
Paper ID: 2112

Distinguishing Between Phase to Ground, Phase to Phase and Cross-Coupled PD Signals in Stator Windings

Sasic, Mladen;Sedding, Howard;Stone, Greg
Iris Power-Qualitrol

Paper ID: 2117

Comparison of Magnetic Nature of Vegetable Oil based Nanofluids

Sangineni, Rohith;Baruah, Niharika;Kanumuri, Deepak;Nayak, Sisir Kumar
Indian Institute of Technology Guwahati, India

Paper ID: 2132

Effects of Corona Discharges on Silicone Rubber Samples under Severe Weather Conditions

Hakami, Mohammad;El-Hag, Ayman;Jayaram, Shesha
University of Waterloo, Canada

Paper ID: 2134

Deeper insight into the relationship between experimental expressions of conductivity and DC electric field in cables

Diban, Bassel (1);Mazzanti, Giovanni (1);Guerrini, Nicola (2);Troia, Ivan (3)
1: University of Bologna, Italy, Italy;2: Prysmian Cables & Systemes, France;3: Scapa Italia SpA, Italy

Paper ID: 2137

Application of Convolution Neural Network in Hydrophobicity Classification

Fahmy, Yehia;El-Hag, Ayman
University of Waterloo, Canada

Paper ID: 2142

The Effect of Insulator Angles on Leakage Current Characteristics In Wet Fog

Plaengraphan, Chorphaka (1);Cotton, Ian (2)

1: University of Manchester, United Kingdom;2: University of Manchester, United Kingdom

Paper ID: 2144

The Effect of Stress Grading on the Selection of Stator Coil Dissection Locations Related to Voids in Groundwall Insulation

Cotner, Scott

Hydroelectric Design Center, US Army Corps of Engineers, United States of America

Paper ID: 2145

Observations on the Polarization Index Test as Applied to Strip-on-edge Field Windings of Salient Pole Hydro Generators

Cotner, Scott

Hydroelectric Design Center, US Army Corps of Engineers, United States of America

Paper ID: 2157

Electrical Characterization of Carbon Fiber Reinforced Polymer Composites

Gupta, Himanshu;Agnihotri, Prabhat K.;Basu, Sumit;Gupta, Nandini

Indian Institute of Technology, Kanpur, India

Paper ID: 2165

Potential distribution on stress grading system of coil end under operating temperature of rotating machines

Hasegawa, Yuki (1);Hidaka, Kunihiko (1);Kumada, Akiko (1);Okamoto, Tetsushi (2);Umemoto, Takahiro (3)

1: The University of Tokyo, Japan;2: Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan;3: Mitsubishi Electric Corporation, Japan

Paper ID: 2167

Reliable InterTurn Fault Detection on Low Voltage Motors Using SFRA Measurements and Comparison with Surge Testing Results

Mayer, Maximilian (1);Oettl, Fabian (2)

1: Vienna Technical University;2: Omicron electronics, Austria

Paper ID: 2169

Frequency Dielectric Spectroscopy and Dissipation Factor during Thermal Cycles on different Types of MV Cable Joints

Contin, Alfredo (1);Borghetto, Johnny (2);Pirovano, Giovanni (3);Tornelli, Carlo (4)

1: University of Trieste, Italy;2: RSE s.p.a. Milano, Italy;3: RSE s.p.a. Milano, Italy;4: RSE s.p.a. Milano, Italy

Paper ID: 2178

Discharges Pattern Recognition on Uniformly Polluted Glass Surface Using an MLPNN Classifier

Ferrah, Imene;Teguar, Madjid;chaou, khaled ahmed

National Polytechnic School of Algiers, Algeria

Paper ID: 2211

An intelligent cross-connected box door for power cable partial discharge detection

zhou, jie (1);wang, wei (2);zhou, jingjing (1);he, he (1);zhang, wei (1);wang, pingyu (1);yang, shuting (1);xu, wei (1)

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Paper ID: 2212

GIS discharge induced by vibration, metal particles and VFTO

xin, weifeng (1);wang, wei (2)

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Paper ID: 2214

Performance of a Bio-based Hydrocarbon type Insulating Liquid

Nunes, Jayme; Wolmarans, Carl; Pahlavanpour, Bruce; Fairholm, Robert

NYNAS AB, Sweden

Paper ID: 2215

Research on High voltage Cable Insulation on-line Monitoring Technology Based on Double differential CT Method

Wang, Tingting (1); Suo, Changyou (2); Gong, Xun (2); Zheng, Huan (2)

1: Power Grid Technology Research Center of China Southern Power Grid Co., Ltd., China; 2: Harbin University of Science and Technology, China

Paper ID: 2232

Influence of fillers based on different types of tubular halloysite on dielectric properties of epoxy-based composites

Kadlec, Petr; Polanský, Radek

University of West Bohemia, Faculty of Electrical Engineering, Czech Republic

Paper ID: 2233

Dielectric analysis of selected polyimide films and derived epoxy-based sandwich composites

Kadlec, Petr; Pihera, Josef; Prosr, Pavel; Polanský, Radek

University of West Bohemia, Faculty of Electrical Engineering, Czech Republic

Paper ID: 2245

Study of the evolution of DC and DCPR Stresses in LDPE

Sriram, Balaji; Gupta, Nandini

Indian Institute of Technology Kanpur (IIT-k), India

Paper ID: 2253

Influence of the pulse voltage injection configuration on the electromagnetic distortion

Mier, Guillermo Andres;Rodrigo Mor, Armando
University of Technology, Netherlands, The

Paper ID: 2267

Electric Field Analysis of Stress Grading System Delamination in the Stator End-winding of High Voltage Rotating Machine

Liu, Ping;Liu, Xuezhong
xi'an jiaotong university, China, People's Republic of

Paper ID: 2290

Limitations of magnitude guidelines for PD Measurements on Stator Windings

Lachance, Mathieu (1);Sze, Matthew (1);Oetl, Fabian (2)
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Paper ID: 2294

