

TECHNICAL PROGRAM

The 38th Electrical Insulation Conference is organized with 17 technical sessions, being 14 sessions of oral presentations of papers and 3 poster sessions.

Session Name	Topics	Session Chair
Cable I	Cables & Accessories	Shafiq, Muhammad
Cable II	Cables & Accessories	Naderian Jahromi, Ali
Failure Analysis I	Failure Analysis	Arvidsson, Lars
Failure Analysis II	Failure Analysis	Khazanov, Aleksandr
New Materials I	New Materials	Wicks, Roger
New Materials II	New Materials	Gegenava, Anna
Outdoor Insulation / Switchgear	Outdoor Insulation & Switchgear (including arrestors)	McDermid, William (Bill)
Partial Discharges I	Partial Discharges	Stone, Greg
Partial Discharges II	Partial Discharges	Hong, Wenli (Willam)
Rotating Machinery I	Rotating Machines	Alewine, Kevin
Rotating Machinery II	Rotating Machines	Cotner, Scott
Testing Technologies I	Testing Technologies	Montanari, Gian Carlo
Transformers I	Transformers	Kiparizoski, Zan
Transformers II	Transformers	Staley, Brad

Session Name	Topics	Session Chair	Session Chair
Poster Session I	Transformers Cables & Accessories Testing Technologies Nanodielectrics Partial Discharges	Ghassemi, Mona	Alvarez, Raul
Poster Session II	Rotating Machines Transformers Transportation Systems Partial Discharges Failure Analysis	Field, Norman	Arroyo, Oscar
Poster Session III	Cables & Accessories Testing Technologies Outdoor Insulation Switchgear (including arrestors) New Materials	Agnew, David	Yang, Yang

Oral Presentation Sessions

Session Topic: Cables & Accessories - Cable I (CL1)

Session Chair: Muhammad Shafiq
University of Vaasa

Paper ID	2224
Title	Dielectric Characterization Study on Medium-Voltage Ethylene Propylene Rubber (EPR) and Tree-Retardant Cross-Linked Polyethylene (TR-XLPE) Cables under Varying Thermal Conditions
Authors	Gorji, Amin (1); Banerjee, Sarajit (1,2); Jayaram, Shesha (1)
Affiliation	1: University of Waterloo, Electrical and Computer Engineering, Canada; 2: Kinectrics Inc., Transmission and Distribution Technologies, Canada
Presenting Author	Banerjee, Sarajit

Paper ID	2134
Title	Superconducting Power Cable Design with Hybrid Cryogenic Media - Gaseous Helium for Cooling and Liquid Nitrogen for Dielectric Insulation
Authors	Stamm, Taylor (1,2); Cheetham, Peter (1,2); Kim, Chul H. (1); Pamidi, Sastry (1,2)
Affiliation	1: Center for Advanced Power Systems, Florida State University, Tallahassee, FL, USA; 2: FAMU-FSU College of Engineering, Department of Electrical & Computer Engineering, Tallahassee, FL, USA
Presenting Author	Stamm, Taylor

Paper ID	2171
Title	A Novel Method for the Localization of Partial Discharge in Power Cables Based on Time Reversal Technique
Authors	Kong, Jiamin; Zhou, Kai
Affiliation	Sichuan University, China, People's Republic of
Presenting Author	Kong, Jiamin

Paper ID	2174
Title	Illuminations to the Interface Polarization Characteristics of Water-Tree Aged Cables Based on Polarization and Depolarization Current Method
Authors	Zhou, Kai (1); Li, Shiyu (1); Yin, You (1); Chen, Zelong (2)
Affiliation	1: Sichuan University, China, People's Republic of; 2: Hefei Power Supply Company, State Grid Anhui Electric Power Co., Ltd., Hefei, China, People's Republic of
Presenting Author	Zhou, Kai

Paper ID	2169
Title	DC Breakdown Properties of liquid-solid interfaces of silicone materials
Authors	Chmura, Lukasz Andrzej (1); Santosh, Adeep (1); Bergsma, Dennis (2); van Nes, Paul (2); Heller, Radek (2); Mor, Armando Rodrigo (2)
Affiliation	1: Royal Lovink Enertech, Netherlands; 2: TU Delft, Delft, Netherlands
Presenting Author	Chmura, Lukasz Andrzej

Paper ID	2110
Title	Measuring partial discharges in MV cables under DC voltage: procedures and results in steady state conditions
Authors	Naderiallaf, Hadi (1); Cavallini, Andrea (1); Esterl, Florian (2); Plath, Ronald (2); Seri, Paolo (1); Montanari, Gian Carlo (3)
Affiliation	1: DEI, Bologna University, Italy; 2: Technische Universität Berlin, Germany; 3: CAPS, Florida State University, Tallahassee, USA
Presenting Author	Naderiallaf, Hadi; Cavallini, Andrea; Plath, Ronald; Seri, Paolo

Session Topic: Cables & Accessories - Cable II (CL2)

Session Chair: Ali Naderian Jahromi
METSCO

Paper ID	2294
Title	Development and Implementation of an In-situ Cable Condition Monitoring Method
Authors	Harmon, Gary; Toll, Trevor; Sexton, Casey
Affiliation	AMS Corporation, United States of America
Presenting Author	Harmon, Gary

Paper ID	2267
Title	In situ Defect recognition and aging analysis on long cables through nondestructive FDR and DS: a comparison
Authors	Suraci, Simone Vincenzo (1,2); Fabiani, Davide (1); Cohen, Josy (3)
Affiliation	1: LIMES Laboratory of Innovative Materials for Electrical Systems – DEI University of Bologna, Italy; 2: PIMM, Arts et Metiers Institute of Technology, CNRS, Cnam, HESAM University, Paris (France).; 3: CEA, Paris-Saclay Campus - Nano-INNOV, France
Presenting Author	Fabiani, Davide

Paper ID	2149
Title	Sequential versus Simultaneous Aging of XLPE Nuclear Cable Insulation subjected to Elevated Temperature and Gamma Radiation
Authors	Spencer, Mychal P.; Zwoster, Andy J.; Bisel, Tucker T.; Murphy, Mark K.; Fifield, Leonard S.
Affiliation	Pacific Northwest National Laboratory, United States of America
Presenting Author	Spencer, Mychal P.

Paper ID	2295
Title	Derating of instrumentation and control system cables for small modular reactor
Authors	Houser, Jacob R.; Hashemian, Alexander H.; Tyler, Shawn N.
Affiliation	Analysis and Measurement Services Corporation, United States of America
Presenting Author	Houser, Jacob R.

Paper ID	2296
Title	Laboratory testing results of vintage medium voltage nuclear power plant cables
Authors	McConkey, James B.; Toll, Trevor A.; Ward, Patrick R.; Ferree, Codi R.
Affiliation	Analysis and Measurement Services Corporation, United States of America
Presenting Author	McConkey, James B.

