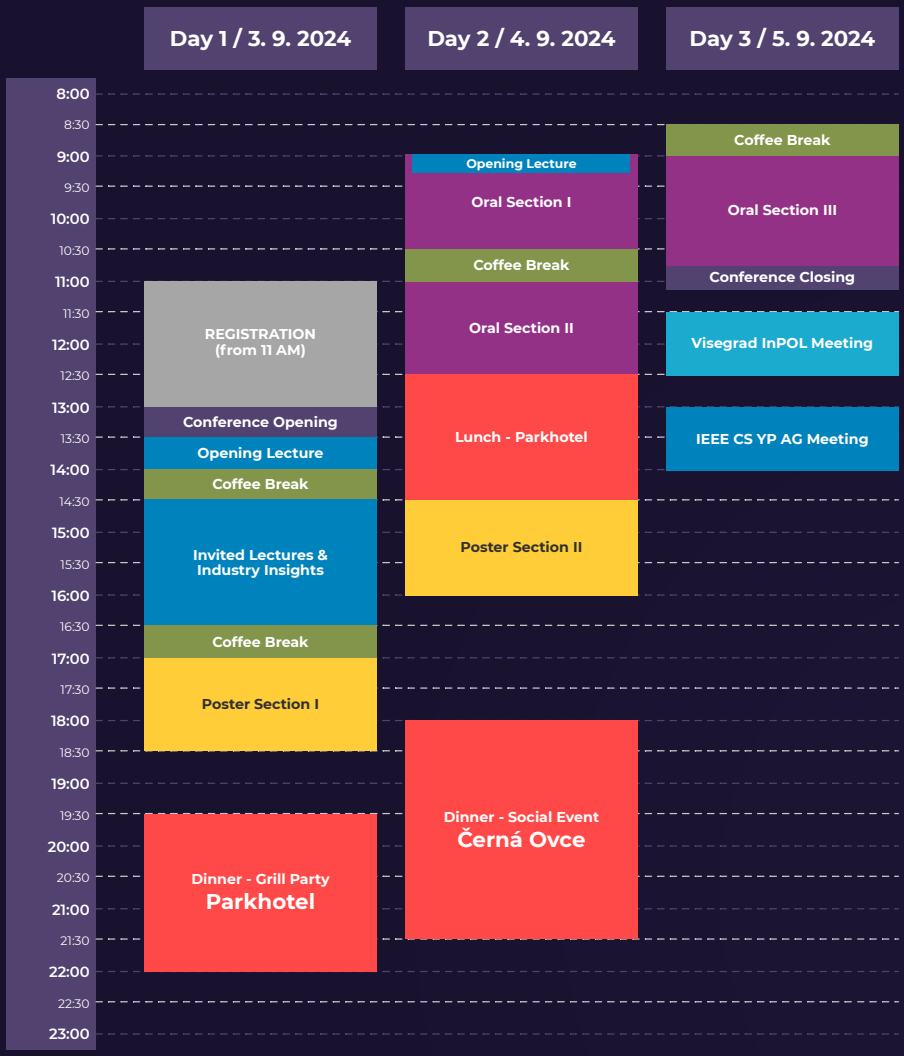
CONFERENCE PROGRAM



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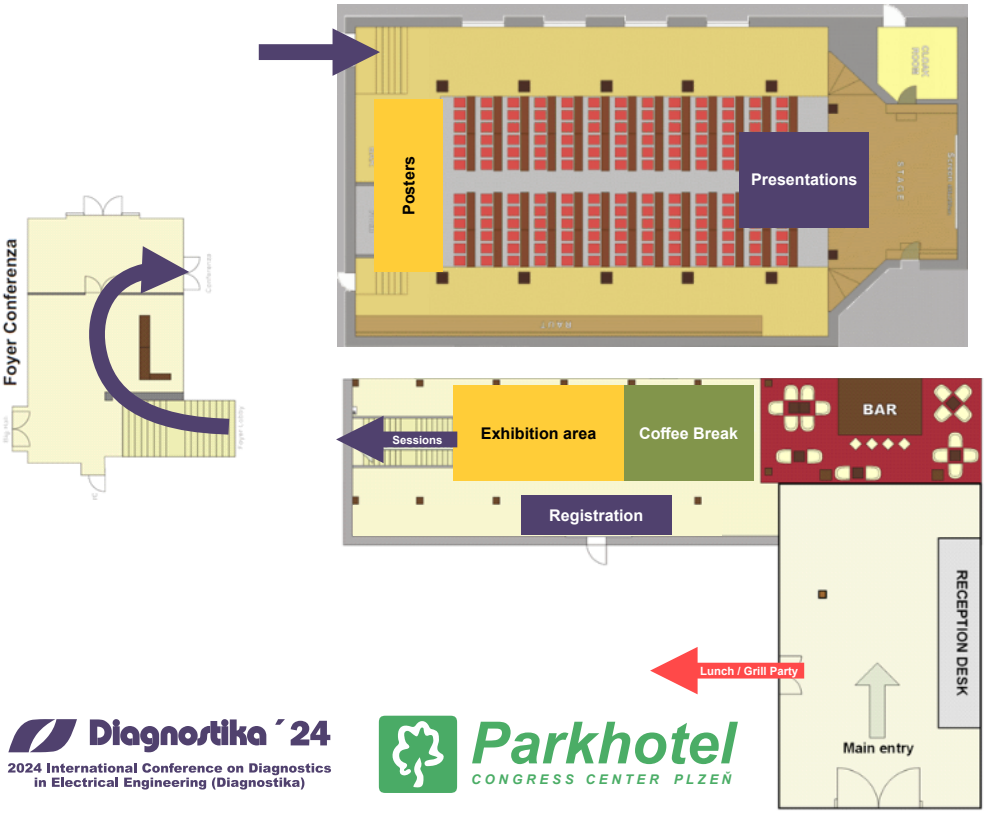
Diagnostika´24



Diagnostika ´24

2024 International Conference on Diagnostics in Electrical Engineering (Diagnostika)

Parkhotel

CONGRESS CENTER PLZEŇ

INVITED LECTURES

Dr. **Simon Podkoritnik**

IMPACT OF RESHAPING THE ELECTRICAL GRID ON HIGH-VOLTAGE EQUIPMENT WITH REGARD TO NEW TECHNOLOGIES, INNOVATIVE APPROACHES, AND MAINTENANCE CHALLENGES

