on High Frequency Resonances and Information Fusion**
F. Perisse, E. Lefevre, D. Mercier, D. Roger, E. Mateo, Université d'Artois, France
- 16:40 – 17:00 Capacitive Grading of 13.8 kV Form-Wound Motor Coil Ends for Pulse Width Modulated Drive Operation**
E. Sharifi, S. Jayaram and E. A. Cherney, ECE Department, University of Waterloo, Canada

SESSION 20 – CABLES – PART 3 (ORAL)

15:40 – 17:00, Harbourside 2

Session Chair: **Benjamin Lanz, IMCORP**

- 15:40 – 16:00 HV AC Testing of Super-Long Cables**
P. Coors and S. Schierig, HIGHVOLT Prüftechnik Dresden GmbH, Germany
- 16:00 – 16:20 The Impact of System Voltage on the Ageing of All-Dielectric Self-Supporting Cables on Overhead Lines**
S. M. Rowland, X. Zhang and K. Kopsidas, The University of Manchester, UK
- 16:20 – 16:40 Dielectric Response of Laboratory Aged PE Cables**
S. Bernier, É. David, École de Technologie Supérieure, Canada; J.L. Parpal, D. Jean, D. Lalancette, Institut de recherche d'Hydro-Québec Canada, Canada
- 16:40 – 17:00 On-site Testing and PD Diagnosis of HV Power Cables**
E. Gulski¹, P.P. Seitz², R. Bodega³, T. Hermans³
¹Delft University of Technology, High Voltage Technology and Management, The Netherlands
²Seitz Instruments AG, Switzerland
³Prysmain Cables and Systems, The Netherlands

SESSION 21 – PARTIAL DISCHARGE – PART 3 (ORAL)

15:40 – 17:00, Harbourside 3

Session Chair: **Alfredo Contin, University of Trieste, Italy**

- 15:40 – 16:00 Judgment of the Quality of HV-Insulating Systems Based on Recommended pC / μ V-Values in International Standards**
J. Fuhr, BKW FMB Energy Ltd., Switzerland
- 16:00 – 16:20 A Comparison of the Short and Long Term Behaviour of Nanostructured Enamels with the Performances of Conventional Insulation**
F. Guastavino, E. Torello, A. Dardano, Electrical Engineering Department, Italy
S. Bono, M. Pellegrini, L. Vignati, ABB SACE S.p.A., Italy
- 16:20 – 16:40 Understanding Electromagnetic Radiation due to Partial Discharges by Simulating the Motion of a Group of Charged Particles and their Interaction**
A.S. Bhangaonkar and S. V. Kulkarni, Electrical Engineering Department, IIT Bombay, India

16:40 – 17:00 **Sensitivity Assessment Procedure for Partial Discharge Measurements on Transmission Class Cables**
M. Fenger, Kinectrics Inc, Canada

18:30 - 21:00 **Conference Banquet**
Vistas Restaurant

WEDNESDAY, JUNE 11, 2008

07:30 – 08:30 General Breakfast, *Harbourside Foyer*

07:30 – 08:30 Wednesday Oral Presenters and Session Chairs, *Port of Vancouver*

SESSION 22 – OUTDOOR INSULATION – PART 3 (ORAL)

08:30 – 10:10, Harbourside 1

Session Chair: Sudhakar Cherukupalli, BC Hydro, Canada

08:30 – 08:50 **Water Droplets on Polymeric Surfaces Under the Influence of Uniform Electric Fields: An Investigation with Horizontal and Inclined Test Electrode Arrangements**

M.G. Danikas, Democritus University of Thrace, Department of Electrical and Computer Engineering, Greece

08:50 – 09:10 **Use of Nanosilica in Silicone Rubber Coatings for Ceramic Insulators in Coastal Areas – Field Results**

L.H. Meyer, S.H.L. Cabral, and G.E. Cardoso, Dept of Electrical and Telecommunications Engineering, University of Blumenau, Brazil; M.R. de Lima and F.H. Molina, CELESC – Electrical Utility of Santa Catarina, Brazil

09:10 – 09:30 **Research on Lightning Attraction Ability of Lightning Rod with Insulation Covering and Series Air Interstice**

X. Yi, W. Zhou, J.Yu, J. Wang, X. Wang, Institute of High Voltage Engineering, Wuhan University, China

09:30 – 09:50 **Simulation for Shielding Performance of Transmission Line**

H. Lu, X. Wen, L. Lan, X. Tong, J. Hu, School of Electrical Engineering Wuhan University, Wuhan High Voltage Research Institute, China

09:50 – 10:10 **Research on Mechanism and Ultraviolet Imaging of Corona Discharge of Electric Device Faults**