Paper ID	2220
Title	Gas Insulated Transmission Lines for High Power Dense Distribution at Medium Voltage
Authors	Cheetham, Peter (1); Kvitkovicova, Martina (1,2); Mullings, Alexia (1,2); Kim, Chul (1); Pamidi, Sastry (1,2)
Affiliation	1: Florida State University, Center for Advanced Power Systems, United States of America; 2: FAMU-FSU College of Engineering, Department of Electrical Engineering, United States of America
Presenting Author	Cheetham, Peter

Session Topic: Failure Analysis - Failure Analysis I (FA1)

Session Chair: Lars Arvidsson
VPdiagnose

Paper ID	2256
Title	Investigation of EHV Current Transformer Failure by Dielectric Frequency Response Technique
Authors	Robalino, Diego M. (1); Guner, Ismail (2)
Affiliation	1: MEGGER North America; 2: Hydro Quebec
Presenting Author	Guner, Ismail

Paper ID	2212
Title	Failure Prediction of Metal Oxide Arresters using Artificial Neural Networks
Authors	Muremi, Lutendo; BoAffiliationkoro, Pitshou Ntambu
Affiliation	University of Johannesburg, South Africa
Presenting Author	Muremi, Lutendo

Paper ID	2177
Title	Considerations for Maximum Operational Stresses in Electrical Insulation for High Voltage Machines Stator Winding for Different Rated Voltages
Authors	Khazanov, Aleksandr; Gegenava, Anna; Dawson, Fred
Affiliation	National Electric Coil, United States of America
Presenting Author	Khazanov, Aleksandr

Paper ID	2181
Title	Not So-Bright Ideas
Authors	McDermid, William {Bill}
Affiliation	Manitoba Hydro, Canada
Presenting Author	McDermid, William {Bill}

Paper ID	2230
Title	Forensic Review and Characterization of Half-Century Old Network Cables
Authors	Potvin, Joseph C. (1); Tripolitis, John P. (1); Groeger, Joseph H. (2)
Affiliation	1: Electric Power Research Institute, United States of America; 2: Mantis Associates, Inc., United States of America
Presenting Author	Groeger, Joseph H.

Paper ID	2303
Title	Incipient failures analysis of high voltage bushings
Authors	Enciso, Luciano (1); Alvarez, Raul (2); Martinez, José Luis (1); Arce, Pablo (1); Galliani, Mauro (1); Rodríguez, Pablo (1); Calo, Emilio (2)
Affiliation	1: Edenor SA, Argentine Republic; 2: IITREE-LAT, FI-UNLP, Argetine Republic
Presenting Author	Enciso, Luciano

Session Topic: Failure Analysis - Failure Analysis II (FA2)

Session Chair: Aleksandr Khazanov
National Electric Coil

Paper ID	2236
Title	Basic Forensic Analysis of Polymer Concrete High Voltage Insulation in Various Applications
Authors	Gunasekaran, Muthian
Affiliation	Sekar Enterprises, United States of America
Presenting Author	Gunasekaran, Muthian

Paper ID	2137
Title	Ageing study in aircraft electromechanical chain: systems modeling for property evolution monitoring
Authors	Pin, Samuel (1); Belijar, Guillaume (1); Fetouhi, Louiza (1,2); Van de Steen, Cyril (1); Albert, Laurent (1)
Affiliation	1: IRT Saint Exupery, France; 2: Leroy Somer, France
Presenting Author	Pin, Samuel

Paper ID	2268
Title	The Application to the Experiment Analysis in Bushing Moisture of the Dielectric Modulus
Authors	Kaige, Yang; Yizhuo, Hu; Ming, Dong; Jiacheng, Xie
Affiliation	Xi'an Jiaotong University, China, People's Republic of
Presenting Author	Kaige, Yang

Paper ID	2302
Title	Approaches to the forensic failure investigation of medium voltage polymeric cables
Authors	Naderian Jahromi, Ali (1); Ketharam Pattabi, Pranav (1); Lo, Shanon (1); Densley, John (2)
Affiliation	1: METSCO Energy Solutions Inc., Canada; 2: ArborLec Solutions Inc., Canada
Presenting Author	Naderian Jahromi, Ali; Ketharam Pattabi, Pranav

Paper ID	2306
Title	Influence of Temperature and Frequency on Electric Field Reduction Method via a Nonlinear Field Dependent Conductivity Layer Combined with Protruding Substrate for Power Electronics Modules
Authors	M. Tousi, Maryam; Ghassemi, Mona
Affiliation	ECE Department, Virginia Tech, Blacksburg, VA, USA
Presenting Author	M. Tousi, Maryam

Paper ID	2243
Title	State evaluation model of distribution transformer considering environmental factors and operation data
Authors	Chen, Yingyu (1); Wang, Youyuan (1); Zhang, Yubo (1); Fang, Jian (1,2)
Affiliation	1: Chongqing University, China, People's Republic of; 2: Guangzhou Power Supply Bureau Co., Ltd. (China)
Presenting Author	Chen, Yingyu

Session Topic: New Materials - New Materials I (NM1)

Session Chair: Roger Wicks
DuPont

Paper ID	2154
Title	Structure-activity Relationship and Molecular Design for Discovery of Environmentally Sustainable Dielectric Gases
Authors	Yu, Xiaojuan; Hou, Hua; Wang, Baoshan
Affiliation	College of Chemistry and Molecular Sciences, Wuhan University, China, People's Republic of
Presenting Author	Wang, Baoshan

Paper ID	2125
Title	New Breakdown Calculation Method on Gas Insulated High Voltage Application
Authors	Hopf, Andreas (1); Rossner, Michael (2); Berger, Frank (4); K�uchler, Andreas (3)
Affiliation	1: Phenix Technologies, Germany; 2: University of Applied Sciences Coburg; 3: University of Applied Sciences W�urzburg-Schweinfurt; 4: Technical University of Ilmenau
Presenting Author	Hopf, Andreas

Paper ID	2115
Title	Comparison of gases generated in mineral oil and natural ester immersed transformer's models
Authors	Meira, Matias (1); �lvarez, Ra�l (2); Catalano, Leonardo (2); Ruschetti, Cristian (1); Verucchi, Carlos (1)
Affiliation	1: INTELYMEC (UNCPBA) y CIFICEN (UNCPBA-CICPBA-CONICET), Olavarr�a, Argentina; 2: IITREE-LAT-FI-UNLP, La Plata, Argentina
Presenting Author	Meira, Matias

Paper ID	2155
Title	A Review on Dielectric Properties of Supercritical Fluids
Authors	Wei, Jia (1); Cruz, Alfonso (1); Xu, Chunmeng (1); Haque, Farhina (2); Park, Chanyeop (2); Graber, Lukas (1)
Affiliation	1: School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA; 2: Department of Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS
Presenting Author	Wei, Jia

Paper ID	2116
Title	Thermal aging analysis of mineral oil and natural ester immersed windings
Authors	Meira, Matias (2); Alvarez, Raul (1); Verucchi, Carlos (2); Catalano, Leonardo (1); Ruschetti, Cristian (2)
Affiliation	1: IITREE UNLP, Argentine Republic; 2: INTELYMEC (UNCPBA) y CIFICEN (UNCPBA-CICPBA-CONICET), Argentine Republic
Presenting Author	Meira, Matias

Paper ID	2132
Title	The Impact of Lightning Channel Diameter on the Damage of Carbon Fiber Reinforced Polymer Matrix (CFRP) Composite Laminates
Authors	Yousefpour, Kamran (1); Rostaghi-Chalaki, Mojtaba (1); Lin, Wenhua (2); Haque, Farhina (1); Wang, Yeqing (2); Park, Chanyeop (1)
Affiliation	1: Department of Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS 39762, USA; 2: Department of Aerospace Engineering, Mississippi State University, Mississippi State, MS 39762, USA
Presenting Author	Yousefpour, Kamran

