TECHNICAL PROGRAM

2024 IEEE 42nd Electrical Insulation Conference (EIC)

Date: Sunday, 02/June/2024

9:00am - 12:00pm

Workshop on Electrification of Transportation
Location: **Nokomis-B**
Chair: **Andrea Cavallini**, University of Bologna, Italy

Electrification of Transportation Wrokshop

1:30pm - 5:30pm

Generator Winding Failure, case studies and repair methods
Location: **Nokomis-A**
Chair: **Joël Pedneault-Desroches**, Hydro-Québec, Canada

Artificial Intelligence and Machine Learning
Location: **Nokomis-B**
Chair: **Luiz Cheim**, Hitachi Energy, United States of America

Liquid Insulation Diagnostics and Field Condition Assessment
Location: **Nokomis-C**
Chair: **Diego Robalino**, MEGGER Group, United States of America

6:00pm - 7:00pm

Conference Opening + Main Keynote Speaker
Location: **Lakes Ballroom A**
Chair: **Alan Sbravati**, Hitachi Energy, United States of America

7:00pm - 10:00pm

Posters Session
Location: **Lakes Ballroom B**
Chair: **Mark Winkeler**, ELANTAS PDG, Inc., United States of America

Atmospheric Correction of DC Flashover along Short GPO-3, PPS, PP, and PE Surface
Y. Liu, N. Guo, E. Karimi, L. Graber
Georgia Institute of Technology, United States of America

Designing a Platform to Evaluate Metal Oxide Varistors for DC Circuit Breaker Applications
Y. Liu, Z. Zhang, K. Chuong, Z. Jin, L. Garten, L. Graber
Georgia Institute of Technology, United States of America

Lifetime Evaluation of High-frequency Voltage Endurance of Sheet Insulation Materials for Electric-Vehicle Motors
Y. Tsukamoto[1], S. Mukasa[2], K. Haga[2], Z. Timoranský[3], K. Kandlbauer[4]
1: Nippon Rika Technologies Inc., Nihonmatsu, Japan; 2: Nippon Rika Technologies Inc., Mibu, Japan; 3: Nippon Rika Industries Corporation, Branch Office Austria, Austria; 4: Nippon Rika Inc., Marengo OH, USA

Ageing Mechanism of PLA Based 3d-printed Solid Insulators
A. P. Rojas[1], F. Haque[2]
1: Department of Engineering Science, Sweet Briar College; 2: Department of Electrical and Computer Engineering, The University of Akron, United States of America

Aramid based slot liners for low voltage electric motor applications
N. Boulanger[1], X. Jia[1], N. Yaghini[2], T. Sharifi[2], E. Bengtsson[3], S. Trey[3], T. Wågberg[1]
1: Umeå University, Sweden; 2: Scania AB, Sweden; 3: Research Institutes of Sweden, Sweden

The quadripole - an underrated component of partial discharge measurement
D. W. Gross
Power Diagnostix Consult GmbH, Germany

High Voltage Inductor Design and Implementation for Synthetic Testing of a Supercritical CO2 Circuit Breaker
M. S. A. Hossain[1], H. Shabani[1], S. Catania[1], Z. Jin[2], L. Graber[2], C. Park[1]
1: University of Wisconsin - Milwaukee, United States of America; 2: Georgia Institute of Technology, United States of America

Breakdown characterization of transformer mineral oil on the pulsed and AC condition
L. P. Silva Neto[1], J. O. Rossi[2], E. Antonelli[1], R. G. Aredes[1]
1: Unifesp, Brazil; 2: INPE, Brazil