Impulse discharge voltage prediction of complicated engineering gaps based on machine learning of spatial electric field features

Qiu, Zhibin (1,2);Zhang, Louxing (2);Liao, Caibo (2);Liu, Jianben (1);Liu, Yan (1);Hou, Huasheng (2)
1: State Key Laboratory of Power Grid Environmental Protection (China Electric Power Research Institute);2: Department of Energy and Electrical Engineering, Nanchang University

Paper ID: 2312

The Relationship Between Electrical Tree Growth and Partial Discharge Characteristics in XLPE

Wu, Shiyou;Zheng, Shusheng;Zhang, Zongheng;Zhong, Aixu;Cao, Renjie;Wang, Cong
North China Electric Power University, China, People's Republic of

Paper ID: 2314

Space Charge Simulation of Electric Tree Before Germination in XLPE at DC Voltage Based on Improved Bipolar Carrier Transport Model

Wu, Shiyou;Zheng, Shusheng;Zhong, Aixu;Zhang, Zongheng;Cao, Renjie;Wang, Cong
North China Electric Power University, China, People's Republic of

Paper ID: 2316

A feature set of electrostatic field distribution to predict rod-plane gap breakdown voltage

Liu, Jianben (1);Qiu, Zhibin (1,2);Hou, Huasheng (2);Liu, Yan (1);Liao, Caibo (1)

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Paper ID: 2318

Study of parameters affecting heat dissipation in an impregnated random wound stator

Ferraris, Mattia (1);Campanini, Fabio (1);Cuminetti, Nicola (1);Bergemann, Nils (2)

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Paper ID: 2319

Preliminary investigations of the electrical tree growth at frequencies of 50 Hz and 2.2 kHz by means of partial discharge analysis.

Galesi, Federico (1);Guastavino, Francesco (1);Nett, Isabella (2);Puffer, Ralf (2);Soppe, Bastian (2);Vocke, Jan (2)

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Paper ID: 2323

Electrical Tree Aging Characteristics of Epoxy Resin under High Frequency at Different Temperatures

Zhou, Yuanxiang (1,2);Xing, Weiwei (3);Gesang, Quzong (1);Zhang, Yunxiao (1);Cheng, Zixia (3);Zhang*, Ling (1)

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Paper ID: 2324

Research on shunt coefficient calculation and insulation gap design of overhead ground wire

Qiu, Annan;Zhan, Huamao;Li, Min

North China Electric Power University, China, People's Republic of

Paper ID: 2331

Understanding ageing condition of epoxy micro nanocomposites using space charge characteristics and by adopting PCA and ANN analysis

Babu, Myneni Sukesh (1);Sarathi, Ramanujam (1);Imai, Takahiro (2)

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Paper ID: 2335

Design of warm dielectric terminations and ceramic breaks for high temperature superconducting power cables

Cheetham, Peter;Mensah, Paul;Kim, Chul;Pamidi, Sastry

Florida State University, United States of America

Paper ID: 2350

Computational study on the positive streamer inception in air at high altitude

Che, Junru (1);Ding, Yujian (2);Yao, Xiuyuan (2);Ma, JiangGong (3);He, Hengxin (1);Cheng, Chen (1);Xia, Dezhi (1)

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Paper ID: 2351

Visualization of Positive Leader Channel Expansion in a 3m rod-plane gap by Schlieren Method

Wu, Yutong (1);Ding, Yujian (2);Yao, Xiuyuan (2);Ma, JiangGong (3);He, Hengxin (1);Chen, Cheng (1);Xia, Dezhi (1);Che, Junru (1)

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Paper ID: 2356

A high-speed dynamic measurement system for transient space charge in insulation materials

Zhang, Ling (1);Xu, Yuxuan (1);Wang, Zhaowei (2);Wu, Wangsongng (1);Zhou*, Yuanxiang (1)

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Paper ID: 2357

Algae Distribution on the HVDC Composite Insulator and the Influence of Algal Activity on Electrical Characteristics of Silicone Rubber

Tan, Jieying (1);Xiao, Wei (2);Xu, Chi (1);Zhang, Fuzeng (2);Wei, Xiaoxing (3);Jia, Zhidong (1)

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Paper ID: 2359

Effect of annealing rate on low-temperature impact strength and space charge characteristics of isotactic polypropylene

Zhang, Ling (1);Wu, Wangsong (1);Xu, Yuxuan (1);Zhou*, Yuanxiang (1,2)

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Paper ID: 2105

Defect diagnosis technology based on multispectral point cloud

Yang, Yang;Yang, Ning;Li, Lihua;Gao, Fei

China Electric Power Research Institute, China, People's Republic of

Paper ID: 2107

Advantages vs. risks with on-line monitoring of transformer bushings

Jonsson, Lars

Hitachi ABB, Sweden

Paper ID: 2119

Prediction of the most probable dielectric strength of large systems and St. Petersburg paradox

Geilikman, Mikhail Boris

Milleboswe Consulting LLC, United States of America

Paper ID: 2123

Comparative Analysis of Partial Discharge Denoising Techniques

Andrade, Gabriel de Oliveira;Avelar, André Souza Oliveira;Mota, Hilton de Oliveira

Federal University of Minas Gerais, Brazil

Paper ID: 2128

Numerical Simulation of Partial Discharge in Air-Polyimide Insulation under High Frequency Electrical Stress

Guo, Yujin (1);Han, Zhiyun (1);Li, Zhihui (1);Dong, Ziwei (1);Liu, Tao (2);Gao, Haoyu (1);Li, Qingmin (1)

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Paper ID: 2146

Comparison of Methods for the Interpretation of Dissolved Gases in Soybean Based Natural Ester

Meira, Matias (1);Álvarez, Raúl (2);Verucchi, Carlos (1);Catalano, Leonardo (2)

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Paper ID: 2147

Simulation Study on the Effect of PD Pulse Shape on Electromagnetic Wave Propagation in L-type GIS Structure

Zhao, Tao (1,2);Judd, Martin D. (3);Stewart, Brian G. (2)

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Paper ID: 2170

PD Positioning of Electrical Transformers Based on the Designed Pressure-balanced EFPI Sensor Array

Xi, Yingjie (1);Luo, Chuanxian (2,3);Yang, Xu (2,3);Zhang, Chongxing (1);Dong, Ming (1);Liu, Yang (1)

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Paper ID: 2174

Green Substation: Dream or Reality?