Assoc. Prof. **Norasage Pattanadech**

CONDITION ASSESSMENT OF ROTATING MACHINE INSULATION: CASE STUDIES FROM POWER PLANTS

INDUSTRY INSIGHTS: **ModemTec s.r.o.**

APPLICATION EXPERIENCE AND MODEL EXAMPLES FROM ONLINE TESTING OF PARTIAL DISCHARGERS USING THE PD DOCTOR SYSTEM

Assoc. Prof. **Anton Rassõlkin**

UTILIZING DIGITAL TWINS TECHNOLOGY FOR THE DIAGNOSTICS OF ELECTROMECHANICAL DEVICES

INDUSTRY INSIGHTS: **Profess | Sparks Instruments**

MODULAR INSULATION CONDITION MONITORING PLATFORM FOR ROTATING MACHINES AND OTHER HV ASSETS

ASSOCIATED EVENTS

PROJECT MEETING
INNOVATION OF POLYMER NANOCOMPOSITE MATERIALS FOR ELECTRICAL ENGINEERING

AFFINITY GROUP MEETING
IEEE CZECHOSLOVAKIA SECTION YOUNG PROFESSIONALS

MEETING
CIGRE NEXT GENERATION NETWORK

FULL CONFERENCE PROGRAM

DAY 1 / 3. 9. 2024 - 13:00 CONFERENCE OPENING

13:30-14:00	**OPENING LECTURE / Simon Podkoritnik** Impact of Reshaping the Electrical Grid on High-Voltage Equipment with Regard to New Technologies, Innovative Approaches, and Maintenance Challenges
14:00-14:30	**COFFEE BREAK**
14:30-15:00	**INVITED LECTURE / Norasage Pattanadech** Condition Assessment of Rotating Machine Insulation: Case Studies from Power Plants
15:00-15:15	**INDUSTRY INSIGHTS / ModemTec** Application experience and model examples from online testing of partial dischargers using the PD Doctor system
15:15-15:45	**INVITED LECTURE / Anton Rassõlkin** Utilizing Digital Twins Technology for the Diagnostics of Electromechanical Devices
15:45-16:00	**INDUSTRY INSIGHTS / PROFESS | SPARKS INSTRUMENTS** Modular insulation condition monitoring platform for rotating machines and other HV assets

A 30-minute gap is planned to allow for potential delays in individual invited lectures due to extended discussions.

16:30-17:00	**COFFEE BREAK**

17:00-18:30 POSTER SECTION I

ID 30 Zdenek Frank, Jan Leffler, Vaclav Hlinomaz, Karel Hruska
Comparative Vibration Response Analysis of a 3-phase and 9-phase PMSM Prototypes

ID 52 Stefan Veit, František Steiner
Challenges and opportunities of risk-based inspection methods for fire alarm systems

ID 54 Raya A. K. Aswad, Laszlo Szamel, Bassim M.H. Jassim
On the Winding Insulation of Electrical Machines and its Aging Diagnostic Methods

ID 57 Martin Hirman, Krystof Svagr, Jiri Navratil, David Kalas, Frantisek Steiner
What is the Effect of Salt Spray Aging on the Reliability of Conductive Joints on E-textiles?

ID 63 Mahmoud Ibrahim, Anton Rassõlkin, Toomas Vaimann, Ants Kallaste
Identification and Characterization of Modulation Scheme in an EV-PMSM Control Strategy for Digital Twin Modeling

ID 69 Almehdhar Awad , Radek Prochazka
Innovative Approaches in Partial Discharge Modeling: Leveraging COMSOL and MATLAB for Predictive Analysis

ID 78 Sajjad Asefi, Jako Kilter, Nabil Akroud, Aritz Hurtado, Ian Gilbert, Inaki Orue
Application of Transfer Learning for Instrument Transformer Condition Monitoring

ID 80 Pavel Rous, Martin Hirman, František Steiner
The Influence of Nitrogen Atmosphere on Properties and Development of IMCs in Selected Lead-Free Solders

ID 91 Aljaž Špelko, Leopold Herman, Anže Zaletel, Rok Leskovec, Jalen Štremfelj
A smart way to improving power quality based on customer emission

ID 96 Bilal Asad, Muhammad Usman Sardar, Toomas Vaimann, et. al.
High Voltage Circuit Breaker Charging Motor's Condition Monitoring – Importance, Possibilities, and Challenges

ID 98 Andrea Benešová, Martin Hirman, František Steiner, Jiří Tupa
Digital Transformation of Predictive Maintenance: A Case Study

ID 100 Sebastian Bottler, Erik Beitinger, Max Stammberger, Christian Weindl
Fundamental Introduction of a Holistic Modeling Approach Enabling the Depiction of Sector-Coupled Energy Systems

ID 108 Thomas Gräf, Jonathan, Herrmann
Comparative Investigation at AC-Arcing vs. DC-Arcing

ID 109 Eduardo Jr Piedad, Zherish Galvin Mayordo, et. al.
Deep Learning-based Machine Condition Diagnosis using Short-time Fourier Transformation Variants

ID 113 Jan Leffler, Pavel Slama, Zdislava Mokra, Pavel Trnka
Dielectric and Mechanical Response of Cold-Curing Epoxy Resin to Hygrothermal Stress

ID 119 Bohumil Paslavský, Eva Műllerová
Identification and Characterization of Modulation Scheme in an EV-PMSM Control Strategy for Digital Twin Modeling

ID 122 Tetjana Tomaskova, Pavel Trnka
Modeling of Electrical Insulation System of Turbogenerators with a Higher Value of Coefficient of Thermal Conductivity and Associated Ecological Perspectives and Economic Benefit