	Insulation Resistance Measurements of Medium-Voltage Cross-linked Polyethylene Cables under Thermal Stresses **X. Ge, F. Fan, M. Given, B. Stewart** Institute for Energy and Environment, University of Strathclyde, United Kingdom
	Effect of Total Gap Distance on Breakdown Voltage of Live-Line Work Air Gaps **T. Ding[1], J. Gao[1], T. Jiang[1], K. Liu[2], Y. Liu[2], J. Liu[2]** 1: College of Electrical and Information Engineering, Hunan University, Changsha, China; 2: State Key Laboratory of Power Grid Environmental Protection, China Electric Power Research Institute, Wuhan, China
	Investigating the Impact of Pulse Rise Time in PEA Methods: A Simulation Study **A. Saeed, B. Stewart** University of Strathclyde, United Kingdom
	Signal Analysis of Partial Discharge Defects in SF6 and C4F7N/CO2 Mixture **T. Y. Hong, Y. W. Youn, J. H. Cho, J. H. Sun** Korea Electrotechnology Research Institute(KERI), Korea, Republic of (South Korea)
	DC Needle-Plane PD Measurements with Superimposed Harmonics **S. Shahtaj[1], F. Fan[1], A. Arshad[2], B. Stewart[1]** 1: University of strathclyde, United Kingdom; 2: Glasgow Caledonian University, United Kingdom
	A model based on the finite element method for estimating the impacts of saline pollution on high voltage insulators **A. B. F. de Oliveira[1], E. d. S. Araújo[1], G. V. R. Xavier[1], B. V. S. Araújo[1], G. A. Rodrigues[1], U. D. E. d. S. Lebre[2], C. A. Cordeiro[2], T. V. Ferreira[1]** 1: Universidade Federal de Sergipe, INESC P&D Brasil, Brazil; 2: Eneva S.A., Brasil
	Methods for mapping salt pollution deposition in insulation **E. d. S. Araújo[1], A. B. F. de Oliveira[1], G. V. R. Xavier[1], B. V. S. Araújo[1], G. A. Rodrigues[1], U. D. E. d. S. Lebre[2], C. A. Cordeiro[2], T. V. Ferreira[1]** 1: Universidade Federal de Sergipe, INESC P&D Brasil, Brazil; 2: Eneva S.A., Brazil
	Improving the Microstructure of ZnO-Based Metal Oxide Varistors Using Cold Sintering **K. Chuong, Y. Liu, L. Graber, L. Garten** Georgia Tech, United States of America

Date: Monday, 03/June/2024

10:00am - 12:00pm

Rotating Machines - Oral Session 1

Location: **Lakes Ballroom A**

Chair: **Andrea Cavallini**, University of Bologna, Italy

10:00am - 10:24am

Coils design influence on corona inception

C. S. Goncalves, R. L. Sartori, W. Trentin, R. Morsch

WEG, Brazil

10:24am - 10:48am

Forensic Analysis and Coil Dissection of Mobile Generator Failure

H. W Penrose

MotorDoc LLC, United States of America

10:48am - 11:12am

Electrical tree propagation in epoxy resin under superimposed sinusoidal and repetitive pulse waveforms for converter-fed motor insulation

T. Umemoto[1], M. Sato[1], A. Yoshida[2], K. Hidaka[2], Y. Yamanaka[3], T. Yamada[4], T. Okamoto[4], A. Kumada[1]

1: The University of Tokyo, Japan; 2: Tokyo Denki University, Japan; 3: Mitsubishi Electric Corporation, Japan; 4: Toshiba Mitsubishi-Electric Industrial Corporation, Japan

11:12am - 11:36am

Dissection techniques used to assess the root cause after a phase-to-ground fault on hydro-generator stator bars

H. Provencher[1], M. Levesque[1], D. Lalancette[1], J. Pedneault-Desroches[2], E. Cloutier-Rioux[2], Y. D. Seol[2]

1: Institut de Recherche d'Hydro-Québec, Canada; 2: Hydro-Québec, Canada

11:36am - 12:00pm

Experience With Hydro-Generator Stator Core Failure, Investigation, and Recommendation

Transformers & Reactors - Oral Session 1

Location: **Lakes Ballroom C**

Chair: **Mathieu Lachance**, OMICRON electronics Canada Corp, Canada

10:00am - 10:24am

Thermal Aging Performance of Enhanced Cellulose Insulation in Natural Ester Liquid

B. Greaves[1], T. Prevost[1], J. E. Contreras[2], J. Rodriguez[2], C. Gaytan[2]

1: Weidmann Electrical Technology Inc., St.Johnsbury, Vermont, United States of America; 2: Prolec GE Applied Research Center (CIAP), Apodaca, Nuevo Leon, Mexico

10:24am - 10:48am

Special considerations for insulation design of high voltage delta connected windings

W. Ziomek[1], K. Vijayan[1], K. Kuby[1], T. Prevost[2]

1: PTI Transformers LP, Canada; 2: Weidmann Electrical Technology Inc.

