



**2016 IEEE ELECTRICAL INSULATION
CONFERENCE (EIC)**

**34th ELECTRICAL INSULATION CONFERENCE
Advanced Detailed Program**

Hotel Bonaventure
Montréal, Qc, Canada
19 – 22 June 2016

Sponsored by IEEE Dielectrics and Electrical Insulation Society



Copyright ©2016 by IEEE

All rights reserved.

Copyright and Reprint Permission: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For reprint or republication permission, email to IEEE Copyrights Manager at pubs-permissions@ieee.org.

IEEE Catalog Number: CFPEEI-PRT

ISBN: 978-1-5090-2700-2

Additional Copies of This Publication Are Available from:

IEEE Service Center
445 Hoes Lane
Piscataway, NJ 08854

Phone: (800) 678-IEEE
(732) 981-1393

Fax: (732) 981-9667

E-mail: customer-service@ieee.org



2016 IEEE ELECTRICAL INSULATION CONFERENCE (EIC)

34th ELECTRICAL INSULATION CONFERENCE Advanced Detailed Program

Hotel Bonaventure
Montréal, Qc, Canada
19 – 22 June 2016

Sponsored by IEEE Dielectrics and Electrical Insulation Society



Conference proceedings produced with the assistance of
POWER MONITORING AND DIAGNOSIS TECHNOLOGY LTD.



POWER MONITORING AND DIAGNOSIS TECHNOLOGY LTD.
6840 Via del Oro, Suite 150, San Jose, CA 95119
Tel: 408-972-5588
Fax: 408-972-5678
E-mail : sales@powermdt.com
WWW.powermdt.com

IEEE DIELECTRIC AND INSULATION SOCIETY (DEIS)

DEIS is the *Dielectrics and Electrical Insulation Society* whose field of interest includes the study and application of solid, liquid and gaseous dielectrics from the molecular level, to nano-structured materials, to insulation in products and large-scale systems.

The Society is involved with emerging fields such as bio-dielectrics, nano-dielectrics and other small-scale systems, numerical methods for dielectric systems, and high power insulation systems. It supports basic science through practical applications and the development of relevant standards.

Membership in the DEIS (only an additional \$26 per year with IEEE dues) includes a subscription to the *IEEE Transactions on Dielectrics and Electrical Insulation* and the *IEEE Electrical Insulation Magazine*, both published bi-monthly. Among the other benefits of the Society, all DEIS members also receive information on all DEIS sponsored meetings and events and a 20% discount on conference registration fees. For membership and other information please see the DEIS website at <http://sites.ieee.org/deis>.

The current executive members of the DEIS are:

President: Paul Lewin
University of Southampton, UK

Vice-President Administration: Reimund Gerhard
University of Potsdam, Germany

Vice President Technical: Paul C. Gaberson
Curtiss-Wright, USA

Secretary: Brian Stewart
Glasgow-Caledonian University, UK

Treasurer: Bill McDermid
Manitoba Hydro, Canada

Past President: Frank Hegeler
Naval Research Laboratory, USA

Publications Committee Chair: Eric David
Ecole de technologie supérieure, Canada

Meetings Committee Chair: Davide Fabiani
University of Bologna, Italy



To: Attendees of the 34th Electrical Insulation Conference,

Welcome to the 34th Electrical Insulation Conference (EIC), a fully sponsored conference of the IEEE Dielectric and Electrical Insulation Society (DEIS). This year we are meeting in Montreal, a very lively town commonly referred to as North America's Paris.

We have worked hard to bring together a strong technical program. This year we received over 311 abstracts from a worldwide collection of authors, and after much work the technical committee has produced a program offering 103 oral presentations and 48 posters. In addition to the extensive technical program, there is an associated exhibition with 25 exhibitors such as suppliers of electrical insulant materials, electrical test equipment, instrumentation and sensors, as well as exhibits by insulation test providers.

All areas of the scope of this conference are represented and to ensure delivery of the program, we will start on Sunday evening with an opening reception which will include the first of two poster sessions.

This year we will be honouring Prof. Abderrahmane Beroual with the Thomas W. Dakin Distinguished Technical Contributions Award at the Tuesday evening awards banquet. Prof. Beroual will present the opening plenary lecture entitled "*Pre-breakdown mechanisms in dielectric liquids and Predicting Models*".

As is tradition on the Sunday of the conference, we are offering a range of short courses delivered by leading experts in the field. A series of working group meetings sponsored by the Materials Subcommittee of the IEEE Power and Energy Society will be held on Wednesday afternoon and Thursday. At these meetings, discussions are held on new IEEE standards and revisions to existing standards. Working group meetings are open to all and your participation is welcome and encouraged.

Finally, I would like to acknowledge the hard work of the EIC Conference Organization team, all volunteers. I would also like to thank the technical contribution of the authors, session chairs as well as the large group of experts who took the time to review the papers. Without the assistance of the volunteers, this conference would not be possible.

Thank you all and I sincerely hope you enjoy the experience

Bernard Noirhomme
EIC General Conference Chair

2016 CONFERENCE ORGANIZATION

GENERAL CONFERENCE CHAIR

Bernard Noirhomme, Hydro-Québec (IREQ), Canada

VICE-CHAIR

Ramtin Omranipour, GE Power Conversion, Canada

TREASURER

Stefano Bomben, OPG, Canada

TECHNICAL PROGRAM CO-CHAIRS

William Chen, TECO-Westinghouse, USA

Patrick Picher, Hydro-Québec (IREQ), Canada

EXHIBITS

Mark Winkeler, Altana, USA

REGISTRATION

Liz Tillotson, University of Southampton, UK

PUBLICATIONS

Kevin Alewine, Shermco, USA

WEBMASTER

Howard Penrose, MotorDoc LLC , USA

SHORT COURSES

Inna Kremza, Voith, Canada

STUDENTS

Eric David, ETS, Canada

INTERNATIONAL

Nancy Frost, Gerome Technologies, USA

LOCAL ARRANGEMENTS

Marie-Claude Lessard, Hydro-Québec (IREQ), Canada

EIC BOARD OF GOVERNORS

Greg Stone, Chair, Qualitrol-Iris Power, Canada

Stefano Bomben, Treasurer, OPG, Canada

Bill McDermid, Manitoba Hydro, Canada

Ed Cherney, University of Waterloo, Canada

Eric David, ETS, Canada

Paul Lewin, University of Southampton, UK

Paul Gaberson, Curtiss-Wright, USA

Rafael Garcia-Ramirez, 3M, USA

Roger Wicks, Dupont, USA

Liz Tillotson, Registrations, University of Southampton, UK

Davide Fabiani, –DEIS Meetings Committee Chair, University of Bologna, Italy.

2016 DAKIN AWARD WINNER



Professor Abderrahmane Beroual
École Centrale de Lyon

Abderrahmane Beroual was born on October 30, 1951 in Algeria. He received the *Diplôme d'Ingénieur d'Etat en Electrotechnique* in 1976 from the *Ecole Nationale Polytechnique* of Algiers and Ph.D degree in electrical engineering with specialization in high voltage technology in 1979 from the Technical University of Wroclaw, Poland. In 1980, he joined the *Ecole Nationale Polytechnique* of Algiers where he initiated several research projects in collaboration with national companies. He also served as advisor at the Algerian Ministry of Higher Education and Scientific Research (1980 – 1983). From 1983 to 1987, he was researcher at the *Laboratoire d'Electrostatique et de Matériaux Diélectriques* (LEMD) – CNRS of Grenoble and visiting professor at the Joseph Fourier University of Grenoble, France. In 1987, he obtained the *Doctorat d'Etat ès Sciences Physiques* degree from the *Institut National Polytechnique* of Grenoble. Back in Algeria in 1987, he received the title of professor at the *Ecole Nationale Polytechnique* of Algiers.