Session Topic: New Materials - New Materials II (NM2)

Session Chair: Anna Gegenava
National Electric Coil

Paper ID	2193
Title	Quantum Chemistry Computing to analyze the Gas Generation Mechanism in Ester Insulating Oils
Authors	Kato, Masamichi (1,2); Matsumoto, Satoshi (2)
Affiliation	1: Yuka Industries Co., LTD.; 2: Shibaura Institute of Technology
Presenting Author	Kato, Masamichi

Paper ID	2136
Title	Electron Scattering Cross Section Data of Supercritical Fluid CO ₂ Clusters
Authors	Haque, Farhina (1); Wei, Jia (2); Graber, Lukas (2); Park, Chanyeop (1)
Affiliation	1: Department of Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS 39762; 2: School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA 30332
Presenting Author	Park, Chanyeop

Paper ID	2229
Title	Investigation of Track and Thermal Shock Crack Resistance in Outdoor Cycloaliphatic Electrical Insulating Materials Using Response Surface Methodology
Authors	Ghanbar, Sadegh; Nazaripour, Sedigheh; Kornowski, Marek; Whitaker, Keaton
Affiliation	Polycast Industrial Products Ltd, Canada
Presenting Author	Ghanbar, Sadegh

Paper ID	2246
Title	Polymer Concrete Insulation Technology as a Feasible Development Incubator for Rural Electric Cooperatives& Their Local Communities
Authors	Gunasekaran, Muthian
Affiliation	Sekar Enterprises, United States of America
Presenting Author	Gunasekaran, Muthian

Paper ID	2147
Title	Distinct Representations of Hot Gas Dielectric Strength and Their Impact
Authors	Haque, Farhina; Rostaghi-Chalaki, Mojtaba; Yousefpour, Kamran; Park, Chanyeop
Affiliation	Department of Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS 39762
Presenting Author	Park, Chanyeop

Paper ID	2200
Title	Detection of C ₄ F ₇ N/CO ₂ Gas Mixture Decomposition Products Based on Photonic Crystal Fiber
Authors	Zheng, Diya; Wang, Yuan; Liao, Wenlin; Ma, Guoming
Affiliation	North China Electric Power University, Beijing, People's Republic of China
Presenting Author	Zheng, Diya

**Session Topic: Outdoor Insulation & Switchgear (including arrestors)-
(OI/SWGR)**

**Session Chair: William (Bill) McDermid
Manitoba Hydro**

Paper ID	2189
Title	Humidity and Temperature Effects on the Dielectric Properties of PET Film
Authors	Küchler, Florian; Färber, Raphael; Franck, Christian Michael
Affiliation	ETH Zürich, Switzerland
Presenting Author	Küchler, Florian

Paper ID	2183
Title	Compatibility Analysis of Piezoelectric Actuators in Supercritical Carbon Dioxide
Authors	Xu, Chunmeng; Wei, Jia; Graber, Lukas
Affiliation	Georgia Institute of Technology, United States of America
Presenting Author	Xu, Chunmeng

Paper ID	2213
Title	An Analysis of geometry characteristics of metal oxide blocks on heat flow rate using Finite Element Analysis
Authors	Doetein, Isaac; Bokoro, Pitshou Ntambu; Muremi, Lutendo
Affiliation	University of Johannesburg, South Africa
Presenting Author	Muremi, Lutendo

Paper ID	2151
Title	Evaluation of Partial Discharge Characteristics in Inclined Plane Tracking and Erosion Tests on Silicone Rubber under AC Voltage
Authors	Pevtsov, Valeria (1,2); Jacob, Nathan (1); Kordi, Behzad (2)
Affiliation	1: Manitoba Hydro, Canada; 2: University of Manitoba
Presenting Author	Pevtsov, Valeria

Paper ID	2123
Title	Analysis of Decomposition Products of SF6 and C4F7N under Low Energy Corona Discharge
Authors	Wei, Jia (1); Park, Chanyeop (2); Uzelac, Nenad (3); Graber, Lukas (1)
Affiliation	1: School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA; 2: Department of Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS; 3: G&W Electric Company, Bolingbrook, IL
Presenting Author	Wei, Jia

Paper ID	2150
Title	Testbed to Study the Surface Charge Distribution along DC Standoff Insulators for All-Electric Ships
Authors	Choi, Jeong H. (1); Guo, Ning (1); Damle, Tushar (1); Ding, Jeffrey (1); Nguyen, Richard (1); Park, Chanyeop (2); Graber, Lukas (1)
Affiliation	1: Georgia Institute of Technology, United States of America; 2: Mississippi State University, United States of America
Presenting Author	Choi, Jeong H.

Session Topic: Partial Discharges - Partial Discharges I (PD1)

**Session Chair: Greg Stone
Iris Power**

Paper ID	2263
Title	Unconventional accelerated thermal ageing test for traction electric motors in vehicles
Authors	Lusuardi, Luca (1); Cavallini, Andrea (1); Madonna, Vincenzo (2); Giangrande, Paolo (2); Galea, Michael (2)
Affiliation	1: DEI, University of Bologna, Italy; 2: PEMC Group, University of Nottingham, UK
Presenting Author	Madonna, Vincenzo

Paper ID	2247
Title	Detection of Partial Discharges Occurring in Propulsion Coils of Superconducting Maglev Systems from a Test Bogie Running at High Speed Using a Radio Interferometer System with a Vector-Antenna
Authors	Kawada, Masatake (1); Ikeda, Ryohei (2); Aiba, Masayuki (2); Watanabe, Ken (2); Suzuki, Masao (3)
Affiliation	1: Tokushima University, Japan; 2: Railway Technical Research Institute; 3: TESS Co., Ltd.
Presenting Author	Kawada, Masatake

Paper ID	2309
Title	Effects of Low-Pressure Condition on Partial Discharges in WBG Power Electronics Modules
Authors	Borghei, Moein; Ghassemi, Mona
Affiliation	ECE Department, Virginia Tech, Blacksburg, VA, USA
Presenting Author	Borghei, Moein

Paper ID	2323
Title	Influence of Water Contents on Natural Ester Liquids Partial Discharge Inception Voltage
Authors	Calcara, Luigi (1); Rapp, Kevin (2); Sangiovanni, Silvia (1); Sbravati, Alan (2); Pompili, Massimo (1)
Affiliation	1: Sapienza University of Roma, Italy; 2: Cargill CBI PowerGen
Presenting Author	Calcara, Luigi

Paper ID	2107
Title	A Track towards Unsupervised Partial Discharge Inference in Electrical Insulation Systems
Authors	Ghosh, Riddhi (1); Seri, Paolo (1); Montanari, Gian Carlo (2)
Affiliation	1: University of Bologna, Italy; 2: CAPS, Florida State University, Tallahassee, USA
Presenting Author	Montanari, Gian Carlo

Paper ID	2187
Title	Integrated Hardware and Software system for measurement and analyses of Partial Discharges.
Authors	Manu, Daniel; Basappa, Prathap
Affiliation	Norfolk State University, United States of America
Presenting Author	Basappa, Prathap

Session Topic: Partial Discharges - Partial Discharges II (PD2)