10:48am - 11:12am

Mechanical and Thermal Properties of Epoxy Containing Aluminum Isopropoxide Precursors Compared to Aluminum Oxide

Z. Jin[1], L. Graber[1], S. Ghosh[1], G. Langston[1], T. Uhrik[1], Y. Liu[1], N. Stingelin[1], K. Kalaitzidou[1], U. Levy[2], N. Tal[2]

1: Georgia Institute of Technology, United States of America; 2: SolarEdge, Israel

11:12am - 11:36am

Structure-Activity Relationship Models for Properties of the Dielectric Fluids

M. Zhang, H. Hou, B. Wang

College of Chemistry and Molecular Sciences, Wuhan University, China, People's Republic of

Insulation Coordination - Oral Session 1

Location: **Lakes Ballroom D**

Chair: **Brian Stewart**, University of Starthclyde, United Kingdom

10:00am - 10:24am

Preventing Space Charge Injection and Accumulation Using Electrets Under Steep Voltage Pulses with Varying Frequency and Duty Cycle

P. C. Saha, O. Faruqe, A. M. Juberi, C. Park

University of Wisconsin-Milwaukee, United States of America

10:24am - 10:48am

Partial Discharge Monitoring to Predict Failures in 230 kV GIS Substation using UHF and Ultrasonic Sensors

R. Birla, S. Mohammad, G. Hashmi, M. Zahrani

Saudi Aramco, Saudi Arabia

10:48am - 11:12am

Influence of UHF Filters on Partial-Discharge Measurement in Gas-Insulated Switchgear

S. Nobel, M. Söller, M. Chapman

Power Diagnostix Systems GmbH, Germany

11:12am - 11:36am

The Effect of Long Term Corona Discharge on Protrusion Characteristics in C4F7N / CO2 and SF6

E. Karimi[1], Z. Jin[1], A. Laso[2], M. Mucha[2], L. Graber[1]

1: Georgia Tech University, United States of America; 2: G&W Electric Company, United States of America

11:36am - 12:00pm

New approach for air humidity correction factor under positive switching impulses for indoor applications

	W. Hong, M. Arshad British Columbia Hydro and Power Authority, Canada		**L. Arevalo, N. Mahant, O. Diaz** Hitachi Energy - HVDC, Sweden
1:30pm - 3:30pm	**Transformers & Reactors - Oral Session 2** Location: **Lakes Ballroom A** Chair: **Waldemar Ziomek**, PTI Transformers LP, Canada	**Rotating Machines - Oral Session 2** Location: **Lakes Ballroom C** Chair: **Andrea Cavallini**, University of Bologna, Italy	**Insulation Coordination - Oral Session 2** Location: **Lakes Ballroom D** Chair: **Chanyeop Park**, University of Wisconsin-Milwaukee, United States of America
	1:30pm - 1:54pm **Discrete Elements Thermo-Chemical Digital Twin Incorporating Oil and Paper Degradation** **A. Sbravati[1], L. Cheim[1], M. Finn[1], M. Marciniak[2]** 1: Hitachi Energy, United States of America; 2: Hitachi Energy, Poland	**1:30pm - 1:54pm** **Dissection of stator winding insulation HVRM, VPI insulation** **A. Gegenava, A. Khazanov** National Electric Coil, United States of America	**1:30pm - 1:54pm** **Risk Mitigation through Transient Protection of Transformer Bushings when Using Online Monitoring** **H. Löfås, R. Berg, L. Jonsson, R. Hedlund** Hitachi Energy Sweden AB, Sweden
	1:54pm - 2:18pm **Determination of Moisture Content during Dynamic Loading of Liquid-Filled Distribution Transformers** **A. Al-Abadi[1], A. Gamil[1], A. Sbravati[2]** 1: HITACHI Energy Germany; 2: HITACHI Energy USA	**1:54pm - 2:18pm** **Insulation System Development and an honest interpretation of results** **K. Thatcher, B. George** Von Roll USA, United States of America	**1:54pm - 2:18pm** **CFD simulation and design of a new supercritical CO2 circuit breaker contact and nozzle system** **Z. F. G. Wong, N. Guo, S. Neall, Z. Jin, L. Graber, J. Rauleder** Georgia Institute of Technology, United States of America
	2:18pm - 2:42pm **Low Temperature Behaviour of Natural Ester Dielectric Liquids** **K. Wirtz, Q. Hoang** Cargill, Inc., United States of America	**2:18pm - 2:42pm** **Experience and Techniques for Stator Bars Repair in Hydro-generators** **J. Pedneault-Desroches[1], M. Lévesque[1], K. Al-Haddad[2]** 1: Hydro-Québec, Canada; 2: École de Technologie Supérieure	**2:18pm - 2:42pm** **Design and Fabrication of A 72-kV Bushing for the TESLA Breaker** **Z. Jin[1], Y. Liu[1], A. Cruz[1], A. S. Sukhwani[2], A. R. Krishnan[1], G. J. Langston[1], S. Ghosh[3], T. Uhrik[4], K. Kalaitzidou[2], L. Graber[1]** 1: School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, USA; 2: School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, USA; 3: School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, USA; 4: School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, USA
	2:42pm - 3:06pm **On Challenges of Using Insulation Natural Ester liquid: Transformer Cold Start** **A. Gamil, A. Al-Abadi** Hitachi Energy Germany AG, Germany	**2:42pm - 3:06pm** **Optimizing Electric Vehicles Motor Insulation: Tailoring Surface Charges and Thermal Transients through Plasma Modification** **S. Akram, I. Ul Haq, Z. Fang, X. Zhu** Nanjing Tech University, Nanjing, China, People's Republic of	**2:42pm - 3:06pm** **Enhancing Wind Farm Reliability through Offline Partial Discharge Testing with Damped AC Technique** **Y. Godhwani, B. Cursey, S. Farhang** Megger
		3:06pm - 3:30pm **Historical Trends in Use of Accelerated Aging and Diagnostic Tests for Qualification of Stator Bar/Coil Insulation** **R. Soltani, R. Demegillo** Powertech Labs, Canada	**3:06pm - 3:30pm**