Prof. Beroual moved to France in 1992 where he was nominated on a permanent position at the *Ecole Centrale de Lyon*, University of Lyon. He is currently full professor and the head of High Voltage Engineering Group at AMPERE Lab – CNRS. He is also involved in the research programs of SuperGrid Institute, the biggest French Energy Transition Institute.

From 1994 to 1998, he chaired the International Study Group on Streamer Propagation in Liquids of the IEEE – DEIS. Prof. Beroual's is a member of many Advisory Committees of International Conferences, the Technical Committee of the IEEE CEIDP, the International Electrotechnics Commission (IEC) Commission UF 10 « Fluids and electrotechnical applications » - MT30, and associate editor for IEEE TDEI.

Prof. Beroual's research has made substantial contributions to high voltage engineering and dielectric materials, especially to long air gap discharge and lightning, outdoor insulation, modelling of discharges and composite materials, pre-breakdown and breakdown phenomena in dielectric fluids and solid/fluid interfaces; he established mathematical formulas and models useful in these topics. He was elected IEEE Fellow in 2011 for his contribution to processes of pre-breakdown and breakdown in dielectric liquids.

Past conferences (EIC and ISEI)

Year	Location	Chair	Affiliation
1958	Cleveland, USA	Joseph R. Perkins	DuPont
1959	Washington, DC, USA	Harry H. Chapman, Jr.	Owens-Corning Fiberglas
1960	Chicago, USA	H.G. Hoffer	Johns-Mansville Corp
1962	Washington, DC, USA	Roger B. White	The Glastic Corp
1963	Chicago, USA	Edward H. DaCosta	Taylor Corp
1965	New York, USA	William J. Dwyer	Suflex Corp
1967	Chicago, USA	Graham Lee Moses	Westinghouse Electric Corp
1968	Los Angeles, USA	E.J. Phelan	Prehler Electrical Insulation Co
1969	Boston, USA	E.J. Phelan	Prehler Electrical Insulation Co
1971	Chicago, USA	W.H. Bartlett	Johns-Mansville Sales Corp
1973	Chicago, USA	L.R. Samelson	Lake Publishing Corp
1975	Boston, USA	F.A. Blankenbaker	3M Company
1976	Montréal, Canada	Ray Bartnikas	IREQ
1977	Chicago, USA	W.H. Bentley Jr	Bentley-Harris Mfg. Co
1978	Philadelphia, USA	Eric Forster	Exxon
1979	Boston, USA	John D. Deacon	Keene Corp./Chase Foster
1980	Boston, USA	Hugues St-Onge	IREQ
1981	Rosemont, USA	Donald E. Wiesenberg	Phelps Dodge Magnet Wire Co
1982	Philadelphia, USA	Alan Cookson	Westinghouse Electric Corp
1983	Chicago, USA	Russell C. Allen	Essex Group, Inc
1984	Montréal, Canada	Hugues St-Onge	IREQ
1985	Boston, USA	Harry R. Sheppard	Westinghouse Electric Corp
1986	Washington, D.C., USA	Steinar Dale	DOE
1987	Rosemont, USA	John K. Merrell	Industrial Dielectrics, Inc
1988	Cambridge, USA	Steinar Dale	DOE
1989	Rosemont, USA	John G. Bullivant	Sterling Ltd
1990	Toronto, Canada	Greg Stone	Ontario Hydro
1991	Boston, USA	John K. Merrell	Industrial Dielectrics, Inc
1992	Baltimore, USA	Richard Van Brunt	NIST
1993	Rosemont, USA	Don R. Disque	Phelps Dodge Magnet Wire Co
1994	Pittsburgh, USA	Karl Schoch, Jr.	Westinghouse

1995	Rosemont, USA	Thomas E. Castaldi	Essex Group, Inc
1996	Montréal, Canada	Jean-Pierre Crine	IREQ
1997	Rosemont, USA	Sharon Walker	Allied-Apical/Kaneka
1998	Arlington, USA	Gerald FitzPatrick	NIST
1999	Cincinnati, USA	R. William Simpson, Jr.	QUIN-T Corporation-NH
2000	Anaheim, USA	Greg Stone	Iris Power
2001	Cincinnati, USA	John W. Mueller	Elektrisola, Inc
2002	Boston, USA	Harold Marsden	GridCom International
2003	Indianapolis, USA	Roger Wicks	DuPont
2004	Indianapolis, USA	Bill McDermid	Manitoba Hydro
2005	Indianapolis, USA	Richard B. Duke	A/Z – Tech, Inc
2006	Toronto, Canada	Howard Sedding	Kinectrics Inc
2007	Nashville, USA	L. Gerry Landry	Suflex-Regal
2008	Vancouver, Canada	Resi Zarb	Iris Power
2009	Montréal, Canada	Bill McDermid	Manitoba Hydro
2010	San Diego, USA	Stefano Bomben	Ontario Power Generation
2011	Annapolis, USA	Nancy Frost	Krempel
2012	San Juan, Puerto Rico	Don C. Campbell	US Army Corps of Engineers
2013	Ottawa, Canada	Éric David	École de Technologie Supérieure
2014	Philadelphia, USA	Paul Gaberson	Curtiss-Wright
2015	Seattle, USA	Paul Lewin	University of Southampton, UK

SUNDAY, JUNE 19, 2016

08:30 - 14:30 Registration, banquets level
16:00 - 19:30 Registration, banquets level

Short Courses

09:00—17:30, Room: St-Lambert
On Site and Laboratory Partial Discharge Measurements and Analysis
Instructors: Thomas Prevost and William Hu, OMICRON Electronic Corp., USA.

09:00—17:30, Room: St-Laurent
Forensic Analysis of Insulation and System Failures
Instructor: Howard W Penrose PhD, CMRP: Vice President of Dreisilker Electric Motors, Inc., USA

09:00—12:30, Room St-Michel
Effect of Inverter Drive on Electrical Insulation
Instructor: Dr. Greg Stone , Iris Power-Qualitrol, Toronto, Canada

18:00 - 20:30 Reception & Poster Session

Poster Session 1

Room: Fontaine CD

Poster Session Hosts: W.Chen, P.Picher, H.Provencher, M.Lévesque

Rotating Machines

P1-1 Experiences with Resin Rich Mica Taping Materials
N. E. Frost, Ph.D. and M. Williamson: Gerome Technologies, NY
G. Harold "Hal" Miller: Consultant, NY

P1-2 Effect of Moisture on the Test of Frequency Domain Spectroscopy of Large Turbine-Generator Stator Insulation
J. Xu, B. Gao, Southwest Jiaotong University, China

P1-3 Numerical Investigation of Transient Potential Distribution along Stress-Grading on Form-Wound Stators
(Roebel Bar Type)
G. Kone and C. Volat: Université of Québec à Chicoutimi, Canada
C. Hudon: Institut de recherche d'Hydro Québec (IREQ), Canada

Transformers

- P1-4 Studying Power Transformers Cooling Effectiveness from Computational Fluid Dynamics approach
K. S. Kassi, I. Fofana, M. I. Farinas, C. Volat, Université du Québec à Chicoutimi, Canada
-
- P1-5 Experiments on the Multi-functional Current Sensor for condition detection of Transformer Bushings
Y. Cheng, T. Hu, North China Electric Power University, China W. Chang, J. Bi, China Electric Power Research Institute, China
-
- P1-6 Numerical Model of a Three-Phase Busbar Trunking System
F. Delgado, C. Renedo, A. Ortiz, I. Fernández, University of Cantabria, Spain
-
- P1-7 Effects of Passivator on Lifetime and Electrical Properties of Insulating Paper
Y. Qian, W. Su, Electric Power Research Institute of Guangdong Power Grid, China
S. Zeng, S. Cao, Wuhan University, China
-
- P1-8 Theoretical Study of Corrosion Inhibition on Copper in Transformer Oil
W. Su, Y. Zhao, Y. Qian, Electric Power Research Institute of Guangdong Power Grid, China
X. Yu, B. Wang, Wuhan University, China
-
- P1-9 Metrics for Partial Discharge Detection by the Acoustic Emission Technique to support Decisionmaking
A. P. Marques, C. H.B. Azevedo, J. A.L. dos Santos, F. R. de C. Sousa, CELG Distribuição S.A., Brazil
C. J. Ribeiro, N. K. Moura, A. S. Rocha, L. da C. Brito: Federal University of Goiás, Brazil
-
- P1-10 Study of Limit Concentrations of DBDS and Sulfur Mercaptan in Power Transformers
S. Rehman, L. M. Alhems, K. Y. Soufi, King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia
R. Jadim, Linnaeus University, Sweden
B. A. Al faraj, K. S. Balasubramanian, K. S. AlMutairi, A. Khalid Al-Yemni, D. V. Shinde, S. A. Al-Hsaien, Saudi Electricity Company (SEC), Saudi Arabia
-