Negri, Fabrizio (1);Kaineder, Kurt (1);Giovanelli, Lorenzo (2);Yazdani, Mana (2)

1: Siemens Energy, Germany;2: Trench Group

Paper ID: 2176

Electrical Studies to Understand the Water Absorption Behaviour of Polyoxymethylene Used for Deep-Sea Applications

Arumugam, Saravanakumar (1);Krohmann, Sascha (1);Haba, Yvonne (1);Pieterse, Petrus (2);Uhrlandt, Dirk (2);Kosleck, Sascha (1)

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Paper ID: 2177

A setup for measuring bubbling from paper in transformer oil under simulated sudden overload.

Linhjell, Dag;Lundgaard, Lars E.

SINTEF Energy Research, Norway

Paper ID: 2181

Study on Nest Material Flashover Risk Level Assessment of AC Overhead Transmission Line

Wang, Shenghui (1);Wang, Ximing (2);Guo, Fengtian (2);Han, Bing (3);Wang, Xiaoyu (3)

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Paper ID: 2184

Theoretical Calculation and Experimental Study on the Effect of Gas Content on Heat - Induced Bubble Formation of Oil-paper insulation

Xiaohui, He;Rui, Zhang;Chong, Guo;Qiaogen, Zhang;Tao, Wen

Xi 'an Jiaotong University, China, People's Republic of

Paper ID: 2186

Research on Discharge Characteristics of Nest Material of Overhead Transmission Line under AC Voltage

Wang, Shenghui (1);Guo, Fengtian (2);Dong, Xinghao (2);Han, Bing (3);Wang, Xiaoyu (3)

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Paper ID: 2187

Study on Adaptability of Transient Calculation Model for MOA under Lightning Impluse

Shen, Lin;Chen, Zhe;Fang, Chonghao;Ma, Zixin;Li, Pengfei;Guo, Jie

Xi'an Jiaotong University, China, People's Republic of

Paper ID: 2188

Breakdown Characteristics of Transformer Oil under Vibration and Electric Field

Guo, Chong (1);Zhang, Qiaogen (1);He, Xiaohui (1);Zhang, Rui (1);Wen, Tao (1);Wu, Xingwang (2)

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Paper ID: 2190

Research on Discharge Characteristics of Plastic Cloth on Overhead Transmission Lines under AC Voltage
Research on Discharge Characteristics of Plastic Cloth on Overhead Transmission Lines under AC Voltage

Wang, Shenghui (1);Dong, Xinghao (2);Wang, Ximing (2);Han, Bing (3);Wang, Xiaoyu (3)

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Paper ID: 2192

Research on the discharge evolution law of the needle-plate defect in oil-paper insulation at AC voltage

Liu, Yang;Dong, Ming;Hu, Yizhuo;Xing, Yadong;Xi, Yingjie;Ren, Ming

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Paper ID: 2199

Dynamic Behavior of Micro-droplets in Liquid Dielectric and Its Effect on Partial Discharge

Zhang, Rui (1);Zhang, Qiaogen (1);Zhou, Junjie (1);He, Xiaohui (1);Sun, Yuhan (1);Wen, Tao (1);Zhang, Shuqi (2);Yu, Xinru (2)

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Paper ID: 2201

Design of a Pulse Generator for Testing Partial Discharge Measurement Systems

Hejtmanek, Tomas (1);Judd, Martin D (2);Drexler, Petr (1);Stewart, Brian G (3)

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Paper ID: 2202

Application of Distributed PD Detection synchronously with Wireless Communication during Withstand Voltage Test on Power Cable lines

Min, Chen (1);Zhipeng, Zhou (2);Daren, Pan (2);Tianyu, Su (2)

1: SE Technology Limited, Hong Kong S.A.R. (China);2: ZF Technology Limited, Guangzhou, China

Paper ID: 2207

PDIV Numerical And Experimental Estimation In A Needle/Dielectric Film/Plane Configuration

Van de Steen, Cyril;Abadie, Cédric;Belijar, Guillaume
IRT Saint Exupery, France

Paper ID: 2224

Platform phenomenon of insulation characteristics of SF6 under AC superimposed impulse voltage

Sun, Haochen (1);Li, Xiaoang (1);Li, Jie (1);Lv, Yufang (1);Zhao, Ke (2);Zhang, Qiaogen (1)
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Paper ID: 2230

Effect of Multiple Transposition Structures of Transformer Helical Low Voltage Winding on the Electromagnetic Force Distribution

Wen, Tao (1);Wang, Qing (2);Yu, Yinshu (2);Zhu, Xiaojie (2);Han, Bin (3);Zhao, Yi (4)
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Paper ID: 2237

Stress Distribution Characteristics of Composite Wire-Paper Winding Structure under the Radial Electromagnetic Force

Jin, Mingkai (1);Zhao, Yi (1);Wen, Tao (1);Chen, Weijiang (2);Zhang, Qiaogen (1);Zhu, Taiyun (3);Wu, Jie (3);Wu, Zhengyang (3)
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Paper ID: 2241

The influence of electrode materials on the emission spectrum in SF6 under AC corona discharge

Li, Yanfei (1,2);Han, Dong (1,2);Tang, Beibei (1,2);Qiu, Zongjia (1);Li, Kang (1);Zhang, Guoqiang (1,2)

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Paper ID: 2262

Electrical and optical partial discharge assessment of dielectric barriers in mineral oil and synthetic ester