**Session Chair: Wenli (Willam) Hong
BC Hydro**

Paper ID	2106
Title	Partial Discharges testing in MV switchboards: sensitivity evaluation of embedded sensors
Authors	Montanari, Gian Carlo (1); Cirioni, Leonardo (2); Galvagno, Giuseppe (2); Mastroeni, Salvatore (2)
Affiliation	1: CAPS, Florida State University; 2: COL GP SpA, Italy
Presenting Author	Montanari, Gian Carlo

Paper ID	2319
Title	Effects of Resins on Partial Discharge Activity and Lifetime of Low Voltage Motors Used in eDrive and Automotive Industries
Authors	Esmacil Moghadam, Davoud; Herold, Christoph; Zbinden, Rolf
Affiliation	Von Roll Institute for High Voltage Insulation, Switzerland
Presenting Author	Esmacil Moghadam, Davoud

Paper ID	2297
Title	Partial Discharge Tests in DC Applications: A Review
Authors	Guo, Jim (1); Zheng, Zhong (1,2); Caprara, Andrea (3)
Affiliation	1: Techimp US Corp, USA; 2: North China Electric Power University, China; 3: Techimp-Altanova Group, Italy
Presenting Author	Guo, Jim; Zheng, Zhong; Caprara, Andrea

Paper ID	2173
Title	The definition of RPDIV in impulsive testing and the effect of the electrical conditioning on the variability of the results
Authors	Caprara, Andrea (1); Ciotti, Giacomo (1); Cavallini, Andrea (2) Rumi, Alberto (2)
Affiliation	1: Techimp - Altanova group Srl, Italy; 2: University of Bologna, Italy
Presenting Author	Caprara, Andrea

Paper ID	2235
Title	Characterization of corona and internal partial discharge under increasing electrical stress using time domain analysis
Authors	Shafiq, Muhammad (1); Kiitam, Ivar (2); Taklaja, Paul (2); Hussain, Amjad (3); Kutt, Lauri (2); Kauhaniemi, Kimmo (1)
Affiliation	1: University of Vaasa, Finland; 2: Tallinn University of Technology, Estonia; 3: American University of Kuwait
Presenting Author	Shafiq, Muhammad

Session Topic: Rotating Machines - Rotating Machinery I (RM1)

**Session Chair: Kevin Alewine
Shermco Industries**

Paper ID	2203
Title	Computational approach to electrical and thermal behavior at end-turn stress grading system of inverter-fed rotating machine under PWM waveform
Authors	Umemoto, Takahiro (1); Nakamura, Takahiro (2); Karasawa, Kazunari (2)
Affiliation	1: Mitsubishi Electric Corporation, Japan; 2: Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan
Presenting Author	Umemoto, Takahiro

Paper ID	2121
Title	Stress grading system evaluation for a converter feed hydro generator winding
Authors	Staubach, Christian (1); Hildinger, Thomas (2)
Affiliation	1: University of Applied Science Hannover, Germany; 2: Voith Hydro, Brazil
Presenting Author	Staubach, Christian

Paper ID	2145
Title	Dielectric frequency response of a MV stator coil: effect of humidity and thermal ageing
Authors	Calo, Emilio; Alvarez, Raul Emilio; Catalano, Leonardo Javier; Morcelle del Valle, Pablo
Affiliation	IITREE - LAT, Argentine Republic
Presenting Author	Calo, Emilio

Paper ID	2119
Title	Field Experiences Utilizing Electrical Signature Analysis to Detect Winding and Mechanical Problems in Wind Turbine Generators
Authors	Alewine, Kevin (1); Penrose, Howard (2)
Affiliation	1: Shermco Industries, United States of America; 2: MotorDoc LLC
Presenting Author	Alewine, Kevin

Paper ID	2105
Title	The Impact of Thermal Aging on the Electrical Endurance of Corona-Resistant Magnet Wires
Authors	Cavallini, Andrea (1); Han, Tao (2); Ciotti, Giacomo (3); Caprara, Andrea (3); Rumi, Alberto (2)
Affiliation	1: University of Bologna, Italy; 2: Tianjin University; 3: Techimp HQ Srl
Presenting Author	Cavallini, Andrea

Paper ID	2182
Title	Status of IEEE P2465 - Draft Recommended Practice for Pulse-type Partial Discharge Measurements on Individual Stator Bars and Coils
Authors	McDermid, William (Bill); Black, Tyler; Partyka, Mike
Affiliation	Manitoba Hydro, Canada
Presenting Author	McDermid, William (Bill)

Paper ID	2330
Title	LT-Spice Model for Induction Generators with Self-Excitation
Authors	Giesselmann, Michael; Daneshvardehnavi, Saeed
Affiliation	Texas Tech University, United States of America
Presenting Author	Giesselmann, Michael

Session Topic: Rotating Machines - Rotating Machinery II (RM2)

**Session Chair: Scott Cotner
US Army Corps of Engineers**

Paper ID	2128
Title	Dielectric Dissipation Factor measurements on Stator Insulation - Results from a global survey
Authors	Wezelenburg, Margaretha Geertruida
Affiliation	CIGRE WG A1.39
Presenting Author	Wezelenburg, Margaretha Geertruida

Paper ID	2315
Title	Introduction to Predictive Models for Motor Dielectric Aging
Authors	Jones, Gavin (1); Frost Ph.D., Nancy (2)
Affiliation	1: SmartUQ; 2: Frosty's Zap Lab
Presenting Author	Jones, Gavin; Frost Ph.D., Nancy

Paper ID	2104
Title	Evaluation of Interturn Stator and Rotor Interturn Stress with Electrical Signature Analysis in Variable Frequency Drive and Wind Generation
Authors	Penrose, Howard W
Affiliation	MotorDoc LLC, United States of America
Presenting Author	Penrose, Howard W

Paper ID	2120
Title	Improvements in Direct Current Stator Winding Insulation Testing
Authors	Sasic, Mladen; Sedding, Howard; Stone, Greg
Affiliation	Iris Power, Canada
Presenting Author	Stone, Greg

Paper ID	2113
Title	Method to Profile the Maintenance Needs of a Fleet of Rotating Machine Assets using Partial Discharge Data
Authors	Kuppuswamy, Raja
Affiliation	Dynamic Ratings, United States of America
Presenting Author	Kuppuswamy, Raja

Paper ID	2202
Title	Fundamental and Carrier Frequency-dependence of PWM waveform on Electric Field and Power Dissipation for Inverter-fed High Voltage Rotating Machine
Authors	Nakamura, Takahiro (1); Karasawa, Kazunari (1); Umemoto, Takahiro (2)
Affiliation	1: Toshiba Mitsubishi-Electric Industrial Systems Corporation; 2: Mitsubishi Electric Corporation
Presenting Author	Nakamura, Takahiro

Session Topic: Testing Technologies - Testing Technologies I (TT1)

Session Chair: Gian Carlo Montanari
Florida State University

Paper ID	2233
Title	Narrow Band Dielectric Frequency Response: Theory and Applications
Authors	Naranjo, Volney; Nybeck, Charles
Affiliation	Megger, United States of America
Presenting Author	Naranjo, Volney; Nybeck, Charles

Paper ID	2172
Title	A Space Charge Measurement Method of XLPE Based on Polarization and Depolarization Current
Authors	Zhou, Kai; Lin, Siyan; Li, Mingzhi
Affiliation	Sichuan University, China, People's Republic of
Presenting Author	Zhou, Kai