C. Zang^{1,2}, X. Zhao¹, S. He¹, H. Lei³, Z. Jiang³, H. Ye³, Z. Jiang³

¹College of Electrical and Electronics Engineering, Huazhong University of Sci. & Tech., Wuhan, China; ²Xi'an Electric Manufacturing Corp., ³Electric Experiment Research Institute of Hunan Power Grid Co., China

SESSION 23 – CABLES – PART 4 (ORAL)

08:30 – 10:10, Harbourside 2

Session Chair: Ed Gulski, Delft University of Technology, The Netherlands

08:30 – 08:50 **Algorithms for Arrival Time Estimation of Partial Discharge Pulses in Cable Systems**

P. Wagenaars and P.A.A.F. Wouters P.C.J.M. van der Wielen and E.F. Steennis, Eindhoven University of Technology KEMA, The Netherlands

08:50 – 09:10 **Condition Assessment of 15 kV Rejuvenated Underground XLPE Cables**

L.E. Ogawa, K. Abdolall and M.J. Stephens, Powertech Labs Inc., Canada, and B. Smith, The City of Lethbridge, Canada

09:10 – 09:30 **Rejuvenation of Insulation in Aged Power Cables**

J. Dionne, Transelec Common Inc., Canada and W. Stagi and W. Chatterton, UtilX Corporation, USA

09:30 – 09:50 **Service Availability Assessment of Mass-insulated Power Cables by Means of Statistical Analysis**

R.A. Jongen, P.H.F. Morshuis, E. Gulski, J.J. Smit, Delft University of Technology, The Netherlands and A.L.J. Janssen, Continuum Asset Management, The Netherlands

- 09:50 – 10:10** **The Study on Evaluation Model for Water in Silicone Oil of Cable Termination and Simulate Experiment**
C. Chen, G. Liu, J. Li, School of Electric Power, South China University of Technology, China
J. Wang, G. Lu, Central Testing and Researching Institute of Guang Zhou Power Supply Company, China

SESSION 24 – SWITCHGEAR (ORAL)

08:30 – 10:10, Harbourside 3

Session Chair: Martin Hinow, EEH High Voltage Laboratory, Switzerland

- 08:30 – 09:10** **Keynote Address:**
Testing Distribution Switchgear for Partial Discharge in the Laboratory and the Field
N. Davies and D. Jones, EA Technology Ltd, UK
- 09:10 – 09:30** **Measurements and Simulations of Cold Gas Flows in High Voltage Gas Circuit Breakers Geometries**
J.D. Mantilla, ABB Switzerland Ltd. Interrupter Development and C.M. Franck, M. Seeger, ABB Switzerland Ltd. Corporate Research, Switzerland
- 09:30 – 09:50** **Verification and Validation Studies of OpenFOAM for Transonic Compressible Flow Simulations Inside High Voltage Circuit Breaker Diffusers**
B. Wuethrich and Y. Lee, ABB Switzerland Ltd, Corporate Research, Switzerland
- 09:50 – 10:10** **Diagnostics of the Vacuum Condition in Medium Voltage Vacuum Circuit Breakers**
M. Koochack-Zadeh and V. Hinrichsen, Technische Universität Darmstadt, Germany

SESSION 25 – ASSET MANAGEMENT (ORAL)

10:30 – 13:00, Harbourside Ballroom

Session Chair: Glenn Mottershead, DevineTarbell, Canada

- 10:30 – 11:10** **Keynote Address:**
A Framework Linking Insulation Ageing and Power Network Asset Management
S. M. Rowland and S. Bahadoorsingh, The University of Manchester, UK
- 11:10 – 11:30** **Optimizing Trading Capabilities and Reliability of Power Transmission Networks**
P. Morshuis¹, G.C. Montanari², G. Stevens³, C. Laurent⁴, J. Fothergill⁵, A. Campus⁶
¹Delft University of Technology, The Netherlands
²University of Bologna, Italy
³GnoSys UK Ltd, University of Surrey, United Kingdom
⁴University of Toulouse, France
⁵University of Leicester, United Kingdom
⁶Borealis, Belgium
- 11:30 – 11:50** **Rapid Non-Destructive Condition Assessment of Insulating Materials**
P.J.Baird, H.Herman and G.C.Stevens, GnoSys UK Ltd, UK
- 11:50 – 13:00** **Asset Management Expert Panel - Questions and Answers**
William McDermid, Manitoba Hydro, Canada
Richard Huber, BC Hydro, Canada
Gian Carlo Montanari, University of Bologna, Italy
Douglas Conley, Siemens Power Generation, USA

END OF SYMPOSIUM