			Theoretical Characterizations on Novel Eco-friendly Dielectric Gas: Trifluoromethyl Carbonofluoridate **M. Zhang, H. Hou, B. Wang** College of Chemistry and Molecular Sciences, Wuhan University, China, People's Republic of
4:00pm - 5:30pm	**Rotating Machines - Oral Session 3** Location: **Lakes Ballroom A** Chair: **Émilie Cloutier-Rioux**, Hydro-Quebec, Canada	**Outdoor Insulation, Cables, and Accessories - Oral Session 1** Location: **Lakes Ballroom C** Chair: **James Steele**, Southwire, LLC, United States of America	**Power Electronics in the Electrical Grid - Oral Session 1** Location: **Lakes Ballroom D** Chair: **Gian Carlo Montanari**, Florida State University, United States of America
	4:00pm - 4:24pm **Evaluation of the Dissection of Coils for Stator Winding for High Voltage Rotating Machines** **A. Khazanov, A. Gegenava** National Electric Coil, United States of America	**4:00pm - 4:24pm** **High aspect ratio novel ceramic filler composites with nonlinear current voltage characteristics for power applications** **D. Ghosh, G. B. Jin** 3M, United States of America	**4:00pm - 4:24pm** **Silane Functional Stabilizers for Underground Cable Rejuvenation Fluid** **D. Busby, J. Steele, W. Chatterton** Southwire, LLC, United States of America
	4:24pm - 4:48pm **Novel variable edge time solid state pulse generator for improved dielectric material aging** **M. Damev[1], N. Frost[2]** 1: Phenix Technologies, a Doble Company, United States of America; 2: Frosty's Zap Lab, LLC, United States of America	**4:24pm - 4:48pm** **Non Intrusive Detection of Ceramic Disc Punctures in Outdoor Insulator Strings** **A. Lutfi[1], A. El-Hag[1], K. Shaban[2]** 1: University of Waterloo, Canada; 2: Qatar University	**4:24pm - 4:48pm** **Mitigating High Electric Field Stresses in Power Modules Utilizing Field Grading Materials** **O. Faruqe, P. C. Saha, A. M. Juberi, C. Park** University of Wisconsin-Milwaukee, United States of America
	4:48pm - 5:12pm **On the effects of repetitive high-frequency voltage impulses on modern high-voltage insulation systems** **M. J. da Silva, M. Wiesenhofer, W. Ladstaetter** ANDRITZ HYDRO GmbH, Austria	**4:48pm - 5:12pm** **Fabrication and Characterization of Crosslinked Polyethylene /Polyhedral Oligomeric Silsesquioxane Nanocomposites** **P. THOMAS, V NITHYA, N. MOUMITA, P V SATHEESH KUMAR** CENTRAL POWER RESEARCH INSTITUTE,India	**4:48pm - 5:12pm** **Dielectric and Thermal Analysis of Diamond-Like Carbon Incorporated Power Substrates** **A. M. Juberi, O. Faruqe, P. C. Saha, C. Park** University of Wisconsin Milwaukee, United States of America
	5:12pm - 5:36pm **Dissecting IEEE 1310: A Critical Examination and Ideas for Improvements** **M. J. da Silva, R. Mlecnik, G. Lemesch, W. Ladstaetter** ANDRITZ HYDRO GmbH, Austria	**5:12pm - 5:36pm** **Unexplained Flashovers on High Voltage Direct Current Transmission Lines under Negative Polarity Voltages** **J. Laninga[1,3], N. Jacob[2,3], B. Kordi[3]** 1: Manitoba Hydro; 2: Camlin Energy; 3: University of Manitoba	**5:12pm - 5:36pm** **Statistical Analysis of Partial Discharge Mitigation Performance of Electret in High Power Density System** **F. Haque[1], C. Park[2]** 1: Department of Electrical and Computer Engineering, The University of Akron; 2: Department of Electrical Engineering, University of Wisconsin-Milwaukee