Paper ID	2269
Title	Analysis of the results of on-line Partial Discharge Monitoring and the impact of the maintenance actions on a 30 MVA synchronous generator
Authors	Caprara, Andrea; Ciotti, Giacomo; Paschini, Lorenzo
Affiliation	Techimp - Altanova group Srl, Italy
Presenting Author	Caprara, Andrea

Paper ID	2265
Title	A case study, Online DGA during varying transformer conditions
Authors	Leivo, Senja Maria (1); Briosso, Eduardo (2)
Affiliation	1: Vaisala Oyj, Finland; 2: CTM Salto Grande, Uruguay
Presenting Author	Leivo, Senja Maria

Paper ID	2244
Title	A Problematic Field Experience Using Surge Testing
Authors	Gaerke, Tyler; Lang, Nichlos
Affiliation	Siemens Industry, United States of America
Presenting Author	Gaerke, Tyler

Paper ID	2329
Title	1D-FDTD Simulation of Microwave Generation Using Ferrite Electromagnetic Shock Lines
Authors	Rossi, Jose Osvaldo (1); Guedes Greco, Ana Flávia (1); Sayuri Yamasaki, Fernanda (1); Schamiloglu, Edl (2); Barroso, Joaquim José (3); da Silva Neto, Lauro Paulo (4)
Affiliation	1: National Institute for Space Research, Brazil; 2: University of New Mexico, Albuquerque, NM; 3: Technological Institute of Aeronautics, Brazil; 4: Federal University of Sao Paulo, Brazil
Presenting Author	Rossi, Jose Osvaldo

Session Topic: Transformers - Transformers I (TR1)

**Session Chair: Zan Kiparizoski
Howard Industries**

Paper ID	2227
Title	The Influence of Repetitive Transient Parameters on the Distribution of Transients along the Transformer Winding
Authors	Devadiga, Anurag Anand; Jayaram, Sheshakamal
Affiliation	University Of Waterloo, Canada
Presenting Author	Devadiga, Anurag Anand

Paper ID	2257
Title	Evaluation of Distribution Class Transformers Using Narrow Band Dielectric Frequency Response Measurements
Authors	Robalino, Diego M. (1); Breazeal, Robert C. (2)
Affiliation	1: MEGGER North America; 2: Southern California Edison
Presenting Author	Robalino, Diego M.; Breazeal, Robert C.

Paper ID	2168
Title	The use of thermal and load data to identify large autotransformers that have aged and degraded electrical insulation
Authors	Doolgindachbaporn, Atip (1); Callender, George (1); Pilgrim, James (1); Lewin, Paul (1); Wilson, Gordon (2)
Affiliation	1: University of Southampton, United Kingdom; 2: National Grid
Presenting Author	Doolgindachbaporn, Atip

Paper ID	2261
Title	Investigation of X- Wax Formation in Power Transformers under Operating Conditions
Authors	Kuhnke, Moritz (1); Homeier, Kristin (1); Werle, Peter (1); Sbravati, Alan (2); Rapp, Kevin (2)
Affiliation	1: Leibniz Universität Hannover, Institute of Electrical Power Systems, Division of High Voltage Engineering and Asset Management, Schering-Institute, Hannover, Germany; 2: Cargill, United States of America
Presenting Author	Kuhnke, Moritz

Paper ID	2114
Title	DGA: A novel strategy for key gases identification in power transformers
Authors	Meira, Matias (1); Álvarez, Raúl (2); Carlucho, Ignacio (1); Catalano, Leonardo (2); Acosta, Gerardo (1)
Affiliation	1: INTELYMEC (UNCPBA) y CIFICEN (UNCPBA-CICPBA-CONICET), Olavarría, Argentina; 2: IITREE-LAT-FI-UNLP, La Plata, Argentina
Presenting Author	Meira, Matias

Paper ID	2327
Title	New Method For Thermal Aging Testing of Enameled Conductors Used in Liquid-Immersed Transformers
Authors	Prevost, Thomas, Levin, Aleksandr; Greaves, Brad; Biggie, Kevin
Affiliation	Weidmann, United States of America
Presenting Author	Levin, Aleksandr

Session Topic: Transformers - Transformers II (TR2)

**Session Chair: Brad Staley
Salt River Project**

Paper ID	2214
Title	Novel investigations on ageing behaviour of thermally-upgraded (TU) Kraft papers for power transformers
Authors	Barnet, Axelle (1,2); Mortha, Gérard (1); Marlin, Nathalie (1); Boiron, Lucie (2); Ramousse, Agnès (2); Brun, Huguette (2)
Affiliation	1: Univ. Grenoble Alpes, CNRS, Grenoble INP, LGP2; 2: Ahlstrom-Munksjö, Centre de Recherche d'Apprieu
Presenting Author	Barnet, Axelle

Paper ID	2141
Title	Effects of ageing on the mechanical and dielectric properties of transformer grade Kraft paper
Authors	Hosier, Ian Lee (1); Lewin, Paul Leonard (1); Pilgrim, James (1); Wilson, Gordon (2)
Affiliation	1: University of Southampton, United Kingdom; 2: National Grid, United Kingdom
Presenting Author	Hosier, Ian Lee

Paper ID	2231
Title	Power Transformer Fault Characterization Through Oil Contaminants Evaluation
Authors	Wilhelm, Helena Maria (1); Fernandes, Paulo (1); Steffens, Camila (1); Moscon, Kethlyn Ghellere (1); Peres, Sergio Moura (1); Ziliotto, Melissa (1); Mattoso, Mauricio (1); Neto, Jose Batista Ferreira (2); Marchesan, Tiago (3); Bender, Vitor (3)
Affiliation	1: VEGOOR, Brazil; 2: SANTO ANTONIO ENERGIA, Brazil; 3: UNIVERSIDADE FEDERAL DE SANTA MARIA, Brazil
Presenting Author	WILHELM, HELENA MARIA

Paper ID	2190
Title	Life expectancy of high voltage bushings based on incipient failure detections: a practical approach
Authors	Enciso, Luciano; Martinez, José Luis; Arce, Pablo
Affiliation	Edenor SA, Argentine Republic
Presenting Author	Enciso, Luciano

Paper ID	2112
Title	LCA and Smoke Test of Dielectric Fluids based on Natural Esters
Authors	Scatiggio, Fabio (1); Breda, Erika (1); Santoro, Angela (1); Calcara, Luigi (2); Pompili, Massimo (2); Campi, Giorgio (3); Pedriali, Riccardo (3); Parodi, Lara (3)
Affiliation	1: TERNA, Italy; 2: UNIVERSITA' LA SAPIENZA - ROMA, Italy; 3: A&A FRATELLI PARODI, Italy
Presenting Author	SCATIGGIO, FABIO

Paper ID	2273
Title	Practical experience of natural esters quality maintenance
Authors	Mazur, Oksana; May, Frank; Mora, Jose
Affiliation	Globecore GmbH, Germany
Presenting Author	May, Frank

Poster Presentation Sessions

Poster Session I

Topics: **Transformers**
 Cables & Accessories
 Testing Technologies
 Nanodielectrics
 Partial Discharges

Session

Chairs: **Mona Ghassemi** **Raul Alvarez**
 Virginia Polytechnic Institute **IITREE UNLP**
 and State University