ANAND, Somya (1,2);VAGNON, Eric (2);ZOUAGHI, Ayyoub (2);GUILLET, Martin (1);BUTTAY, Cyril (2);AGRI, Ouassim (2)

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Paper ID: 2266

Analysis on Characteristic Emission Spectrum of SF6 under 50Hz AC Corona Discharge

Tang, Beibei (1,2);Han, Dong (1,2);Li, Yanfei (1,2);Li, Kang (1);Qiu, Zongjia (1);Zhang, Guoqiang (1,2)

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Paper ID: 2273

Dielectric Frequency Response of Transformers – Field Case Study

Chavda, Ashok (1);Patel, Jatinkumar (1);Bhatt, Hardika (1);Pandya, Vivek (2)

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Paper ID: 2283

Experimental Research on Overvoltage Suppressing Measures Caused by 10-kV Vacuum Circuit Breakers Switching-off Shunt Reactors

Li, Xin (1);Xu, Puming (1);Zhao, Shihua (1);Zhou, Tong (2);Yang, Qing (2);Chen, Song (3)

1: Hunan Electric Power Company Limited Research Institute;2: State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University;3: State Grid Zhengzhou Electric Power Company

Paper ID: 2284

Operating Status Diagnosis of Power Equipment Based on Rule Engine

LI, Chen (1);QIAN, Ping (2);XU, Ning (1);JIANG, Chen (3);WANG, Yawen (3);WANG, Yuan (3);MA, Guoming (3)

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Paper ID: 2301

Impact of Benzotriazole on the degradation Performance of Ester Fluid

Amalanathan, A J (1);Sarathi, R (1);Harid, Noureddine (2);Griffiths, Huw (2)

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Paper ID: 2317

Investigation on pyrolysis and aerogenesis of Irgamet 39 in oil-immersed transformer

Gao, Sihang (1);Zhang, Guowen (1);Ke, Tingjing (2);Liu, Yang (3);Zeng, Xisong (1)

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Paper ID: 2321

Voiceprint Recognition of Transformer Fault Based on Blind Source Separation and Convolutional Neural Network

Li, Min;Zhan, Huamao;Qiu, Annan

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Paper ID: 2329

Investigation on activation of inactive sulfur in oil-immersed transformer based on molecular dynamics simulation

Gao, Sihang (1);Zeng, Xisong (1);Liu, Yang (3);Ke, Tingjing (2);Zhang, Guowen (1)

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Paper ID: 2340

Non-linearity of Hysteresis and Eddy current Losses of Single-phase Distribution Transformers

Santos, Filipe Freire;Lopes, Gustavo Paiva;Wanderley Neto, Estacio Tavares;Villibor, Jansen Paula;Faria, Gabriel Henrique;Pereira, Matheus Penha

UNIFEI Federal University of Itajuba, Brazil

Paper ID: 2344

Understanding of incipient discharges in transformer insulation by reconstruction of Digital Twins for the discharges using Generative Adversarial Networks

Mahidhar, G D P (1);Kumar, Aneesh (1);Sarathi, R (1);Taylor, Nathaniel (2);Edin, Hans (2);Ashwin Desai, B M (3)

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Paper ID: 2353

The property evaluation of oil-paper insulation after long-term storage by dielectirc modulus

Hu, Yizhuo;Liu, Yang;Xing, Yadong;Xie, Jiacheng;Dong, Ming

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Paper ID: 2360

A universal method for frequency domain response curve decomposition and its application

Hu, Yizhuo;Xing, Yadong;Liu, Yang;Song, Bo;Xia, Changjie;Dong, Ming

State Key Laboratory of Electrical Insulation & Power Equipment, Xi'an Jiaotong University, China, People's Republic of

Paper ID: 2100

Evaluation of Asynchronous Wind Generator Stator Magnetic Slot Wedge and Coil Movement Using Electrical Signature Analysis

Penrose, Howard W

MotorDoc LLC, United States of America

Paper ID: 2102

REMOTE TECHNICAL SUPPORT DURING GENERATOR MAINTENANCE

Maughan, Clyde

Maughan Generator Consultants, United States of America

Paper ID: 2113

Automatic Classification of 2D Partial Discharge from Generator

Hudon, Claude (1);Lévesque, Mélanie (1);Kokoko, Olivier (1);Zemouri, Ryad (2);Amyot, Normand (1)

1: Hydro-Quebec IREQ, Canada;2: CEDRIC laboratory, Conservatoire National des Arts et Métiers

Paper ID: 2114

Initial Experience with Acoustic Imaging of PD on Stator Winding Components

Wendel, Christoph (1);Herold, Christoph (2);Stone, Greg (1)

1: Qualitrol-Iris Power;2: Von Roll

Paper ID: 2115

The Correlation Between PRPD Patterns and Dissection on Individual Stator Coils

Levesque, Melanie (1);Seol, Yoon Duk (2);Hudon, Claude (1);Provencher, Helene (1);Cloutier-Rioux, Emilie (2)

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Paper ID: 2136

Performance of Corona Resistant Insulation for Aerospace

Rumi, Alberto (1);Marinelli, Jacopo Gabriele (1);Seri, Paolo (1);Kohler, Mario (2);Cavallini, Andrea (1)

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Paper ID: 2179

Condition Assessment of Rotating Electrical Machines using SFRA - A Survey

Mayora, Hernan (1);Alvarez, Raúl Emilio (1);Bossio, Guillermo (2);Calo, Emilio (1)

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Paper ID: 2196

UNDERSTANDING ALTERNATE METHODS OF MACHINE ON-LINE CONDITION MONITORING, AN INVESTIGATION BASED ON YEARS OF EXPERIENCE AND FIELD CASE STUDIES

Haq, Saeed Ul (1);Schartner, Chris (2);TS Moorthy, Madu (3)

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Paper ID: 2204

Partial discharge, glass transition temperature and dissipation factor as tool to assess insulation with history of failures

Ferreira, Rafael Freitas

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Paper ID: 2209

Heat flow simulations of epoxy-based stator insulation at 100 kHz.