Date: Tuesday, 04/June/2024

10:00am - 12:00pm

Posters Session
Location: **Lakes Ballroom B**
Chair: **Adam Balawejder**, Curtiss Wright, United States of America

Optimizing the Impact of Pour Point Depressants on Natural Ester Properties Using Taguchi-Grey Relational Analysis
S. O. OPARANTI, I. FOFANA, R. J. Aminabadi, Z. Ramzi
Université du Québec à Chicoutimi, Canada

Voltage Endurance of Mechanically Fatigued Epoxy-Fiberglass Laminate
A. T. Wilder[1], N. E. Frost[2], A. Mosier[3]
1: Wilder Innovations LLC, United States of America; 2: Frosty's Zap Lab LLC, United States of America; 3: Mosier Consulting

Preliminary Investigation of Arc Quenching in Supercritical CO2
A. J. Cruz Feliciano[1], S. M. Neall[1], S. Hossain[2], N. Guo[1], Z. Jin[1], C. Park[2], L. Graber[1]
1: Georgia Institute of Technology, United States of America; 2: University of Wisconsin-Milwaukee, United States of America

Numerical Calculation and Analysis of Temperature Rise in Power Transformers with Different Insulating Liquids
S. Wang[1], G. Wang[2], W. Dai[1], R. Zhuo[2], Q. Peng[1], M. Gao[2], D. Zou[1], Z. Tang[3], X. Zhang[3]
1: Electric Power Research Institute of Yunnan Power Grid Co.,Ltd Kunming,China; 2: CSG Electric Power Research Institute Co.,Ltd Guangzhou, China; 3: State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

Aluminum-epoxy bonding strength assessment based on modified butt joint sample
J. Korbel[1], R. Kochetov[1], X. Dong[2]
1: Hitachi Energy Switzerland Ltd; 2: Hitachi Energy China Ltd

An update to gram density calculations for resin rich high voltage coil designs
S. P. Caveney
Electrolock, United States of America

Development and Testing of Self-Triggering System for Laboratory Impulse Voltage Generators
M. P. Pereira, T. B. Silio, G. P. Lopes, G. H. Faria, J. P. Villibor, E. T. Wanderley Neto
UNIFEI Federal University of Itajuba, Brazil

Research on the properties of water-tree in PP/POE composites for cable insulation
G. Ren[1], Z. Wang[2], P. Li[2], K. Chen[2], Z. Tang[2], M. Xu[2]
1: State Grid Zhejiang Electric Power Co., Ltd.; 2: Xi'an Jiaotong University, China, People's Republic of

Characterisation of Interfacial Tracking in Solid Insulation Interfaces Using Partial Discharge Measurements
P. Donoso Daille[1], V. Peesapati[1], C. Smith[2], K. Tavernier[2]
1: The University of Manchester, United Kingdom; 2: IPEC Ltd

Electric Field Modeling in Cable Terminals with Defects and Fed by Power Converters
M. Barrera Chávez[1], F. P Espino Cortes[2], R. Nuricumbo Guillen[3]
1: Arteche North América, México; 2: SEPI ESIME Zacatenco, Instituto Politécnico Nacional, México; 3: Escuela de Ingeniería y Ciencias, Departamento de Ciencias, Tecnológico de Monterrey Campus Ciudad de México

Effect of Test Voltage on DC Polarization-Depolarization Measurements of Stator Winding Insulation
M. Sasic[1], G. Stone[2]
1: Iris Power, Canada; 2: Stone Dielectrics

Experience with Dielectric Dissipation Factor Testing of Complete Stator Windings
A. Shaikh, H. Sedding
Kinectrics, Canada

A Study on the Insulation breakdown voltage according to degradation condition of natural ester oil
H. G. Jeong, S. Lee, J. Y. Park, J. Y. Park, C. Y. Bae
LS ELECTRIC