Paper ID	2207
Title	Frequency Response Curves of Windings With Bulge Deformation in Power Transformers
Authors	Zheng, Danyang (1); Sun, Feifei (2); Bi, Jiangang (3); Ding, Guocheng (4); Cheng, Yangchun (1)
Affiliation	1: Beijing Key Laboratory of High Voltage and EMC in North China Electric Power University Beijing, China; 2: Electric Maintenance Company of State Grid Tianjin Electric Power Company; 3: China Electric Power Research Institute, Haidian District, Beijing, 100192, China; 4: China Electric Power Research Institute of State Grid ANHUI Electric Power Co. Ltd, No.299, Ziyun Road, Hefei, China
Presenting Author	Cheng, Yangchun

Paper ID	2157
Title	Operation characteristics analysis of different structure current transformers
Authors	Yang, Xiaoping (1); Deng, Jieqing (1); Li, Jiansheng (2); Wu, Yiming (2); Wei, Chao (2); Wang, Shengquan (2); Li, Bonan (3); Chen, Yingyu (3)
Affiliation	1: State Grid Jiangsu Electric Power CO., LTD., Nanjing, China, People's Republic of; 2: State Grid Jiangsu Electric Power CO., LTD. Research Institute, Nanjing, China, People's Republic of; 3: ChongQing University, China, People's Republic of
Presenting Author	Li, Bonan

Paper ID	2191
Title	Distribution Characteristics of Three-Dimensional Leakage Magnetic Field At the Transposition Structure of Transformer Winding
Authors	Zhao, Yi (1); Wen, Tao (1); Jin, Mingkai (1); Chen, Weijiang (2); Guo, Chong (1); Zhang, Qiaogen (1); Chen, Ming (1)
Affiliation	1: Xi'an Jiaotong University, China; 2: State Grid Corporation of China, China
Presenting Author	Zhao, Yi

Paper ID	2288
Title	Corona Discharge Characteristics of a Single Droplet under AC Electric Field
Authors	Zhang, Xu; Emersic, Christopher; Lian, Chengxing; Cotton, Ian
Affiliation	The University of Manchester, United Kingdom
Presenting Author	Zhang, Xu

Paper ID	2293
Title	A Cable Condition Monitoring Strategy for Safe and Reliable Plant Operation
Authors	Toll, Trevor; Sexton, Casey; McConkey, Bryan; Harmon, Gary
Affiliation	AMS Corporation, United States of America
Presenting Author	Toll, Trevor

Paper ID	2176
Title	Research on Failure Identification of Partial Discharge Ultrasonic Signal Based on GFCC
Authors	Zhou, Mengxi; Tang, Zhiguo
Affiliation	North China Electric Power University, Beijing, People's Republic of China
Presenting Author	Zhou, Mengxi

Paper ID	2290
Title	Study on Characteristics of Discharge Channels Induced by Pulsed Discharge in Water and Its Application in Solar Panel Recycling
Authors	Fan, Yue (1); Jiang, Ling (2); Kang, Jun (2); Wang, Sheng-fu (2); Zhang, Cheng-lei (2); Zhang, Meng-yao (3); Yang, Ning (3); Song, Bai-peng (3); Zhang, Guan-jun (3); Zhou, Xiang (4)
Affiliation	1: State Grid Qinghai Electric Power Company, Xining, 810008, China; 2: Electric Power Research Institute of State Grid Qinghai Electric Power Company, Xining, 810008, China; 3: School of Electrical Engineering, State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, 710049, China; 4: School of Earth Sciences, State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan, 430074, China
Presenting Author	Fan, Yue; Jiang, Ling; Kang, Jun; Wang, Sheng-fu; Zhang, Cheng-lei; Zhang, Meng-yao; Yang, Ning; Song, Bai-peng; Zhang, Guan-jun; Zhou, Xiang

Paper ID	2194
Title	Statistical Analysis of Partial Discharge Faults of HV Cables
Authors	Cheng, Yangchun (1); Zhao, Li (1); Wu, Xutao (2); Ni, Hui (2); Ding, Pei (2); Li, Xiuguang (2); Zhou, Xiu (2)
Affiliation	1: State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, 2 Beinong Road, Beijing, 102206, China; 2: Electric Power Research Institute of State Grid Ningxia Electric Power Company Limited, 716 the Yellow River East Road, Yinchuan, 750002, China
Presenting Author	Cheng, Yangchun

Paper ID	2185
Title	Investigation of electric field grading in HVDC cable joints utilizing electro-thermal simulation: effect of field grading materials
Authors	Arab Baferani, Mohamadreza (1); shahsavarian, Tohid (1); li, Chuanyang (1); Jovanovic, Ivan Jovanovic (2); Cao, Yang (1)
Affiliation	1: University of Connecticut, United States of America; 2: G&W Electric Company, Bolingbrook, USA
Presenting Author	Arab Baferani, Mohamadreza

Paper ID	2317
Title	A Novel Dielectric Loss Measurement Method for Power Cable Based on Oscillating Wave Test Technology
Authors	Xu, Xiaolong (1); Zhang, Hangwei (1); Liu, Fenglian (2); Lu, Yuxin (1); Yan, Yuan (1); Yang, Saike (1)
Affiliation	1: Xi'an Jiaotong University, China, People's Republic of; 2: State Grid Sichuan Electric Power Company, China, People's Republic of
Presenting Author	Xu, Xiaolong

Paper ID	2217
Title	Comparison of Two Denoising Techniques to Improve UHF Partial Discharge Localization
Authors	Hejtmanek, Tomas (1); Drexler, Petr (1); Judd, Martin D (2); Stewart, Brian G (3)
Affiliation	1: Department of Theoretical and Experimental Electrical Engineering Brno University of Technology; 2: HFDE Ltd; 3: Department of Electronic and Electrical Engineering University of Strathclyde
Presenting Author	Hejtmanek, Tomas

Paper ID	2321
Title	Simulation and Analysis of Impedance Characteristics of MV Cable Joint with Different Moisture Degree
Authors	Xu, Penglei (1); Di, Yunpeng (1); Guo, Xiaokai (2); Yang, Saike (1); Li, Tian (1); Wang, Haochen (1)
Affiliation	1: Xi'an Jiaotong University, China, People's Republic of; 2: China Southern Power Grid Company, China, People's Republic of
Presenting Author	Xu, Penglei

Paper ID	2287
Title	High Temperature Partial Discharge Inception Voltage under Repetitive Impulse Voltage Applied to Motorette Samples
Authors	Nishigaki, Yasutaka (1); Matsuzoe, Takakazu (1); Takenouchi, Sho (1); Kozako, Masahiro (1); Hikita, Masayuki (1); Nakamura, Takahiro (2); Sun, Jintong (2); Izumi, Aoto (2); Sakurai, Takayuki (2); Karasawa, Kazunari (2); Hiroshima, Satoshi (3)
Affiliation	1: Kyushu Institute of Technology, Japan; 2: Toshiba Mitsubishi-Electric Industrial Systems Co., Ltd, Japan; 3: Toshiba Energy Systems & Solutions Co., Ltd, Japan
Presenting Author	Nishigaki, Yasutaka