Cables

- P1-11 On-line Calibration of Partial Discharge Monitoring for Power Cable by HFCT Method
X. Gu, Y. Xu, State Key Laboratory of Electrical Insulation and Power Equipment, China
R. Xia, S. Meng, Y. Wang, China Electric Power Research Institute, China
-
- P1-12 Development of a Measurement System for Off-line Diagnosis of MV Cables
Th. Scharrer, Ch. Weindl, Coburg University of Applied Sciences, Germany
F. Eppelein: Friedrich-Alexander University of Erlangen-Nuremberg, Germany
-
- P1-13 Evaluation of UV Stability of Outdoor Dielectric Compounds for Covered Overhead Lines
S. J. Han, The Dow Chemical Company, USA
J. Kjellqvist, Dow Europe GmbH, Switzerland
-
- P1-14 Method for measuring leakage current in LDPE insulated miniature cables containing volatile additives at elevated temperatures
M. Jarvid, S. Josefsson, Nexans Norway AS, Norway
-

Nanodielectrics

P1-15 Study on Influence of Temperature and Water Absorption on Corona Resistance of Polyimide Nanocomposite Film,
X. Zhong, G. Wu, Southwest Jiaotong University, China

P1-16 Dielectric response and breakdown strength improvement of LDPE/TiO₂ nanocomposites by using POSS as compatibilizing agent
T. Tran Anh, Electric Power University, Vietnam + École de Technologie Supérieure, Canada
C. Vanga-Bouanga, E. David: École de Technologie Supérieure, Canada
M. Fréchette: Hydro-Quebec's research institute, Canada

Outdoor Insulation

P1-17 Effect of Uneven Wetting on E- Field Distribution along Composite Insulators
M Majid Hussain, S Farokhi, S G McMeekin, Glasgow Caledonian University, United Kingdom
M Farzaneh, University of Quebec at Chicoutimi, Canada

P1-18 Influence of Dry Band Width and Location on Flashover Characteristics of Silicone Rubber Insulators
A. A. Nekahi, S.G. McMeekin, Glasgow Caledonian University, United Kingdom
M. Farzaneh, Université du Québec à Chicoutimi, Canada

P1-19 The Flashover Performance of 5000h Multi-factor Artificial-aged Composite Insulator
Y. TU, Y. JIANG, D. LIANG, C. WANG, Z. YUAN, North China Electric Power University, China

P1-20 A New Method to Measure RTV Coatings Thickness with Laser-induced Breakdown Spectroscopy (LIBS) Technique
X. Wang, H. Wang, Z. Jia, Tsinghua University, China

P1-21 Design of Wind-resistant Composite Insulator in Different Level of Wind Speed
Y. WANG, Z. Jia, Y. Lei, Tsinghua University, China
Z. Zhu, Shanghai Power Grid Company, China

P1-22 Effects of Conductive Components on AC Flashover Performance of Insulators at Various Contamination Environments
L. Shu, H. Li, X. Jiang, Q. Hu, Z. Zhang, Chongqing University, China

P1-23 Research on influences of inappropriate use and painting defects of RTV in Guangdong Region
Z. Rao, C. Lin, X. Peng, Electric Power Research Institute of Guangdong Power Grid Corporation, China
M. Fang, Z. Jia, Z. Li, C. Chen, Graduate School of Tsinghua University, China

P1-24 Adaptation of the application of portable protective air gap to the Hungarian live-line maintenance technology
B. G. Halász, Dr. B. Németh, R. Cselkó, G. Göcsei, Budapest University of Technology and Economics, Hungary

Testing

- P1-25 Partial discharge testing in aeronautic environment on magnet wire and feeder cables;
T. Billard: IRT Antoine de Saint Exupéry, France
C. Abadie, IRT Antoine de Saint Exupéry, France + Laboratoire Laplace, CNRS-UPS-INP, France
T. Lebey, Laboratoire Laplace, CNRS-UPS-INP, France
-
- P1-26 Static and quasi-static behavior of dry and oilimpregnated pressboard
O. Girlanda, K. Wei, ABB Corporate Research, Sweden
M. Evenbom, ÅF Industri AB, Sweden
L. E. Schmidt, ABB Insulation and Components, Germany
J. Forslín, ABB Power Products Transformers, Sweden
-
- P1-27 Acoustic Fiber Optic Sensors for Partial Discharge Monitoring
S. QIAN, H. CHEN, Y. XU, L. ZHONG, Xi'an Jiaotong University, China
L. SU, Queen Mary University of London, United Kingdom
-
- P1-28 Low-cost lightning current peak detector for installation on communication towers
F. S. I. Sousa, R. A. C. Altafim, D. A. P. Ferreira, University of São Paulo, Brazil
R. A. P. Altafim, Federal University of Paraíba (UFPB), Brazil
-

MONDAY, JUNE 20, 2016

07:30 – 09:30 Registration, Banquets level

07:00 – 08:00 Breakfast, Fontaine CD

07:00—08:00 Authors' Breakfast, Salon Ville Marie

08:00– 09:00—Plenary Session—Room : Outremont-Verdun-Lachine-Lasalle

Opening Remarks – Conference Chair, Bernard Noirhomme

Introduction of Plenary Speaker—

Title: Pre-breakdown Mechanisms in Dielectric liquids and Predicting Models

Dakin Award Recipient : Prof.Abderrhamane Beroual, École Centrale de Lyon, France.

09:10— 10:25 Session 1– Transformers S1

Room: Mont-Royal/Hamstead

Session Chair: C. Rajotte, Hydro-Québec , Canada

09:10 Dielectric Prototype Test of a Full-scale 420 kV Power Transformer HV Lead Exit Insulated with Natural Ester Liquid

09:35 C. Krause, U. Kaminskis, A. Wild,, Weidmann Electrical Technology AG, Switzerland
K. Rapp, Alan Sbravati:Cargill – Dielectric Fluids, USA

09:35 Safe and Environmentally Friendly Large Power Transformers with Ester, Successful Introduction of Ester Liquids at the 420 kV Transmission Level

10:00 G. J. Pukel, G. Fleck, H. Pregartner: Siemens AG Österreich, Austria; R. Fritsche: Siemens AG, Germany

10:00 Understanding Dissolved Gas Analysis of Ester Liquids: an Updated Review of Gas Generated in Ester Liquid by Stray Gassing, Thermal Decomposition and Electrical Discharge

10:25 D. Hanson, K. Li, J. Plascencia, C. Beauchemin: TJ|H2b Analytical Services; J. Luksich, A. Lemm, Cooper Power Systems;
C. Claiborne, D. Cherry, G. Frimpong, ABB Inc
R. Martin,M&I Materials, Ltd.