ID 125 Tomas Rericha, Marek Vacha, Frantisek Steiner, Jiri Tupa
Application of models for teaching the concept of Industry 4.0

19:30-22:00 DINNER - GRILL PARTY - PARKHOTEL

DAY 2 / 4. 9. 2024

9:00-10:30 ORAL SECTION I

Opening Lecture

9:00-9:15 ID 114 Hamidreza Karami, Marcos Rubinstein, et. al.
Single-Sensor Partial Discharge Localization in Power Transformer Tanks Using Time Reversal: A Validation Example Using an Experimental Setup at Sparks Instruments

9:15-9:30 ID 50 Christian Staubach, Stefan Reddig, Patrick Zander
Practical experience with PD-localization in rotating machines

9:30-9:45 ID 82 Almehdhar Awad , Radek Prochazka
Robust Classification of PD Sources Using Deep Learning and Signal Processing Techniques

9:45-10:00 ID 84 Manuel Eckert, Josef Pihera
Partial Discharge Measurement at Pulse Voltage: Design of a measurement circuit and its components

10:00-10:15 ID 89 Simon Podkoritnik, Peter Osencic, Boris Zupanc, et. al.
Practical experiences of using FDS for determining the insulation condition of instrument transformers

10:15-10:30 ID 70 Jan Fulnecek, Michał Kunicki, Michał Kozioł, et. al.
The influence of frequency range on VLF partial discharge measurement

10:30-11:00 COFFEE BREAK

11:00-12:30 ORAL SECTION II

11:00-11:15 ID 49 Lukas Ranzinger, Stephanie Uhrig, et. al.
Transferability of sweep-frequency-response-analysis measurements between different rotating machine power classes and types

11:15-11:30 ID 59 Mikhail Olkhovskiy, Eva Müllerová, Petr Martínek, et. al.
Determination of the level of degradation of generator stator bar insulation using a one-dimensional convolutional neural network

11:30-11:45 ID 97 Filip Zmeko, Eva Müllerová, Petr Martínek
The Probability-based Model of an Electric Discharge Growth

11:45-12:00 ID 76 Fabian Lemmerz, Mirnes Planic, et. al.
Nondestructive detection of smallest defects inside power cable insulation systems

12:00-12:15 ID 86 Joonjae Han, Hobin Lim, Jae Yong Ahn, Yong-June Shin
Online Fault Localization Algorithm on Offshore Wind Farm Inter-Array Cable via Deconvoluiton Technique

12:15-12:30 ID 110 Eduardo Jr Piedad, Christian Ainsley Del Rosario, et. al.
Exploring Wavelet Transformations for Deep Learning-based Machine Condition Diagnosis

12:30-14:30 LUNCH - PARKHOTEL

KET
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITY OF WEST BOHEMIA
RICE
Department of Materials and Technology
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14:30-16:00 POSTER SECTION II

ID 34 Jaroslav Hornak, Jakub Černohous, Martin Hejl, et. al.
Comprehensive Dielectric Analyses of Polyetheretherketone (PEEK) Thin Film

ID 48 Marian Janek, Jozef Kudelcik, Stefan Hardon
Investigation of Thermal Conductivity Coefficient in Polyurethane Composites

ID 56 Rok Ahlin, Simon Podkoritnik, Samo Štojs, et. al.
Optimizing simulation model for portraying the effect of direct lightning strike to ground with regard to MV cable outer sheath

ID 62 Anton Baran, Natália Šmídová, Štefan Hardoň, Jozef Kudelčík, et. al.
Effect of MgO nanoparticles on viscoelastic properties of Linear Low-Density Polyethylene

ID 64 Yuji Suzuki, Yoji Fujita, Akihiko Kono, Hiroaki Urushibata
Estimation of equivalent circuit constant of porous electrode by electrochemical impedance measurement of lithium ion battery using symmetrical cell

ID 65 Jiri Svarny, Jan Handrejch
Low power measurement of low resistances by simple lock-in amplifier