	A Practical Approach for Estimating Short Interturn Fault Severity in Turbo Rotor Generators Using RSO Measurements **Y. Baskoro, A. Winardi, I. Jaya, A. Hamzah, Y. Saputra, K. Anam, R. Fakrin, M. Sanjaya, N. Afif** PT. PLN Indonesia Power, Indonesia		
	Dielectric Testing of Composite Insulators **R. Cselko, D. Balogh** Budapest University of Technology and Economics, Hungary		
	Proposal of Method for Water Tree Propagation in XLPE power cables under Continuous Heating and Heat Cycle Conditions **T. Kurihara, H. Misaka, T. Takahashi, T. Takahashi** Central Research Institute of Electric Power Industry, Japan		
1:30pm - 3:30pm	**Workshop Outdoor Insulation** Location: **Lakes Ballroom A** Chair: **Vidyadhar Peesapati**, University of Manchester, United Kingdom	**Rotating Machines - Oral Session 4** Location: **Lakes Ballroom C** Chair: **Aleksandr Khazanov**, National Electric Coil, United States of America	**Transformers & Reactors - Oral Session 3** Location: **Lakes Ballroom D** Chair: **Behzad Kordi**, University of Manitoba, Canada
		1:30pm - 1:54pm **Detecting Thermomechanical Ageing of Rotating High-Voltage Machines: Investigating the Influence of the Time Between Mechanical Stress and Diagnostic Measurement** **L. Elspass, S. Schlegel, M. Kosse** Technische Universität Dresden, Germany	**1:30pm - 1:54pm** **Insulation Failure analysis on Power transformer by FEM simulations** **R. Ocón Valdez[1], C P. Bravo Ortega[2], F. P Espino Cortes[2]** 1: FES Aragón Universidad Nacional Autónoma de México; 2: SEPI ESIME Zacatenco Instituto Politécnico Nacional, México
		1:54pm - 2:18pm **Implementation of the condition monitoring for a large fleet of industrial MV motors** **B. Engels[1], A. Caprara[2], L. Paschini[2], G. Ciotti[2]** 1: Nippon Gases, Belgium; 2: Techimp - Doble Engineering, Italy	**1:54pm - 2:18pm** **Dielectric failure of the electronic voltage regulator due to interaction with a power transformer during switching** **W. Ziomek[1], A. Babaei[1], A. Gole[2]** 1: PTI Transformers LP, Canada; 2: University of Manitoba, Winnipeg, Canada
		2:18pm - 2:42pm **Evaluation on Lifetime of Several Corona Armor Tape for Form-Wound Rotating Machines under Partial Discharge Aging** **Y. Yamanaka[1], R. Ikeda[2], N. Okajima[2], S. Kikuta[2], T. Sakurai[2], T. Okamoto[2]** 1: Mitsubishi Electric Corporation, Japan; 2: Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan	**2:18pm - 2:42pm** **Power and dielectric testing of a PCB-mounted electronic voltage regulator** **W. Ziomek, A. Babaei** PTI Transformers LP, Canada
		2:42pm - 3:06pm **Quantification of visual inspection results to be integrated as a diagnostic tool for hydrogenerators**	**2:42pm - 3:06pm** **Online Transformer DGA Monitoring Case Studies in Condition Assessment** **C. Wolmarans[1], R. Cox[2]** 1: GE VERNOVA, South Africa; 2: GE VERNOVA, USA