09:10— 10:25 Session 2 , Rotating Machine S2**Room: Verdun-Lachine****Session Chair: TBD**

09:10- Water-Cooled Stator Windings Copper Oxide Issues

09:35 C. V. Maughan: Maughan Generator Consultants, USA

M. Svoboda, SvoBaTech AG, Switzerland

09:35 Upgrading of Old Large Turbo Generators

- M.Shadmand, MAPNA Generator Engineering and Manufacturing Co., IRAN

10:00

10:00 Evaluation of Electrical Insulation Quality for High Voltage Stator Windings Machines through Visual Inspection

- of Dissected Coils; Dr. A Gegenava, Dr. A. Khazanov, National Electric Coil, TX, USA B.Moore, P.E., National

10:25 Electric Coil, OH,USA

09:10— 10:25 Session 3 Outdoor Insulation S3**Room: Wesmount****Session Chair: TBD**

09:10- High Voltage Robustness of Mold Compounds after Different Treatments

09:35 J. Paye, Infineon Technologies AG, Germany + University Kassel, Germany

A. Claudi, University Kassel, Germany

M. Stecher, Infineon Technologies AG, Germany

09:35 Flashover Prediction of Iced Composite Insulators Based on Leakage Current's Feature Parameters

- L. Shu, G. Qiu, X. Jiang, Q.Hu, Y. He, Chongqing University, China

10:00

10:00 Flashover Performance of Polluted Composite Insulators Under AC and Hybrid AC/DC Field Stress

- H. Saadati, P. Werle, E. Gockenbach, H. Borsi, Leibniz Universität Hannover, Germany; J. Martin Seifert, LAPP

10:25 Insulators GmbH, Germany

10.25 - 10.50 Coffee break , Room : Foyer

10:50— 12:45 Session 4 , Transformers S4**Room: Mont Royal/Hampstead****Session Chair : C.Rajotte, Hydro-Québec, Canada**

10:50 Fault Diagnostics in Oil Filled Electrical Equipment: Review of Duval Triangle and Possibility of Alternatives

- G. K. Irungu, A. O. Akumu, and J. L. Munda: Tshwane University of Technology, South Africa

11:15

11:15 The Assess Method of Validity for DGA Sensor Based on Multiple Criterion

- P. Zhang, B. Qi, Z. Rong, C. Li, North China Electric University,

11:40 C. F. Li, Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China

11:40 Risk Prevention for HV Transformers: Beyond the Health Index
- F. Scatiggio, Terna Rete Italia, Italy, L. Calcara and M. Pompili: University of Roma "La Sapienza", Italy
12:05

12:05 Experience with On-line PD Testing On 653 Instrument Transformers
- O. De León Campos, Costa Rican Institute of Electricity, Costa Rica H. Zhu, Doble Engineering Company, USA
12:30

12:30 *Commercial Presentation* by: TBD
-
12:45

10:50— 12:45 Session 5 Rotating Machines S5

Room: Verdun/Lachine

Session Chair: TBD

10:50- Accelerated aging, partial discharges and breakdown of Type II turn-to-turn insulation system of rotating
11:15 machines
G.C. Montanari, A. Cavallini: University of Bologna DEI, Italy;
F. Ciani, Techimp Group, Italy, A. Contin, University of Trieste DEEI, Italy

11:15 On-Line Partial Discharge Measurement in Hydrogen-Cooled Generators
- G.C. Stone, C. Chan, H.G. Sedding, Iris Power - Qualitrol, Canada
11:40

11:40- On the variability of PD results among expert independent laboratories
12:05 M. J. da Silva, F. Pereira, T. E. Lamas, J. F. Cordeiro, C. S. Gonçalves, T. K. Aoki, E. Faria, T. Hildinger: VOITH
HYDRO LTDA, BRAZIL

12:05 Temperature effects on PD statistics and endurance of inverter-fed motor insulation under repetitive square
- wave voltages
12:30 P. Wang, H. Xu, J. Wang, Sichuan University, China ; A. Cavallini, G.C. Montanari: University of Bologna, Italy

12:30 *Commercial Presentation* by: TBD
-
12:45

10:50— 12:45 Session 6 Outdoor Insulation S6

Room: Wesmount

Session Chair: TBD

10:50- High voltage insulator contamination level online monitoring with conventional and novel methods
11:15 Y. Jiang, S. G. McMeekin, A. J. Reid, A. Nekahi, Glasgow Caledonian University, United Kingdom; M. D. Judd,
High Frequency Diagnostics and Engineering Ltd, United Kingdom;
A. Wilson, Doble PowerTest Ltd, United Kingdom

11:15 - Lightning Withstand of Medium Voltage Cut-out Fuses Stressed by Nonstandard Impulse Shapes,
Experimental Results
11:40 G. P. Lopes, G. H. Faria, E. T. W. Neto, M. L. B. Martinez (in memoriam), Federal University of Itajubá –
UNIFEI, Brazil

11:40- Study on the Effect of Corona on Hydrophobicity Recovery Performance of RTV Silicone Rubber and its Failure Criterion
12:05 X. Yuan, H. Lu, L.Lan, H. Wang, X. Wen, Wuhan University, China; Y. Liao, F. Zhang, China Southern Power Grid Co., Ltd., China

12:05 - AC Pollution Flashover Characteristics of Polluted Insulators at Natural Fog Conditions
X. Jiang, Z. Meng, Y. Guo, Z. Li and Q. Hu: ,Chongqing University, China;
12:30

12:30 - *Commercial Presentation by*

12:45

12:45 - 14:00 Exhibition and Lunch

Room: Fontaine ABCD

14:00— 15:40 Session 7 Transformers S7

Room: Mont-Royal / Hampstead

Session Chair: F.Torriano, Hydro-Québec(IREQ), Canada

14:00 - General Diagnosis of Transformer Winding Axial Displacement Faults Based on FEM Simulation and On-site Experiments

14:25 F.Lu, L. Jin, State Grid Hubei Electric Power Research Institute, China; S. Liu, Y Liu, H. Li, F. Lin, Huazhong University of Science & Technology, China

14:25 - Transformer Structural Faults Detection Based on FRA and SCI Measurement
S.Liu, Y.Liu, H. Li, F. Lin, Huazhong University of Science & Technology, China

14:50 F.Lu, L.Jin, L. Ruan, State Grid Hubei Electric Power Research Institute, China

14:50 Field Experience on Diagnostic Condition Assessment of Three Phase Distribution Class Transformers Over a Wide Frequency

15:15 S. Arumugam, F.Plonus, University of Rostock, GERMANY; T. Wegener, Stadtwerke Netzgesellschaft mbH, GERMANY
S.Gortschakow, INP Greifswald, GERMANY

15:15 Tests on 550 kV Inductive Voltage Transformers
- W. McDermid, Manitoba Hydro, Canada

15:40

14:00— 15:40 Session 8 Rotating Machines S8

Room : Verdun / Lachine

Session Chair: TBD

14:00 PD Acceptance Tests for New Bars and Coils
- Alfredo Contin, DIA University of Trieste, Italy

14:25 Andrea Piccolo, Nidec ASI, Italy

14:25 Round-Robin Test of Repetitive Partial Discharge Inception Voltage Measurements on Complete Winding of 4
- kW Random-Wound Motor

Y. Kikuchi, M. Nagata, Univ. of Hyogo, Japan; T. Ishida, Shizuoka Institute of Sci. and Tech., Japan;

14:50 T. Ueno: Oita National College of Tech., Japan

S. Kanazawa, Oita Univ., Japan

M. Nagao, Y. Murakami: Toyohashi Univ. of Tech., Japan

M. Hikita: Kyushu Institute of Tech., Japan

14:50 A Proposed Procedure for Endurance Testing of Turn Insulation in Rotating Machine Coils

- B. Gupta: AOK Technologies Inc., Toronto, ON, Canada

15:15 I. Kremza: Voith Hydro Inc., Mississauga, ON, Canada

J. Williams III: Electrolock Inc. Hiram, OH, USA

K. Alewine, Shermco Industries, Irving, TX, USA

W. McDermid, Manitoba Hydro, Winnipeg, MB, Canada

15:15 Improving Detection Sensitivity of an On-Board Radio Interferometer System for Locating Partial Discharge
- Sources in Propulsion Coils of Superconducting Maglev Systems