Paper ID	2286
Title	Partial Discharge Properties till Breakdown of Boehmite Added Enameled Twisted Pair under Bipolar Repetitive Impulse Voltage Application
Authors	Takenouchi, Sho (1); Nishigaki, Yasutaka (1); Matsuzoe, Takakazu (1); Kozako, Masahiro (1); Hikita, Masayuki (1); Fujimoto, Nobutaka (2); Hayashizaka, Noriyuki (2); Kato, Toshihiko (2); Kikuchi, Hideyuki (3)
Affiliation	1: Kyusyu Institute of Technology, Japan; 2: Sumitomo Seika Chemicals Co., Ltd; 3: Hide Technology LLC.
Presenting Author	Takenouchi, Sho

Paper ID	2238
Title	Study on Breaking Characteristics of SF6/N2 Gas Mixtures GIS Disconnecting Switch
Authors	Zhang, Min (1); Zhang, Ran (2); Jin, Mingkai (3); Li, Zhibing (2); Zhang, Rui (3); Lyu, Bin (3); Wen, Tao (3)
Affiliation	1: State Grid Corporation of China; 2: China Electric Power Research Institute; 3: Xi'an Jiaotong University
Presenting Author	Zhang, Rui

Poster Session II

Topics: **Rotating Machines**
Transformers
Transportation Systems
Partial Discharges
Failure Analysis

Session

Chairs: **Norman Field** **Oscar Arroyo**
Teshmont Consultants LP **Université du Québec à**
Chicoutimi

Paper ID	2135
Title	Light Emission with Partial Discharge at the Stator Coil End of a Rotating Machine under Operating Temperature
Authors	Onoda, Takaaki (1); Hasegawa, Yuki (1); Kumada, Akiko (1); Hidaka, Kunihiko (1); Umemoto, Takahiro (2); Nakamura, Takahiro (3); Karasawa, Kazunari (3)
Affiliation	1: The University of Tokyo, Japan; 2: Advanced Technology R&D Center, Mitsubishi Electric Corp.; 3: Rotating Machinery Systems Division, Toshiba Mitsubishi-Electric Industrial Systems Corporation
Presenting Author	Onoda, Takaaki

Paper ID	2156
Title	Theoretical Investigations on the Decomposition Characteristic Gases of Fluoronitriles/CO ₂ Mixture After Arc Interruption
Authors	Yu, Xiaojuan; Liu, Yue; Hou, Hua; Wang, Baoshan
Affiliation	College of Chemistry and Molecular Sciences, Wuhan University, China, People's Republic of
Presenting Author	Wang, Baoshan

Paper ID	2195
Title	Influence of Trace H ₂ O and O ₂ on SF ₆ Decomposition under Corona Discharge and Creeping Discharge based on Oxygen Isotope Tracer
Authors	Zhou, Zhenrui (1,2); Han, Dong (1,2); Zhao, Mingyue (1,2); Zhang, Guoqiang (1,2)
Affiliation	1: Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 2: University of Chinese Academy of Sciences, Beijing, China
Presenting Author	Han, Dong

Paper ID	2248
Title	Comparison of Different Simulating Calculation Methods for Electric Fields Along the Stator End-winding of HV Rotating Machine
Authors	Liu, Ping (1); Liu, Xuezhong (1); Zhang, Yue (2); Hu, Bo (2); Liang, Zhiming (2)
Affiliation	1: xi'an jiaotong university, China, People's Republic of; 2: Dongfang electric machinery company
Presenting Author	Liu, Ping

Paper ID	2262
Title	Deterioration of Stator Winding Insulation in Inverter-Fed Traction Motors
Authors	Yuan, Pengfei (1); Liu, Xuezhong (1); Lei, Pingzhen (2); Wang, Jingna (1); Fan, Jiexin (2); Zhang, Xiaoqiang (2); Zhu, Hugh (3)
Affiliation	1: xi'an jiaotong university, China, People's Republic of; 2: CRRC Yongji Electric Co., LTD, China, People's Republic of; 3: Consultant, Boston, MA 02472, USA
Presenting Author	Yuan, Pengfei

Paper ID	2326
Title	A Study of the Pulse Propagation Behavior in a Large Turbo Generator
Authors	Lachance, Mathieu
Affiliation	OMICRON electronics Canada Corp, Canada
Presenting Author	Lachance, Mathieu

Paper ID	2198
Title	Application of heat pipe technology on averaging temperature of UHV converter valve-side bushing
Authors	Chen, Ming; Liu, Xuandong; Zhang, Rui; Fan, Xing; Zhang, Qiaogen; Liang, Chengjun; Zhao, Yi
Affiliation	Xi'an Jiaotong University
Presenting Author	Chen, Ming

Paper ID	2254
Title	Optimal Design of Insulation Structure of HV-HF Transformer Based on High-Frequency Insulation Properties of Gas-Solid System
Authors	Zhao, Yikun (1,2); Zhang, Guoqiang (1,2); Liao, Zhenghai (1,2); Wan, Liujie (1,2); Li, Yanfei (1,2); Yang, Fuyao (3)
Affiliation	1: Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 2: University of Chinese Academy of Sciences, Beijing, China; 3: Global Energy Interconnection Research Institute, State Grid Corporation of China, Beijing, China
Presenting Author	Zhao, Yikun

Paper ID	2158
Title	Analysis and suggestion on the chromatographic detection of inverted oil immersed current transformer
Authors	YANG, Xiaoping (1); WU, Yiming (2); LI, Jiansheng (2); WEI, Chao (2); WU, Peng (2); XU, Tiantian (2); Li, Bonan (3); Chen, Yingyu (3)
Affiliation	1: State Grid Jiangsu Electric Power CO. LTD, Nanjing 210024, China; 2: State Grid Jiangsu Electric Power CO. LTD Research Institute, Nanjing 211103, China; 3: ChongQing University, China, People's Republic of
Presenting Author	Li, Bonan

Paper ID	2199
Title	Propagation Mechanism of Carbonized Trees in Oil-cellulose Insulation Systems of Power Transformers
Authors	Cheng, Yangchun (1); Zhang, Shuang (1); Mao, Ting (2); Niu, Zheng (2); Guo, Shaowei (2); Hao, Zhen (2)
Affiliation	1: State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, 2 Beinong Road, Beijing, 102206, China; 2: Electric Power Research Institute of State Grid JIBEI Electric Power Co. Ltd., Xicheng District, Beijing 100045, China
Presenting Author	Cheng, Yangchun; Zhang, Shuang

Paper ID	2163
Title	Effect of Insulation Thickness on Deterioration Characteristics of Oil Immersed Inverted Current Transformer Under Switching Impulse Voltage
Authors	Guo, Chong (1); Yang, Zhi (2); Ni, Heli (1); Zhang, Rui (1); Zhao, Yi (1); Jin, Mingkai (1); Zhang, Qiaogen (1)
Affiliation	1: State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, the People's Republic of China; 2: State Grid Zhejiang Electric Power Research Institute
Presenting Author	Guo, Chong

Paper ID	2216
Title	Comparison of heat transfer performance between C4F7N/CO2 and C5F10O/Air in gas insulated equipment with pipeline structure
Authors	Zhou, Zhenrui (1,2); Han, Dong (1,2); Zhao, Mingyue (1,2); Zhang, Guoqiang (1,2)
Affiliation	1: Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 2: University of Chinese Academy of Sciences, Beijing, China
Presenting Author	Han, Dong

Paper ID	2184
Title	Interfacial charge dynamics in multi-dielectrics under Electrical and Thermal gradients
Authors	Arab Baferani, Mohamadreza (1); Li, Chuanyang (1); Shahsavarian, Tohid (1); Tefferi, Mattewos (2); Jovanovic, Ivan (2); Cao, Yang (1)
Affiliation	1: University of Connecticut, United States of America; 2: G&W Electric Company, Bolingbrook, USA
Presenting Author	Arab Baferani, Mohamadreza

Paper ID	2146
Title	FEA Simulation Studies of Accelerated Aging of Power Cables in Water Tanks
Authors	GE, XUFEI; Stewart, Brian G.
Affiliation	Department of Electronic and Electrical Engineering, University of Strathclyde, United Kingdom
Presenting Author	Stewart, Brian G.