Wilder, Aleta T.;Pearce, John A.

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Paper ID: 2229

Ageing in aircraft electromechanical chain: design of thermal cycling bench for winding elements

Dreuilhe, Sarah (1);Pin, Samuel (1);Fetouhi, Louiza (1,2);Stemmer, Sebastien (1);Belijar, Guillaume (1);Albert, Laurent (1)

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Paper ID: 2302

Three-Phase Model for Studying Turn-to-Turn Transient Voltage Distribution in Rotating Machine Stator Windings

Sousa Ferreira, Rodrigo;Carlos Ferreira, Antônio

Federal University of Rio de Janeiro, Brazil

Paper ID: 2303

Influence of the Surge Rise-Time on the Turn-to-Turn Transient Voltage Distribution in Rotating Machine Stator Windings using a Three-Phase Model

Sousa Ferreira, Rodrigo;Carlos Ferreira, Antônio

Federal University of Rio de Janeiro, Brazil

Paper ID: 2332

Recommended On-site Smart Assessment Techniques for Stator Winding of Large Rotating Machines

Trivedi, Ashish (1);Haq, Saeed (2);TS Moorthi, Madu (3);Peset, Gregory (4)

1: Delom/Wajax;2: General Electric Canada;3: General Electric Canada;4: Delom/Wajax

Paper ID: 2109

Oil flow related damage to Kraft paper 1: thermal aging

Hosier, Ian Lee (1);Lewin, Paul Leonard (1);Wilson, Gordon (2)

1: University of Southampton, United Kingdom;2: National Grid, United Kingdom

Paper ID: 2110

Oil flow related damage to Kraft paper 2: UV irradiation

Hosier, Ian Lee (1);Lewin, Paul Leonard (1);Wilson, Gordon (2)

1: University of Southampton, United Kingdom;2: National Grid, United Kingdom

Paper ID: 2116

Factory and Retro-Filled Natural Ester Distribution Transformers Subjected to Overload Conditions

Breazeal, Robert Craig;Sbravati, Alan

Southern California Edison, United States of America

Paper ID: 2118

Quick fault severity determination using Dissolved Gas Analysis with different gas ratio fault identification techniques

Kimani, George;Akumu, Aloys

Tshwane University of Technology, South Africa

Paper ID: 2159

Estimation on degradation rate of insulating paper in power transformers using historical load and thermal data

Doolgindachbaporn, Atip (1);Callender, George (1);Lewin, Paul (1);Wilson, Gordon (2)

1: University of Southampton, United Kingdom;2: National Grid

Paper ID: 2189

Simulation of bubble dynamics in liquid under impulse voltage

Zhang, Rui (1);Zhang, Qiaogen (1);Guo, Chong (1);Wang, Shaoqi (1);Wen, Tao (1);Wu, Xingwang (2)

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Paper ID: 2198

Initial investigation of the thermal performance qualification method for the transformer insulating liquids

Sbravati, Alan (1);Casserly, Edward (2);Wilhelm, Helena (3);Su, Paul (4);Levin, Aleksandr (5);Gyore, Attila (6);Masood Cheema, Muhammad Ali (7);Wirtz, Kevin (1);Lukenda, Nikola (8)

1: Cargill, United States of America;2: Ergon Refining, Inc., United States of America;3: Vegoor, Brazil;4: FM Global, United States of America;5: Weidmann Electrical Technology Inc., United States of America;6: M&I Materials Ltd, United Kingdom;7:

Paper ID: 2219

Electrical stress suffered by medium voltage medium frequency transformer

Changjiang, Zheng;Qian, Wang;Huai, Wang;Zhan, Shen;Leth Bak, Claus
Aalborg University, Denmark

Paper ID: 2220

The increase in insulation power factor of transformer oil due to urban dust contamination

Parsons, Greg;Ziomek, Waldemar;Vijayan, Krishnamurthy
PTI Transformers LP, Canada

Paper ID: 2221

Design, manufacture, testing and betterment of insulation system for high voltage mobile transformers

Ziomek, Waldemar (1);Vijayan, Krishnamurthy (1);Kuby, Kyle (1);Kalicki, Tomasz (2)

1: PTI Transformers LP, Canada;2: Hydro One Networks Inc.

Paper ID: 2235

Monitoring of the dielectric dissipation factor during oil reconditioning process for transformer drying

Meira, Matias (1);Álvarez, Raúl (2);Verucchi, Carlos (1);Mayora, Hernán (2)

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Paper ID: 2240

Estimation of Activation Energy of Transformer Insulation from Frequency Domain Spectroscopy Measurement performed at a Particular Temperature

Chowdhury, Soumyadeep (1);Haque, Nasirul (1);Chatterjee, Soumya (2);Pradhan, Arpan Kumar (3);Chakravorti, Sivaji (4)

1: National Institute of Technology Calicut;2: Techno India University;3: University of Stuttgart;4: Jadavpur University

Paper ID: 2243

An optical fiber magnetic field sensor based on Faraday effect for transformer leakage magnetic field measurement

Jiaxun, Li (1);Yi, Zhao (1);Tao, Wen (1);Xing, Fan (1);Weijiang, Chen (2);Qiaogen, Zhang (1);Zhengyang, Wu (3)

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Paper ID: 2103

Water immersion test approach for dry type inductors for railway applications

Wezelenburg, Margaretha Geertruida (1);Duinmayer, Peter (2)

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Paper ID: 2129

On-line three-phase differential partial discharge localization in transformer bushings

Meyer, Hans Kristian Hygen;Eberg, Espen;Lundgaard, Lars

SINTEF Energy Research, Norway

Paper ID: 2131

Insulating liquids at free breathing conditions

Sbravati, Alan (1);Wirtz, Kevin (1);de Oliveira, Lucas (2)