15:40 M. Kawada: T. University, Japan

M. Suzuki, R. Ikeda, S. Ota, The Railway Technical Research Institute, Japan

14:00— 15:15 Session 9 Outdoor Insulation S9

Room: Wesmount

Session Chair: TBD

14:00 Experimental Investigation of Internal Defect Detection of a 69-kV Composite Insulator

- G. Kone, C. Volat and H. Ezzaidi: University of Quebec in Chicoutimi, Canada; L. Duvillaret, Kapteos, France

14:25

14:25 Failure analysis and inspection of long term behaviour of selected medium voltage equipment

- G. Göcsei, Dr. Bálint .Németh, R. Cselkó, T. Bokor, Budapest University of Technology and Economics, Hungary

14:50

14:50 Proposal and Evaluation of a Technique based on Ultrasound for Composite Insulator Monitoring

- M. T. B. Florentino.; E. G. Costa, T. V. Ferreira, K. B. Brito,

15:15 B. A. Dias, A. D. Germano, Federal University of Campina Grande (UFCG), Campina Grande – Paraíba – Brazil

15:40- 18:00 Exhibition and Poster session #2 with refreshment's

Exhibit and Poster Session #2

Room: Fontaine ABCD

Poster Session Hosts: J.Jalbert, E.M.Rodrigues Celis,

Transformers (continued)

P2-1 Thermal Evaluation of High-Temperature Insulation System for liquid-immersed transformer
X. Zhang, S. Shen, Y. Xu, Q.Lei,Xi'an Jiaotong University, China
G.Liu, R.Chen,DuPont China Research&Development center, China, X. Li, Southern Grid Guangdong Electrical Power Research Institute, China

P2-2 Investigation on the possibility of silent partial discharges inside power transformers
S. A.Mahmood Najafi: Senvion GmbH Validating High Voltage Components, Germany; P. Werle, Schering-Institute for High Voltage Engineering and Asset Management, Germany

P2-3 Influence of Metallic Particles on the Breakdown Voltage of Insulating Oil at AC and DC Voltage
C. Wei, S. Wang, Y. Lu, Jiangsu Electric Power Company Research Institute, China; J. Zhang, J.Li, Y. Li: Chongqing University, China

P2-4 Thermal Ageing Effect on the Failure Time of Oil-Paper Insulation at Combined AC-DC Voltage
F.Tao, J. Li, Chao Wei,Jiangsu Electric Power Company Research Institute, China; Y. Li, J. Zhang, Chongqing University, China

P2-5 A Maintenance Decision Optimization Method Based on Life Cycle Cost of Converter Transformer
L. Zhou, Y. Wang,Y. Li, Chongqing University, China
M. Zhu, X. Du, Shandong Electric Power Company, China

New Material

P2-6 Influence of Fabrication Techniques on the Dielectric Properties of PE/POSS Polymeric Composites
M. Guo, É. David, N.R. Demarquette, École de technologie supérieure (ÉTS), Canada
M. Fréchette, Institut de recherche d'Hydro-Québec (IREQ), Canada

P2-7 Discharge Breakdown By-products of CF3I/N2 Gas Mixtures at High Pressure
Y. Tu, F. Zhou, C. Wang, S. Qin,Y. Luo, North China Electric Power University, China

P2-8 Influence of Electron Beam Irradiation on Electrical Properties of Engineering Thermoplastics
H. Martini, S. Zhao, A. Friberg, Z. Jabri, ABB AB, Corporate Research, Sweden

P2-9 Several Fabrication Techniques and Characterization of the thus obtained Epoxy/Polyaniline composite films
C. Vanga-Bouanga, M.F. Fréchette, Institut de recherche d'Hydro-Québec (IREQ), Canada
E. David, École de technologie supérieure (ÉTS), Canada

Switchgear

P2-10 Application of Gaussian Copulas in Describing Station Impinging Lightning Overvoltages
P. Sarajcev , J. Vasilj and D. Jakus, University of Split, Croatia, EU

P2-11 Discharge Characteristics of CF3I/N2 with and without Insulator under Standard Lightning Impulse
S. Zhao, J. Jiao, Y. Deng, H. Zhang, B. Li, D. Xiao, Shanghai Jiaotong University, China; J. D. Yan, University of Liverpool, UK

P2-12 The influence of the insulator volume conductivity on charge accumulation in HVDC-GIL, Si. Qin, Y. Tu, C. Wang, F. Zhou, G. Ma, H. Zhou, North China Electrical Power University, People's Republic of China

P2-13 A Built-in UHF Multifrequency Microstrip Antenna for High-Voltage Switchgears PD Detection; Zheng Cheng, Xiaoxing Zhang : Chongqing University, China

P2-14 Insulation Fault Overview and Analysis on Wall Bushings Used in Medium Voltage Switchgears
D. Tan, D. Xiao, Shanghai Jiao Tong University, Shanghai + Shanghai Rox electric application Co.,ltd, Shanghai
Z., Yu: State Grid Nantong Haimen Power Supply Company Nantong;
Y. H. Liu, W. Yang, Dongtai Power Supply Company of Jiangsu province,
W. Que, GE R&D center China Co., ltd;

P2-15 PD Pattern Recognition Based on Transient Earth Voltage (TEV) Pulse Amplitude-Frequency of Occurrence Diagrams for Switchgears;
W. Fan, S. Guan, H. Yin, China Electric Power Research Institute State Grid Corporation of China, China
G. Ying, J.Xu, Jinhua Electric Power Company State Grid Corporation of China, China
W.Wang, X. Yan, North China Electric Power University, China

Testing

P2-16 Thermoplastic Materials Surface Aging Performance under Multi-stress Conditions
S. Zhao, H. Martini, ABB AB Corporate Research, Sweden

P2-17 Comparison of failure detection capability of available low-voltage cable diagnostic methods
R. Cselkó, I. Berta, Budapest University of Technology and Economics, Hungary

P2.18 Design of UHF-SHF Sensor for the Detection of GIS Partial Discharge
S. Wang, H. Hu, SINOPEC Research Institute of Safety Engineering, China
W. Wang, F. Li, X. Yan, Y. Wang, L. Wang, North China Electric Power University, China

TUESDAY, JUNE 21, 2016

07:30 – 09:30 Registration, Banquets level

07:00 – 08:00 Breakfast, General –Fontaine CD

07:00–08:00 Authors' Breakfast- Salon Castillon

08:00— 10:20 Session 10 Transformer S10

Room : Mont-Royal/Hampstead

Session Chair: C. Krause, Weidman, Switzerland

08:00- A New Accelerated Thermal Aging Test for Over-Loading Condition Transformer

08:25 W. Sun, L. Yang, D. Feng, X. zhao, Chongqing University, China
J. Li, China Electric Power Research Institute, China

08:25 Effect of Higher Insulation Material Thermal Conductivity on Transformer Temperature Rise

- Z.Wang, W. Wu: ABB Inc., USA

08:50

08:50 Numerical thermofluid analysis of a power transformer disc-type winding

- H.M.R. Campelo, M.A. Quintela; EFACEC Energia S.A., Portugal;

09:15 F. Torriano, P. Labbé, P. Picher; Institut de recherche d'Hydro-Québec IREQ, Canada

09:15 Limitations to the determination of water content in transformers solid insulation from measurement of water
- in oil

09:40 J. Aubin, Transformer Consultant, Canada;

B. Noirhomme, Institut de recherche d'Hydro-Québec, Canada

09:40- Study on Aging Degree and Moisture Content Assessment Methods of oil-paper in Transformer based on FDS,

10:05 H. YUAN, S. LI, Southwest Jiaotong University, China

10:05 *Commercial Presentation* by: TBD

-

10:20

08:00— 10:20 Session 11 Cables S11

Room : Wesmount

Session Chair: E. David , ETS, Canada

08:00- AC and DC Partial Discharge Measurements on Defective Cables T. Takahashi, University of Bologna, Italy +
Central Research Institute of Electric Power Industry (CRIEPI), Japan