Poster Session III

Topics: **Cables & Accessories**
 Testing Technologies
 Outdoor Insulation
 Switchgear (including arrestors)
 New Materials

Session

Chairs: **David Agnew**
 NB Power

Yang Yang
Brunel University London

Paper ID	2130
Title	Transmission Line Design for Individual Partial Discharge Waveshape Measurement
Authors	Rostaghi Chalaki, Mojtaba; Yousefpour, Kamran; Ahmed, Zeeshan; Park, Chanyeop
Affiliation	Mississippi State University, United States of America
Presenting Author	Park, Chanyeop

Paper ID	2312
Title	Simulation test method for large current opening process of circuit breaker based on damped oscillating voltage
Authors	Ma, Yi (1); Qian, Guochao (1); Wang, wei (2); Xu, Dingkai (2)
Affiliation	1: Yunnan electric power research institute, China, People's Republic of; 2: North China electric power university, China, People's Republic of
Presenting Author	Wang, wei

Paper ID	2316
Title	Recognition of partial discharge in switchgear based on Kohonen network
Authors	Zhang, Hangwei (1); Xu, Xiaolong (1); Yan, Yuan (1); Xu, Penglei (1); Lu, Yuxin (1); Hou, Zhe (2)
Affiliation	1: Xi'an Jiaotong University, China, People's Republic of; 2: State Grid Shaanxi Electric Power Research Institute, China, People's Republic of
Presenting Author	Zhang, Hangwei

Paper ID	2225
Title	Partial discharge detection, Experimental-Simulation Comparison and current limits
Authors	Van De Steen, Cyril; Abadie, Cédric; Belijar, Guillaume
Affiliation	IRT Saint Exupery, France
Presenting Author	Van De Steen, Cyril

Paper ID	2178
Title	A Capacitor Bank Simulation Model
Authors	Mackinnon, Calum; Stewart, Brian
Affiliation	University of Strathclyde, United Kingdom
Presenting Author	Mackinnon, Calum

Paper ID	2259
Title	Calculation method of hot spot temperature of isolation switch based on improved heat path model
Authors	Fan, Xing (1); Zhang, Qiaogen (1); Zhao, Yi (1); Pei, Zhehao (1); Chen, Weijiang (2); Wen, Tao (1); Zhang, Yu (4); Yang, Jiahui (3)
Affiliation	1: Xi'an JiaoTong University, China, People's Republic of; 2: State Grid Corporation of China, China, People's Republic of; 3: electric power research institute, china southern grid, China, People's Republic of; 4: Shanghai Haineng Information Technology Co., China, People's Republic of
Presenting Author	Fan, Xing

Paper ID	2242
Title	Onsite Testing and Diagnosis of Medium Voltage Resin Impregnated Paper (RIP) Insulated Buses by Using Very Low Frequency High Voltage
Authors	Hong, Wenli {Willam} (1); Cao, Linfeng (2); Arshad, Muhammad (1)
Affiliation	1: BC Hydro, Canada; 2: Powertech Lab, Canada
Presenting Author	Hong, Wenli {Willam}

Paper ID	2142
Title	Electrical ageing of silicone oil
Authors	Hosier, Ian Lee (1); Vaughan, Alun Steven (1); Cwikowski, Oliver (2)
Affiliation	1: University of Southampton, United Kingdom; 2: National Grid, United Kingdom
Presenting Author	Hosier, Ian Lee

Paper ID	2289
Title	Development of a Test Method for Validation of Creepage Distances in High Voltage Aerospace Power Systems
Authors	Li, Wenyuan; Cotton, Ian; Lowndes, Robert
Affiliation	University of Manchester, United Kingdom
Presenting Author	Li, Wenyuan

Paper ID	2201
Title	Analysis of Internal Pyrolysis Characteristics of Crosslinked Polyethylene Cable
Authors	Wan, Liujie (1,2); Zhang, Guoqiang (1,2); Zhao, Yikun (1,2); Zhao, Mingyue (1,2); Liao, Zhenghai (1,2)
Affiliation	1: Institute of electrical engineering, Chinese academy of sciences; 2: University of Chinese Academy of Sciences
Presenting Author	Wan, Liujie; Zhang, Guoqiang; Zhao, Yikun; Zhao, Mingyue; Liao, Zhenghai

Paper ID	2131
Title	Study on Microstructure of Composite Insulator Mandrel
Authors	Wang, Tingting (1); Zhang, Fuzeng (1); Zeng, Xiangjun (1); Liao, Yifan (1); Zhang, Sida (2); Huang, Huan (3); Ma, Xiaohong (3); Lv, Qianyong (3); Mao, Xianyin (3); Xie, Rui (4)
Affiliation	1: Electric Power Research Institute, China Southern Power Grid Co.; 2: School of Electrical Engineering, Chongqing University; 3: Electric Power Research Institute, Guizhou Power Grid Co.; 4: Guiyang power supply bureau, Guizhou Power Grid Co.
Presenting Author	Wang, Tingting

Paper ID	2313
Title	Detection of arc extinguishing performance of circuit breaker based on radiated electromagnetic waves
Authors	Cheng, Zhiwan (1); Qian, Guochao (1); wang, wei (2); Xu, Dingkai (2)
Affiliation	1: Yunnan electric power research institute, China, People's Republic of; 2: North China electric power university, China, People's Republic of
Presenting Author	Wang, wei

Paper ID	2162
Title	Effect of Single Rising Bubble on Impulse Breakdown Characteristics of Mineral Oil
Authors	Zhang, Rui; Zhang, Qiaogen; Wu, Zhicheng; Wen, Tao; Guo, Chong; Ni, Heli; Chen, Ming; He, Xiaohui
Affiliation	State Key Laboratory of Electrical Insulation and Power Equipment; Xi'an Jiaotong University; Xi'an, China
Presenting Author	Zhang, Rui

Paper ID	2222
Title	Dielectric Heating of Commercial Insulation Materials
Authors	Wilder, Aleta T. (1); Casalini, Riccardo (2)
Affiliation	1: The University of Texas at Austin, United States of America; 2: Naval Research Laboratory, United States of America
Presenting Author	Wilder, Aleta T.

Paper ID	2196
Title	Condition Evaluation Method of Cable Based on the Growth of Electrical Tree
Authors	Xue, Wenxiang (1); Lu, Yi (1); Gao, Yanfeng (1); Cheng, Yangchun (2); Zhao, Li (2); Zheng, Yibo (1); Xu, Dangguo (1)
Affiliation	1: State Grid Jibei Electric Power Co.Ltd. Research Institute, Beijing, 100045, China; 2: State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, 2 Beinong Road, Beijing, 102206, China
Presenting Author	Cheng, Yangchun