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Paper ID: 2182

Improved thermal resistance and overload capability of the new Ester Bushings

FERDJALLAH KHERKHACHI, Essedik (1);RICHER, Olivier (1);Kaineder, Kurt (2);Negri, Fabrizio (2)

1: Trench Group;2: Siemens Energy Global

Paper ID: 2193

Influence of Slope on Thermal Class Calculations During Accelerated Aging Tests

Greaves, Brad (1);Prevost, Thomas (1);Casserly, Ed (2);Holden, Andy (2);Acosta, Juan (2)

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Paper ID: 2218

Research on On-line Detection Technology of Transformer Winding Deformation

Sha, Yufei (1);Cheng, Yangchun (1);Bi, Jiangang (2);Chang, Wenzhi (2)

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Paper ID: 2246

Simulation of the Movement Characteristics of Micro-bubbles in the Gap of Transformer Windings

Zheng, Yameng (1);Zhao, Tao (2);Tong, Yixin (3);Chao, Nijie (4)

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Paper ID: 2256

Dielectric and mechanical assessment of cellulosic insulation during transformer manufacturing

Sanz-Asensio, Jaime;Sancibrian-Lana, Oasis;Fernandez-Diego, Inma;Ortiz-Fernandez, Alfredo;Vila-Montañes, Carlos;Mendez-Gutierrez, Cristina

University of Cantabria, Spain

Paper ID: 2260

Capacitively graded oil-paper insulation behavior under repeated flashover conditions

Zupan, Tomislav (1);Novko, Ivan (1);Ziger, Igor (2)

1: Končar – Electrical Engineering Institute Inc., Fallerovo šetalište 22, 10002 Zagreb, Croatia;2: Končar – Instrument Transformers Inc., Josipa Mokrvića 10, 10090 Zagreb, Croatia

Paper ID: 2296

Dissection of Wind Power Transformers for Determining the Cause of PD.

Arvidsson, Lars

VPdiagnose, Sweden

Paper ID: 2322

Experimental and numerical study of the polyimide film insulation characteristics in the liquid nitrogen of superconducting transformers

Zhou, Qibin (1);Tang, Feipeng (1);Wang, Xi (2);Jin, Zhijian (3)

1: Shanghai University;2: Shanghai Dianli University;3: shanghai Jiao Tong University

Paper ID: 2328

Research on neutral grounding mode in 35kV system of transformer in wind farm station

Xiang, Nianwen (1);Yuan, Chenchen (1);Wang, Qiong (2);Dou, Bingjie (2);Yang, Bo (2)

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Paper ID: 2333

Partial Discharge Inception Voltage in Liquid Dielectrics and its Definition

Pompili, Massimo (1);Calcara, Luigi (1);Baur, Martin (2);Knauel, Jens (2)

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Paper ID: 2122

Preliminary Experimental Investigation of the Effect of Superimposed Switching Impulses on XLPE-insulated HVDC Cables

Mazzanti, Giovanni;Seri, Paolo;Diban, Bassel
University of Bologna, Italy

Paper ID: 2126

DC Conductivity Fluctuation Due to Temperature Dependence and Cross-linking Byproducts of XLPE Insulation Material in HVDC Cables

Ahmed, Muneeb;Zhong*, Lisheng;Li, Fei;Xu, Nuo;Ren, Haiyang
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Paper ID: 2130

Power Capacity of High Voltage Cables for Future Electrical Aircraft

Xu, Hang;Lowndes, Robert;Cotton, Ian
University of Manchester, United Kingdom

Paper ID: 2133

Avoiding Medium Voltage Cable Joint Failure: Development of a Real-Time Prognostic Tool

Lewin, Paul (1);Coleman, Toby (1);Koumbari, Nicos (1);Liu, Yixuan (1);Christou, Stelios (2)
1: University Of Southampton, United Kingdom;2: RINA Tech UK

Paper ID: 2135

Principal Component Analysis of Nuclear Cable Insulation Subjected to Elevated Temperature and Gamma Radiation

Li, Donghui;Spencer, Mychal;Pallaka, Madhusudhan;Bisel, Tucker;Ni, Yelin;Zwoster, Andy;Murphy, Mark;Fifield, Leonard
Pacific Northwest National Laboratory, United States of America

Paper ID: 2141

Forecasting the Partial Discharge Inception Voltage (PDIV) of Insulated Busbars for High Voltage Interconnects for Future Aircraft Power Distribution Systems

Lowndes, Robert;Cotton, Ian

University of Manchester, United Kingdom

Paper ID: 2151

Peroxide Decomposition Products in Factory Joints for DC XLPE Submarine Cable

Sonerud, Björn (1);Mäkelä, Timo (2);Kjellstrand, Jerker (3)

1: VerdiLink Consulting AB, Sweden;2: Maillefer Extrusion Oy, Finland;3: Arcus IP GmbH, Switzerland

Paper ID: 2162

Preliminary Analysis of the Impact of the Leakage Current on HVDC R&D and Qualification Tests on Power Cables

Guerrini, Nicola (1);Troia, Ivan (2);Mazzanti, Giovanni (3);Diban, Bassel (3)

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Paper ID: 2172

Modelling Harmonic Propagation in HVDC System Power Cables

Arshad, .;Stewart, Brian G.