		M. Levesque[1], A. Merkhouf[1], M. Casavant[2], J. Pedneault-Desroches[2] 1: IREQ Hydro-Québec, Canada; 2: Intégration et ingénierie - Alternateurs Hydro-Québec, Canada **3:06pm - 3:30pm** **Rotor Winding Diagnosis using Sweep Frequency Response Analysis with Comparison to RSO** **P. Froehlich[1], F. Oettl[2], M. Lachance[3]** 1: Brandenburg University of Technology (BTU) Cottbus-Senftenberg; 2: Omicron Technologies, Italy; 3: Omicron electronics, Canada	
4:00pm - 5:30pm	**Rotating Machines - Oral Session 5** Location: **Lakes Ballroom A** Chair: **Hugh Zhu**, Consultant, United States of America **4:00pm - 4:24pm** **Optimization of thermocycling (TC) test setup of coils/bars of high-voltage rotating machines (HVRM)** **A. Nikolaev, A. Khazanov, A. Gegenava** National Electric Coil, United States of America **4:24pm - 4:48pm** **Investigation of Post Processing and Robust Insulation of High-Performance Additively Manufactured Al-Fe-Zr Electrical Machine Windings** **P. Munagala[1], Y. Pang[2], C. Dalton[3], N. Simpson[1]** 1: University of Bristol, Bristol, United Kingdom; 2: Teesside University, Middlesbrough, United Kingdom; 3: The Manufacturing Technology Centre, Coventry, United Kingdom **4:48pm - 5:12pm** **The Importance of Thermal Classification in an Ever-Changing World** **C. Klein[1], M. Wantuch[1], S. Van Allen[1], N. Frost[2]** 1: Astro Chemical; 2: Frosty's Zap Lab, LLC	**Transformers & Reactors - Oral Session 4** Location: **Lakes Ballroom C** Chair: **Nathan Jacob**, Camlin Energy, Canada **4:00pm - 4:24pm** **Evident Bushing Insulation Issue Not So Evident to Line Frequency Power Factor** **V. Naranjo, K. Petroff, R. Gupta, S. Marathe** Megger, United States of America **4:24pm - 4:48pm** **A Review of Thermal and Electrical Designs for Dry-type Transformers and Future Perspectives** **H. Xu[1], S. Matharage[1], Z. Wang[1], D. Squire[2], H. Syzwala[2], M. Fazakarley[2]** 1: The University of Manchester, United Kingdom; 2: IST Power, United Kingdom **4:48pm - 5:12pm** **Thermal Analysis of Cast Resin Dry-Type Transformers Based on Finite Element Method** **H. Xu[1], S. Matharage[1], Z. Wang[1], D. Squire[2], H. Syzwala[2], M. Fazakarley[2]** 1: The University of Manchester, United Kingdom; 2: IST Power, United Kingdom	**Power Electronics + Outdoor Insulation, Cables and Accessories - Oral Session 2** Location: **Lakes Ballroom D** Chair: **Dipankar Ghosh**, 3M, United States of America **4:00pm - 4:24pm** **A discussion on the dependence of partial discharge inception voltage on supply voltage waveform: sinusoidal and modulated AC** **G. C. Montanari, M. Shafiq, Z. Chen** Center for Advanced Power Systems, Florida State University, USA **4:24pm - 4:48pm** **Experience in transmission networks using automatic partial discharge diagnostic platform** **R. Gómez[1], R. Reinoso[1], J. Ortego[2], E. Jorge[2]** 1: Red Electrica de España; 2: Ampacimon, Spain **4:48pm - 5:12pm** **A more appropriate testing method for the characterization of dielectric systems** **P. Seri[1], D. Demian[1], A. Reolon[2], A. Cavallini[1]** 1: University of Bologna, Italy; 2: Serigroup, Italy

	5:12pm - 5:36pm **Determination of insulation system thermal class: history and state of the standards** **N. Frost[1], H. Penrose[2], D. Stankes[3], C. Stroud[4], M. Winkeler[5]** 1: Frosty's Zap Lab, LLC; 2: Motor Doc, LLC; 3: 3M; 4: EMC, Electric & Motor Contracting, Co.; 5: Elantas PDG, Inc.	**5:12pm - 5:36pm** **Reclaiming of Aged Natural Ester Insulating Liquid** **R. Da Silva[1], L. De Oliveira[2], C. Lisboa[3], F. Fabrin[3]** 1: Cargill, USA; 2: Cargill, Brazil; 3: Ecofluid, Brazil	**5:12pm - 5:36pm** **Evaluation of Additively Manufactured Electrostatic Discharge Materials** **C. Hal[1,2], J. Francois[1], A. K. Das[1,2], N. Guvvala[1,2], S. Bernadin[1], S. Pamidi[1,2], P. Cheetham[1,2]** 1: FAMU-FSU COLLEGE OF ENGINEERING, United States of America; 2: Center for Advanced Power Systems Tallahassee

Date: Wednesday, 05/June/2024

8:00am - 9:30am

NEMA Panel on Electrification of Transportation
Location: **Lakes Ballroom A**
Chair: **Steve Griffith**, NEMA, United States of America

10:00am - 12:00pm

Transportation Systems (auto, rail, aerospace, and marine) - Oral Session 1

Location: **Lakes Ballroom A**
Chair: **Steve Griffith**, NEMA, United States of America

10:00am - 10:24am

Partial discharge characteristics for surface discharges at variable atmospheric pressure

S. B. Myneni, M. Shafiq, G. C. Montanari

Center for Advanced Power Systems, Florida State University, Tallahassee, FL, USA.

10:24am - 10:48am

Minimizing partial discharge inception risk in DC cables during energization and voltage transients

G. C. Montanari, S. B. Myneni

Center for Advanced Power Systems, Florida State University, Tallahassee, FL, USA.