08:25 A.Setyo Wibowo, University of Bologna, Italy + Institut Teknologi Bandung, Indonesia. A. Cavallini and G. C.
Montanari: University of Bologna, Italy; L. Boyer, M. Luton, P. Mirebeau: Nexans France, France

08:25 Partial discharge and aging of AC cable systems under repetitive voltage transient supply;

- G. C. Montanari, D. Fabiani, University of Bologna, Italy; F. Ciani, Techimp Group, Italy

08:50

08:50 The Use of Partial Discharge Analysis for the Diagnosis of Electrical Ageing in Polymeric Insulation Containing
- Cavities

09:15 T. Tanmaneeprasert, P.L. Lewin: University of Southampton, United Kingdom

09:15 Investigating the Dependence of Partial Discharge Activity on Applied Field Structure
- G. Callender, P. Rapisarda, P. L. Lewin: University of Southampton, United Kingdom

09:40

09:40- Experimental Results of a Diagnostic Measurement Method for Power Cables Using Interference
10:05 Characteristics of Travelling Waves
E. Fischer, C. Weindl, University of Applied Sciences and Arts, Germany

10:05 *Commercial Presentation* by

-

10:20

08:00— 10:20 Session 12 Rotating Machines S12

Room : Verdun/Lachine

Session Chair: :

08:00 Stator Core Deterioration and Failure Modes
- Clyde V. Maughan: Maughan Generator Consultants, USA

08:25

08:25 Analysis of turn insulation degradation under voltage surge stress
- H. Provencher, C. Millet: Hydro-Québec, Canada; S. Noel: GE Renewable Energy, Hydro North America, Canada

08:50

08:50 Failure Evaluation of the Electrical Insulation for High Voltage Stator Windings Machines and Root Cause
- Analysis through Visual Inspection of Dissected Coils

09:15 Dr. Anna Gegenava, Dr. Aleksandr Khazanov, Bill Moore, P.E.: National Electric Coil, USA

09:15 Main Causes of Failure of Electrical Generators Installed in Refineries and Petrochemical Plants
- O. Reyes, A. González, A. García: Instituto de Investigaciones Eléctricas, México

09:40

10:05 *Commercial Presentation* by: TBD

-

10:20

10:20 -10:50 Coffee Break

10:50— 12:45 Session 13 Transformer S13

Room: Mont-Royal/Hampstead

Session Chair: C.Krause, Weidman, Switzerland

10:50 Laboratory Study: Mitigation of Sulphidation Attacks on Copper by use of a Benzo-Tri-Azole Derivative
- Lars Arvidsson, VPdiagnose, Sweden

11:15 Egil Ravnemyhr, VPdiagnose, Norway

11:15 Influence of wrapped paper and atmosphere on the deposition of copper sulfide induced by the dibenzyl disulfide in oil-immersed insulation
-
11:40 S. Gao, L. Yang, Y. Yuan, J. Zhang, Chongqing University, China B.Deng, Chongqing Electric Power Research Institute, China

11:40 Laser Raman Spectroscopy Applied in Detecting Dibenzyl Disulfide in Transformer Oil
- W. Chen, J. Zou, Z. Gu, W.Qi, L. Du, Chongqing University, China
12:05

12:05 Study of Influence on Metal Passivator Effectiveness, Y. Zhao, Y.Qian, W. Su, Electric Power Research Institute of Guangdong Power Grid, China
-
12:30 Y. Li, W. Zheng, Q. Yu, L. Zhong, Xi'an Jiaotong University, China

12:30 *Commercial Presentation* by: TBD
-
12:45

10:50— 12:45 Session 14 Cables S14
Room: Wesmount
Session Chair: M.Germain, Hydro-Québec(IREQ), Canada

10:50 Effect of Pressure and Elastic Modulus on Tangential Breakdown Strength of Solid-Solid Interfaces
- E. Kantar, F. Mauseth and E. Ildstad, Norwegian University of Science and Technology (NTNU), Norway
11:15

11:15 Wattmeter clamp for multicore cable: a breakthrough in electrical diagnostics
- L. Gillette and G. Gaborit: Université Savoie Mont blanc, France + Kapteos, France
11:40 A. Grau, F. Giraud and V. Murin: EDF R&D, France
L. Duvillelet., Kapteos, France

11:40 The effect of composition and processing on electric characteristics of XLPE in HVDC cable applications
- A. Fazal, M. Hao, A. S. Vaughan, G. Chen: University of Southampton, UK
12:05 J. Cao, H. Wang: Smart Grid Research Institute, China

12:05 Comparison of Polymeric Insulation Materials on Failure Development in Low-Voltage Underground Power Cables
-
12:30 B. Kruizinga and P.A.A.F. Wouters, Eindhoven University of Technology, The Netherlands
E.F. Steennis: DNV GL, The Netherlands

12:30 *Commercial Presentation* by: TBD
-
12:45

10:50— 12:20 Session 15 , Rotating Machines S15
Room: Verdun/Lachine
Session Chair: TBD

10:50 A novel repetitive square wave voltage generator used for insulation evaluation of rotating machines driven by power electronics
-
11:15 P. Wang, J. Wang, H. Xu, Sichuan University, China
A. Cavallini, University of Bologna, Italy

11:15 Temperature Dependence of Insulation Resistance and Current Components for Generator Stator Bars
- K. Suzuki, H. Sako, S. Maeda, Mitsubishi Electric Corporation, Japan
11:40 K. Moi, Ryoshin Technica Corporation, Japan

11:40 Rotor Temperature Monitoring using Fiber Bragg Gratings
- C. Hudon, C. Guddemi, S. Gingras: Institut de recherche d'Hydro-Québec, IREQ, Canada
12:05 R. C. Leite, Eletronorte, Brazil;
L. Mydlarski, McGill University, Canada

12:05 Life-Time Investigation of Mica-Based Insulation for High Voltage Machines Subjected to Converter-Like Voltages
-
12:20 F. Sahlén and G. Paulsson, ABB Corporate Research, Sweden
E. Mårtensson, ABB Motors and Generators, Sweden

12:20 *Commercial Presentation* by: TBD
-
12:45

12:45 - 14:00 Exhibition and Lunch

14:00— 15:40 Session 16 Transformer S16

Room: Mont-Royal/Hampstead

Session Chair: M.C.Lessard, Hydro-Québec(IREQ), Canada

14:00 Effect of Temperature on 2-Furfural Partitioning in the Oil-paper System of Power Transformers
- R. Liao, Y. Lin, L. Yang and X. Zhao: Chongqing University, China
14:25

14:25 Correlation of Microscopic Textural Features and Degree of Polymerization for Thermally Deteriorated Cellulose Insulation
-
14:50 N. D. Jacob, Manitoba Hydro High Voltage Test Facility, Canada
S. Sherif, D. R. Oliver, B. Kordi, University of Manitoba, Canada

14:50 Influence of the Geometric Orientation of Cellulosic Fibers on the Electrical Behavior of Pressboard under DC Stresses
-
15:15 G. Lala, F. Schober, S. Harrer, A. Küchler, University of Applied Sciences Würzburg-Schweinfurt, Germany
W. Exner, Ch. Krause, WEIDMANN Electrical Technology AG, Switzerland
F. Berger, Technische Universität Ilmenau, Germany

15:15 Analysis of Acetone Dissolved in Transformer Oil using Laser Raman Spectroscopy
- Z. Gu, W. Chen, J. Zou, F. Wan, P. Wang, and L. Du: Chongqing University, China
15:40

14:00— 15:40 Session 17 Cables S17

Room: Westmount

Session Chair: TBD

14:00 Test setup for measuring medium voltage power cable and joint temperature in high current tests using thermocouples
-
14:25 P. Taklaja, I. Kiitam, Tallinn University of Technology, Estonia
P. Hyvönen, Aalto University, Finland
J. Klüss, Mississippi State University, USA