University of Strathclyde, United Kingdom

Paper ID: 2203

Characterisation of Verdigris Contamination in Cable Sealing Ends

Thakur, Soumya (1);Shaw, A. V. (2);Andritsch, T. (1);Lewin, P. L. (1);Cwikowski, O (3)

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Paper ID: 2236

Identification of Defects in MV Equipment through Advanced Partial Discharge Diagnostics

Naderian Jahromi, Ali;Ketharam Pattabi, Pranav
METSCO Energy Solutions, Canada

Paper ID: 2286

The effect of Alumina Nanoparticles on Increasing the Lifespan of Aged XLPE MV Cable Insulations

Hosseini, S. M. Hassan;Merati Shirazi, Amir Hossein
Islamic Azad University South tehran branch, Iran, Islamic Republic of

Paper ID: 2310

Microscopy Study of Inception Sites of Vented Water Trees in a HV XLPE Cable Aged in Salt Water

Lesaint, Cedric (1);Hvidsten, Sverre (1);Hestad, Øystein (1);Olsen, Elise (2);Bengtsson, Karl Magnus (2)
1: SINTEF Energy Research, Norway;2: Nexans Norway

Paper ID: 2337

Characterization of a superconducting gas insulated cable under ac and dc voltage

Cheetham, Peter (1);Darbha, Bhanu (1);Talikapalli, Srikar (1);Kim, Chul (1);Pamidi, Sastry (1);Park, Chanyeop (2);Graber, Lukas (3)
1: Florida State University, United States of America;2: Mississippi State University, United States of America;3: Georgia Institute of Technology, United States of America

Paper ID: 2104

Validating discharge and ground electrode effect on the lightning strike damage of materials and its implication to composite structures by modeling lightning discharge

Yousefpour, Kamran (1);Aider, Youssef (1);Wang, Yeqing (2);Rostaghi Chalaki, Mojtaba (1);Park, Chanyeop (1)

1: Mississippi State University, United States of America;2: Syracuse University, United States of America

Paper ID: 2125

Application of D-dot Sensor for Partial Discharge Waveform Measurement

Rostaghi Chalaki, Mojtaba (1);Haque, Farhina (2);Yousefpour, Kamran (2);Park, Chanyeop (2)

1: G&W Electric Company, United States of America;2: Mississippi State University, United States of America

Paper ID: 2148

Low Pressure Partial Discharge Tests with Ultra High dv/dt PWM Voltages for Aircraft Motor Windings

Wei, Zhuo (1);Grosjean, Dennis (2);Schweickart, Daniel (3);Fu, Pengyu (1);Wang, Jin (1)

1: The Ohio State University, United States of America;2: Innovative Scientific Solutions, Inc.;3: Air Force Research Laboratory/RQQE

Paper ID: 2158

270 Vdc Arcing at Flight Altitude Pressures: Comparison with Ground Level

Grosjean, Dennis (1);Schweickart, Daniel (2)

1: Innovative Scientific Solutions, Inc., United States of America;2: Air Force Research Laboratory/RQQE, United States of America

Paper ID: 2197

A Finite Element Analysis Model for Internal Partial Discharges in an Air-Filled, Cylindrical Cavity inside Solid Dielectric

Borghei, Moein (1);Ghassemi, Mona (1);Kordi, Behzad (2);Gill, Puneet (2);Oliver, Derek (2)

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Paper ID: 2223

Partial Discharge Inception Voltage: Precise and Robust Numerical Estimation Based on Extensive Dielectric Spectroscopy Measurements

KEMARI, Youcef (1,2);BELIJAR, Guillaume (1);LAUDEBAT, Lionel (2);DIAHAM, Sombel (2);VALDEZ-NAVA, Zarel (2)

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Paper ID: 2225

OVERHEAD LINE TRANSMISSION COMPOSITE INSULATORS. EVALUATION OF THEIR TECHNICAL CONDITION IN THE LABORATORY AFTER THEIR REMOVAL FROM SERVICE.

Morcelle del Valle, Pablo;Álvarez, Raúl Emilio;Catalano, Leonardo Javier;Calo, Emilio;Mayora, Hernán
Instituto de Investigaciones Tecnológicas para Redes y Equipos Eléctricos, Argentine Republic

Paper ID: 2234

Test-bench and frequency response of a Magnetic Antenna used in GIS PD measurements

Mier, Christian;Rodrigo, Armando

Delft University of Technology, Netherlands

Paper ID: 2255

Development, testing and aging of reference insulation defects for the improvement in partial discharges diagnosis.

Arcones, Eduardo (1);Ortego, Javier (2);Camuñas, Álvaro (1);Rosete, Alejandro (1);Gómez, Pablo (1);Garnacho, Fernando (1);Álvarez, Fernando (1)

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Paper ID: 2257

Error in the measurement of partial discharge pulses according to the frequency response of HFCT sensors

Khamlichi, Abderrahim (1);Garnacho, Fernando (2);Álvarez, Fernando (2);Ortego, Javier (3);Arcones, Eduardo (2)

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Paper ID: 2268

On-line Estimation Method for Internal Temperature of Lithium-ion Battery Based on Electrochemical Impedance Spectroscopy

FAN, Wenjie;Zhang, Zhibin;Dong, Ming;Ren, Ming

Xi'an Jiaotong university, China, People's Republic of

Paper ID: 2280

On-Line Condition Monitoring and Aging Management System for Nuclear Power Plant Cables

McConkey, J. Bryan;Dungan, Nathan A.;Ferree, Codi R.;Ellis, Patrick N.;Connatser, Elijah B.

AMS Corporation, United States of America

Paper ID: 2306

Partial Discharge Activity on Polymeric Insulating Surfaces under Positive Trapezoidal High Voltages

Mikropoulos, Pantelis Nikolaos; Samaras, Pavlos Klimantos
Aristotle University of Thessaloniki, Greece

Paper ID: 2346

Numerical simulation of glow corona discharge in air based on a plasma chemical model

Xiao, Mian (1); He, Hengxin (1); Liu, Lipeng (2); Luo, Bin (1); Che, Junru (1); He, Junjia (1)

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Paper ID: 2124

Modeling of Interface Dielectric Constant in Nanodielectrics

Sharma, Asha;Basu, Sumit;Gupta, Nandini
IIT Kanpur, India

Paper ID: 2156

Theoretical Investigations on the Mechanisms for Dielectric Failure of Heptafluoro-iso-butyronitrile in the Presence of Water Vapor