10:48am - 11:12am

Towards the standardization of impulse tests used for quality control of electrical machines used in road transportation

A. Cavallini[1], N. Frost[2], S. Jayaram[3], P. Seri[1]

1: University of Bologna, Italy; 2: Frosty Zaplab; 3: University of Waterloo

11:12am - 11:36am

Impact of insulating horns on the electrical performance of train pantographs

G. Girelli[1], P. Lewin[1], C. Reed[1], N. Palmer[1], P. Naylor[2], R. Stainton[2], M. Atkins[3]

1: University Of Southampton, United Kingdom; 2: Network Rail, United Kingdom; 3: Brecknell Willis, United Kngdom

11:36am - 12:00pm

Rotating Machines - Oral Session 6

Location: **Lakes Ballroom C**
Chair: **Greg Stone**, Stone Dielectrics, Canada

10:00am - 10:24am

Inverter voltage endurance testing of twisted pairs acc. IEC 60851 with a self-developed, adjustable generator

C. Staubach[1], B. Sahan[1], A. Litinsky[2]

1: University of Applied Sciene Hannover, Germany; 2: Axalta Coating Systems

10:24am - 10:48am

Using DFR measurements for the condition assessment of stator winding insulation systems

M. Lachance[1], É. David[2]

1: OMICRON electronics Canada Corp; 2: École de technologie supérieure

10:48am - 11:12am

Enhancing Motor Reliability for Thermal and Environmental Stresses

D. Tedesco, R. G. Andrzejewski

WEG Equipamentos Elétricos S.A, Brazil

11:12am - 11:36am

Insipient Insulation Fault Detection Using Phase-Resolved Partial Discharge Pattern Matching

A. Abubakar, C. Zachariades

University of Liverpool, United Kingdom

11:36am - 12:00pm

Experience on VLF Diagnostic Testing of the Stator Winding Insulation

H. Zhu

BC Hydro

Transportation Systems + Batteries and Energy Storage - Oral Session 1

Location: **Lakes Ballroom D**
Chair: **Richard Cselko**, Budapest University of Technology and Economics, Hungary

10:00am - 10:24am

Enhancing Grid Performance with AMPD Voltage Peak Detection in Smart Grids

W. A. Shah[1], I. Hussain[2], G. M. Casolino[3], P. Verde[4]

1: Namal University Mianwali, Pakistan, Pakistan; 2: Dipartimento di Ingegneria Elettrica e dell'Informazione "M. Scarano", Università di Cassino e del LM, Via G. Di Biasio 43, 03043 Cassino, FR, Italy; 3: Dipartimento di Ingegneria Elettrica e dell'Informazione "M. Scarano", Università di Cassino e del LM, Via G. Di Biasio 43, 03043 Cassino, FR, Italy; 4: Dipartimento di Ingegneria Elettrica e dell'Informazione "M. Scarano", Università di Cassino e del LM, Via G. Di Biasio 43, 03043 Cassino, FR, Italy

10:24am - 10:48am

Electrical Conductivity Measurement of Dielectric Materials at Cryogenic Temperatures

A. K. DAS[1,2], N. Guvvala[1,2], S. Pamidi[1,2], P. Cheetham[1,2]

1: FAMU-FSU COLLEGE OF ENGINEERING, United States of America; 2: Center for Advanced Power Systems, United States of America

10:48am - 11:12am

Development of PD Detection System for Propulsion Coils Arranged on Both Sidewalls of U-Shaped Guideways in Superconducting Maglev Systems Using Two On-Board Radio Interferometer Systems with Vector-Antennas

M. Kawada

Tokushima University, Japan

	EVALUATION OF GLASS TRANSITION TEMPERATURE AND THERMAL SHOCK OF IMPREGNATING RESINS **M. Winkeler** ELANTAS PDG, Inc., United States of America		**11:12am - 11:36am** **Arc constraint-flash sintering of ZnO2 doped alumina at room temperature at different air pressure** **Y. Li[1], Z. Yan[2], J. Wang[3], H. Zhang[4], Z. Shen[5], X. WANG[1]** 1: Tsinghua University, China, People's Republic of; 2: State Grid Tianjin Chengxi Electric Power Supply Company; 3: China National Electrical Apparatus Research Institute; 4: Electric Power Research Institute, CSG Guangzhou, China; 5: South China University of Technology, Guangzhou, 510641, China
12:00pm - 12:45pm	**Conference Closing and Best Papers Awards** Location: **Lakes Ballroom A** Chair: **Alan Sbravati**, Hitachi Energy, United States of America		