14:25 Long Term Testing and Analysis of Dielectric Samples Under DC Excitation
- E. Corr, W.H. Siew and W. Zhao, University of Strathclyde, UK

14:50

14:50- Observation of non-monotonic dependence of leakage current with temperature during thermal cycling
15:15 H. Ghorbani and M. Saltzer, ABB High Voltage Cables, Sweden
C.-O. Olsson, ABB Corporate Research Center, Sweden

15:15 XLPE Cable Rehabilitation Program, A Summary of the Development and Implementation of Manitoba Hydro's
- Underground Cable Rehabilitation Program
15:40 O. Preston, Manitoba Hydro, Canada

14:00— 15:40 Session 18 Testing S18

Room: Verdun/Lachine

Session Chair: TBD

14:00- Evaluation of Form Wound Insulation with Motor Circuit Analysis
14:25 H.W Penrose, Ph.D., CMRP, MotorDoc LLC, USA

14:25 A State of the Art Review- Methods to Evaluate Electrical Performance of Composite Cross-arms and
- Composite-based Pylons
14:50 Q. Wang, C.L. Bak, F.F. da Silva, Aalborg University, Denmark
E. Bystrup, Bystrup, Denmark

14:50 Influence of pressure on partial discharge spectra
- C. ABADIE: IRT Antoine de Saint Exupéry, France + Laboratoire Laplace, CNRS-UPS-INP, France
15:15 T. Billard, IRT Antoine de Saint Exupéry, France
T. Lebey, Laboratoire Laplace, CNRS-UPS-INP, France

15:15 Virtual Instrumentation for High Voltage Power Capacitors Assessment through Capacitance Monitoring and
- Acoustic Partial Discharge Detection
15:40 A. T. Carvalho, H. P. Amorim, C. F. C. Cunha, L. S. Ferreira, M. C. Cagido, J. B. Borges,CEPEL - Electric Energy
Research Center, Brazil

15:40—16:10 Refreshments

16:10— 17:25 Session 19 Transformer S19

Room : Mont-Royal/Hampstead

Session Chair: TBD

16:10 Life Estimation of RIP Transformer Bushing using Partial Discharge Data
- N S Jyothi, Malnad College of Engineering, India
16:35

16:35 Classification and Localisation of Multiple Partial Discharge Sources Within a High Voltage Transformer
- Winding
17:00 N H Nik Ali, M. Giannakou, R D Nimmo, P L Lewin, P Rapisarda, University of Southampton, United Kingdom

17:00 Comparison of Acoustical Partial Discharge Signals under AC and DC Stress
- S.A. M. Najafi, Senvion GmbH Validating High Voltage Components, Germany + Leibniz Universität Hannover
17:25 Schering-Institute for High Voltage Engineering and Asset Management, Germany
H. Saadati and P.Werle, Leibniz Universität Hannover Schering-Institute for High Voltage Engineering and Asset
Management, Germany

17:25 Effect of Electric Field on Sulfur Corrosion Deposition and Its Diffusion Research in Power Transformers
Ende Hu, Ruijin Liao, Lijun Yang, Jiajia Huang: Chongqing University, China

17:50

16:10— 17:50 Session 20 Switchgear S20

Room : Wesmount

Session Chair: TBD

16:10 Synergistic Effect of c-C4F8/N2 Gas Mixtures in Slightly Non-uniform Electric Field Under Lightning Impulse
- S. Zhao, J. Jiao, X. Zhao, H. Zhang, D. Xiao, Shanghai Jiaotong University, China

16:35 J. D. Yan, University of Liverpool, UK

16:35 Greenhouse Gas Emission Reductions through use of a Sustainable Alternative to SF6

- J. G. Owens: 3M Company, USA

17:00

17:00 A New Approach for Assessing the Moisture Content in SF6-Insulated Equipment

- M-C. Lessard, G. Larocque and S. Gendron, IREQ, Institut de Recherche d'Hydro-Québec, Canada

17:25 S. Laberge and Y. Lavoie, Hydro-Québec, Canada

17:25 Discharge Behavior of SF6 and Air in The Strong Inhomogeneous Field at High Pressure

- A. Hopf, M. Rossner: University of Applied Sciences Coburg, Germany

17:50 F. Berger, Technical University of Ilmenau, Germany

16:10— 17:50 Session 21 Testing S21

Room : Verdun/Lachine

Session Chair: TBD

16:10 A New Methodology for the Evaluation of the Influence of Discrete Spectral Interference on Partial Discharge
- Measurements in the Field

16:35 A.T. Carvalho, C. F. C. Cunha, CEPEL - Electric Energy Research Center, Brazil;

F. M. Machado, A. C. S. Lima, M. R. Patraglia: UFRJ – Federal University of Rio de Janeiro, Brazil

16:35 Analysis of Electromagnetic Waves Emitted from PD in Air using the UHF and HFCT Methods

- F.A. Nugraha, N. Harid, B. Barkat, N. Al Sayari, S. Jayaram, H. Griffiths: Petroleum Institute, Abu Dhabi, UAE

17:00

17:00 Electrical diagnostics of high voltage devices via high resolution near field analysis

- G. Gaborit and L. Gillette, Université Savoie Mont Blanc, France

17:25 G. Revillod, J. Dahdah and L. Duvillaret, Kapteos S.A.S., France

C. Volat, UQAC, Canada; Christian Pons and Emmanuel Bic, EDF R&D, France

L. Giannini, CNER - SERECT, RTE, France

E. Dumont, Laboratoire d'Essais Electriques I&P-LE SNCF Réseau, France

19:00—21:00 Banquet Fontaine B

WEDNESDAY, JUNE 22, 2016

07:30 – 09:30 Registration, Banquets level

07:00 – 08:00 Breakfast, General, Fontaine CD

07:00–08:00 Authors' Breakfast, Salon Castillon

08:00— 10:05 Session 22 Transformer S22

Room: Mont-Royal /Hampstead

Session Chair: TBD

08:00 Calibration of UHF Partial Discharge Measurement for Power Transformers And a Comparison to the
- Calibration of Electrical PD Measurement

08:25 M. Siegel, S. Tenbohlen, University of Stuttgart, Germany

08:25 Carbon Particle Effect on the Breakdown Strength of Insulating Oil at AC and DC Voltage

- Y Li, Y. Wang, J. Zhang, Chongqing University, China

08:50 C. Wei, Y. Lu, Jiangsu Electric Power Company Research Institute, China

08:50 How Hot Is It? A Survey of Temperatures Inside Medium-Voltage Electrical Enclosure across North America

- J. Steele, M. Newton PhD & C. Campion, Novinium, Inc., USA

09:15

09:15 Analysis of HV Bushing Insulation by Dielectric Frequency Response

- D. M. Robalino, MEGGER North America, USA

09:40 I. Güner, Hydro-Quebec, Canada

P. Werelius, MEGGER Sweden, Sweden

09:40 Online Detection of Windings Distortion in Power Transformers by Direct Vibration Measurement Using Thin
- Fiber Optics Sensor

10:05 P. Kung, R. Idsinga, J. B. Fu, H.-Chaska V.-Durand, C. S. Yang, QPS Photonics, Canada

M.I. Comanici, McGill University, Canada

08:00— 10:05 Session 23 Nanodielectric S23

Room: Verdun/Lachine

Session Chair: TBD

08:00- Effect of Water Absorption on Dielectric Spectrum of Nanocomposites

08:25 R. Kochetov, ABB Corporate Research, Switzerland

I.A. Tsekmes, P.H.F. Morshuis, J.J. Smit, Delft University of Technology, The Netherlands

A.J. Wanner, F. Wiesbrock, W. Kern, Polymer Competence Center Leoben, Austria

08:25 Dielectric properties of a functional epoxy : the case of composites containing Carbon Black and reactive POSS