Yu, Xiaojuan;Hou, Hua;Wang, Baoshan
Wuhan University, China, People's Republic of

Paper ID: 2171

Temperature dependence of relative permittivity and dielectric dissipation factor of nano-modified mineral oil for use as insulating liquids in transformers

Khan, Suhaib Ahmad (1);Khan, Asfar Ali (2);Tariq, Mohd (3)
1: Aligarh Muslim University, India;2: Aligarh Muslim University, India;3: Aligarh Muslim University, India

Paper ID: 2208

Electret Fabrication Under Various Discharge Conditions of Triode Corona Charging and the Partial Discharge Mitigation Performance

Haque, Farhina;Park, Chanyeop
Mississippi State University, United States of America

Paper ID: 2242

Effect of theTiO₂ film thickness deposited on the surface of different electrodes on the space charge injection of liquid dielectric

Xian, Tianhua (1);Yang, Qing (2);Zhang, Zhaotian (2);Wu, Shilin (2)
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Paper ID: 2269

Nonlinear dielectric composites with Calcium Copper Titanate filler ceramics for power applications

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Paper ID: 2289

Influence of Nano Sized Fillers on Suppressing DC Erosion of Hybrid Silicone Rubber Composites

Alqudsi, Alhaytham Y. (1);Ghunem, Refat A. (1,2);David, Éric (1)

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Paper ID: 2308

A Simple Group-Additivity Method to Predict the Dielectric Strength of Insulation Gases for Molecular Design

Hou, Hua;Yu, Xiaojuan;Wang, Baoshan

Wuhan University, China, People's Republic of

Paper ID: 2327

Enhancement of Low-temperature Impact Strength of Isotactic Polypropylene Filled with Thermoplastic Elastomer for HVDC Cables

Zhang, Ling (1);Wu, Wangsong (1);Jia, Shiqi (1);Xu, Yuxuan (1);Zhou*, Yuanxiang (1,2)

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Paper ID: 2336

The Effect of Voltage Polarity Reversal on Space Charge Behavior of Epoxy MgO nanocomposites

G, Nagaraju;R, Sarathi

Indian Institute of Technology Madras, India

Paper ID: 2343

Image Segmentation Method for Unbalanced Background in Water Droplets from Insulators Based on Discrete Cosine Transform and Morphological Processing

Santos Macedo, Matheus;Vilela Ferreira, Tarso;Costa dos Santos, Adrielly

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Paper ID: 2347

Measurement of gas density recovery of a post-spark channel in a 1.0m air gap

Huang, Yubin (1);Ding, Yujian (2);He, Henxing (1);Cheng, Chen (1);Chen, Weijiang (3);Wu, Yutong (1);Hu, Jingyang (1)

1: State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China.;2: China Electric Power Research Institute,Beijing,China.;3: State Grid Corporation of China,Beijing,China.

Paper ID: 2363

On the partial discharge behavior of a low-density polymeric foam for hollow-core composite insulators

Machetti, Diego (1);Moal, Eric (2);Seifert, Jens (3);Puffer, Ralf (1)

1: RWTH Aachen University, Germany;2: Reinhausen France SAS (France);3: Reinhausen Power Composites GmbH (Germany)

Paper ID: 2101

Effect of Free Radicals induced by thermal aging on electrical and optical properties of BOPP film for capacitors

Umran, Haider (1,2);WANG, FEIPENG (1);HE, YUSHUANG (1)

1: School of Electrical Engineering Chongqing University;2: University of Kerbala

Paper ID: 2106

Analysis of a hydro-generator stator winding failure

Raymond, Alexandre (1);Millet, Charles (1);Provencher, H el ene (2)

1: Hydro-Qu ebec, Canada;2: IREQ, Canada

Paper ID: 2150

Online Partial Discharge Monitoring and Failure Analysis of a 132kV Current Transformer

Ward, Brody (1);Whyte, Thomas (2)

1: Powerlink Queensland, Australia;2: EA Technology, Australia

Paper ID: 2160

Modelling of an electrochemical double layer capacitor using cyclic voltammetry

Chatterjee, Kingshuk;Basu, Sumit;Gupta, Nandini

IIT Kanpur, India

Paper ID: 2161

Electrical tree progression in the presence of micro-voids due to thermal aging

Bordeori, Moon Moon;Gupta, Nandini

IIT Kanpur, India

Paper ID: 2166

Study on characteristics of surface discharge of silicone rubber under high-speed airflow

Zhang, Guangquan;Zhang, Xueqin;Guo, Yujun;Wang, Bo;Yang, Feng;Wu, Guangning
Southwest Jiaotong University, China

Paper ID: 2194

Microstructure investigation of reference voltage and leakage current trends in varistor arresters

Muremi, Lutendo;Bokoro, Pitshou;Doorsamy, Wesley
University of Johannesburg, South Africa

Paper ID: 2217

Study on the Performance Degradation of a Plasma Jet Gun for Triggering High Pressure SF6 Gap

Gao, Gan (1);Li, Xiaoang (1);Zhang, Ningbo (1);Lv, Yufang (1);Li, Zhibing (2);Zhang, Qiaogen (1)
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Paper ID: 2244

PD energy as a marker of low-voltage insulation aging

Szczepanski, Mateusz (1,2);Fetouhi, Louiza (1,2);Sabatou, Marie (1);Pin, Samuel (1);Belijar, Guillaume (1)
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Paper ID: 2248

Assessing the Condition of Propulsion Coils of Superconducting Maglev Systems Using an On-Board Radio Interferometer System with a Vector-Antenna

Kawada, Masatake
Tokushima University, Japan

Paper ID: 2304

Maximum Likelihood Classification for Transformer Fault Diagnosis Using Dissolved Gas Analysis

S M, Sreelakshmi;Tharamal, Lakshmi;P, Preetha
National Institute of Technology Calicut, India

Paper ID: 2365

Effect of Reliability Principles on Insulation Life Cycle Management

Ross, Alan
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