- M. Fréchette, Hydro-Quebec's research institute, Canada

E. Zribi, C. Vanga-Bouanga, Ecole de Technologie Supérieure, Canada + Hydro-Quebec's research institute,

08:50 Canada

T. Heid, E. David, Ecole de Technologie Supérieure, Canada

08:50 Morphological and Electric Properties of Block Copolymer/Carbon Nanotubes Nanocomposites Obtained by
- Different Methods

09:15 C. A. S. De Lima, École de Technologie Supérieure, ÉTS, Canada + CAPES Foundation, Brazil
L. G. Amurin, N. R. Demarquette, E. David, École de Technologie Supérieure, ÉTS, Canada

09:15 Evaluation of dielectric behavior of polyethylene/thermoplastic elastomer blends containing zinc oxide (ZnO)
- nanoparticles for high voltage insulation

09:40 E. Helal, N. R. Demarquette, E. David, École de Technologie Supérieure ÉTS, Canada
M. Fréchette, Institut de Recherche d'Hydro-Québec IREQ, Canada

09:40- Impact of Nanoparticles on Primary and Secondary Motor Insulation in Stators

10:05 W. Brithinee, Brithinee Electric, USA;
M. Winkeler, S. Tuckwell, ELANTAS PDG, Inc., USA

08:00 - 10:05 Session 24 New Materials S24

Room: Wesmount

Session Chair: TBD

08:00- Dielectric properties of Environmental Friendly Cooling Fluids

08:25 S.Wu, R.D. Chippendale, P.L. Lewin: University of Southampton, United Kingdom; J. Hemrle, L. Kaufmann: ABB
Switzerland Ltd, Corporate Research, Switzerland

08:25 Phase Change Materials for Use in Thermally and Electrically Stressed Insulation for High Voltage Applications
- S. Harrer, C. Dotterweich, J. Hartmann, M. H. Zink: University of Applied Sciences Würzburg-

08:50 Schweinfurt, Germany
F. Hemberger, H.-P. Ebert: Bavarian Center for Applied Energy Research, ZAE Bayern, Germany
T. Schnitzler: HSP Hochspannungsgeräte GmbH, Germany

08:50 Developing a Novel Environment Friendly Epoxy Solventless Impregnating Resin without Anhydride for High
- Voltage Motor

09:15 Xia Yu, Wang Wen, Zhou Cheng, Guo Shengzhi: Suzhou Jufeng Electrical Insulation System Co.,Ltd., China;
James Han: Siemens, China

09:15 Thermoplastic Materials Aging under Various Stresses; Weijia Zhao, Wah Hoon Siew, Martin J Given, Edward
- Corr: University of Strathclyde, UK; Qingmin Li: North China Electric Power University, China; Jinliang He:

09:40 Tsinghua University, China

10:05 - 10:35 Coffee break

10:35— 11:50 Session 25 Switchgear S25

Room: Mont-Royal/Hapmstead

Session Chair:

10:35 Electrical Properties of Composite Material Containing Microvaristor and Tetrapod ZnO

- H. Matsuzaki, T. Nakano, T. Okamoto, H. Ando, M. Takei, and M. Shiiki, Toshiba Corporation, Japan

11:00

11:00 A Practical Test Circuit for Combined High Direct Voltage and Switching Impulse Voltage Multi-stress Tests
- N. D. Jacob and F. A. Fattal: Manitoba Hydro – High Voltage Test Facility, Canada

11:25

10:35— 12:15 Session 26 Nanodielectrics S26

Room : Verdun /Lachine

Session Chair: TBD

10:35 Partial Discharge Characteristics of Polyimide Film Doped with Different Types of Nanoparticles

- X. Zhang, G. Wu, Southwest Jiao Tong University, China

11:00

11:00 Effect of graphene-oxide content on space charge characteristics of PE-based nanocomposites

- D. Fabiani, P. Mancinelli, University of Bologna, Italy

11:25 C. Vanga-Bouanga, M. F. Fréchette, Hydro Quebec Research Center, IREQ, Canada

J. Castellon: University of Montpellier, France

10:35— 11:50 Session 27 Rotating Machines S27

Room: Wesmount

Session Chair: TBD

10:35 Study on the frequency domain dielectric spectroscopy of rotating machines insulation

- Z. CHEN, C. LI: Southwest Jiaotong University, China

11:00

11:00 Feasibility Research of Aging Status Assessment of Steam Turbine Generator Insulation by Frequency-Domain

- Dielectric Spectroscopy

11:25 Y. Xiaofeng: W. Guangning: Southwest Jiao Tong University, China

11:25- TAF Technique for Locating Partial Discharges in Rotating Machine

11:50 Y. Joo Kim, Chung Ang University, Republic of Korea

H. Dong Kim, Technology Expert Center KEPCO Research Institute, Republic of Korea

End of conference

See you next year:

June 11-14 2017

Baltimore, USA.

Conference Chair: Ramtin Omranipour, GE

2016 IEEE WORKING GROUP MEETINGS

The following IEEE working groups are meeting during EIC 2016 on the development or revision of standards.

Wednesday, June 22

14:00- Turn Testing (close out meeting by Bal Gupta)
15:00

15:00- Dissection Document (Nancy Frost)
16:00

16:00- IEEE 1176 William Chen
17:00

17:00- IEEE 433 ((Ashfak Shaikh)
18:00

Thursday, June 23

08:00 IEEE1434 - 2016 - Bill McDermid
- IEEE Guide for the Measurement of Partial Discharges in AC Rotating Machinery
09:00

09:00 IEEE 1553 Hugh Zhu
-
10:00

10:00 IEEE 522 Paul Gaberson
-
11:00

11:00 DC testing Laurent Lamarre
-
12:00

Noon Lunch on our own
to
14:00

14:00 IEEE1719 (Glen Mottershead)
To
15:00

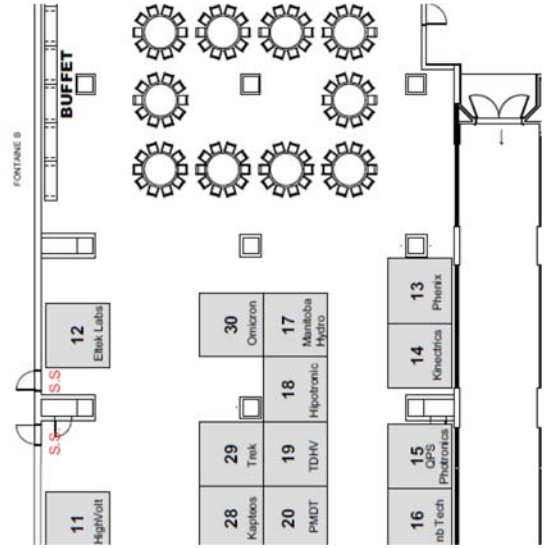
15:00 TBD
to
16:00

16:00 Closing Subcommittee Meeting
to
17:00

2016 EXHIBITORS

Booth #	Exhibitors
22	ELANTAS PDG, Inc.
25	Electrom
12	ELTEK International Laboratories
27	Giffin Koerth Forensic Engineering
19	HAEFELY HIPOTRONICS
11	Highvolt
8	HV Technologies
21	Iris Power – Qualitrol
10	Isovolta
28	Kapteos
14	Kinectrics
17	Manitoba Hydro
3	Morgan Schaffer, Inc
4	Motor Doc LLC
16	ndb Technologies
1	Nippon Rika
30	OMICRON Lab
13	Phenix Technologies
20	Power Monitoring and Diagnostics Technology Ltd.
15	QPS Photonics
19	Tony Davies High Voltage Laboratory
29	Trek
9	TRM Consulting
24	VibrosystM Inc
23	Zeus

Exhibit Plan



Meeting room Plan

Montréal Bonaventure

SALON BO
NIVEAU
LOE

NIVEAU BANQUETS
BANQUETS LEVEL