ID 66 Š. Hardoň, J. Kúdelčík, Miroslav Gutten J. Hornak, et. al.
Investigation of the basic electrical insulation properties of the two-component system using by several diagnostic methods

ID 75 Lubomir Livovsky, Alena Pietrikova, Igor Vehec
Possibilities of using polyethylene carbon material AF-1361 for sensor applications

ID 79 Peter Lukacs, Alena Pietrikova, Igor Vehec and Tomas Lenger
Long-term stability analysis of the paper-based Nomex 410 substrate's dielectric properties

ID 83 Manuel Eckert, Josef Pihera
Polarization and electric field distribution of stacked dielectrics at transient excitation

ID 85 El Hadi Belhiteche, Sébastien Rondot, Mustapha Moudoud, et. al.
Experimental study of accelerated thermal aging of silicone rubber based on electrical characterization

ID 87 Daniel Dzivy, Alena Pietrikova
Durability of new developed PCB surface finishes to multiple reflow

ID 93 Petr Netolický, Pavel Prosr, Lukáš Kupka
Statistical analysis of the glass transition temperature of a thermosetting resins

ID 102 Jan Sipla, Petr Kadlec, Radek Polansky
Polyethylene-based composites with a three-component inorganic flame retardant - effect of different component ratio on dielectric and mechanical properties

ID 103 Petr Kvasnička, Josef Pihera, Pavel Prosr
Dielectric Analysis of Silicone Gels

ID 104 Ondřej Musil, Petr Kadlec, Radek Polanský
Overview of dielectric properties of epoxy-glass-mica layered composites with incorporated PI, PET, and PEN films

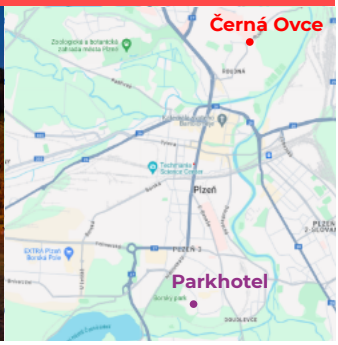
ID 115 Ahmad Abualasal, Zoltán Ádám Tamus
Adequacy of Dielectric-Based Deducted Quantities as an Aging Indicator in EPR/CSPE Low Voltage Cables in Nuclear Power Plants

ID 116 Jizhu Jin, Simone Vincenzo Suraci, Davide Fabiani, Zoltán Ádám Tamus
Investigation of the effect of different radiation dose rates on the electrical properties of EPR-insulated I&C cables

ID 121 Zdislava Mokrá, Pavel Sláma, Pavel Trnka
Characterization of nitride nanoparticles and the properties of nitride dielectric nanofluid

ID 126 Jiří Kopřiva, Pavel Trnka, Ondřej Michal, Jaroslav Hornak
The evaluation of 3D printed layered insulation consisting of PET-G and TPE materials

18:00-21:30 DINNER - SOCIAL EVENT - ČERNÁ OVCE



Experience **Černá ovce**, a one-of-a-kind dining spot in Plzeň, where history and nature come together. Join us on Wednesday, 4th for a **special social event** featuring delicious, home-cooked meals in a charming farm setting. With a warm and welcoming atmosphere, Černá ovce boasts a rich tradition dating back to the 17th century.

The bus to Černá Ovce departs from the Parkhotel at 17:40 and returns at 21:30.

You can also arrive on your own by MHD or by foot.

Address:

Dvorní 70/9,
30100 Plzeň 1 - Severní Předměstí

DAY 3 / 5. 9. 2024

8:30-9:00 COFFEE BREAK

9:00-10:45 ORAL SECTION III

9:00-9:15 ID 60 Sandra Plötz, Lukas Ranzinger, Stephanie Uhrig
Frequency response analysis on rotating machines – model parameterization for different machine types and performance classes

9:15-9:30 ID 120 Ousama Zidane, Rainer Haller, Pavel Trnka, Hans Bärnklau
Accelerated Life Testing for Rotating Machine Insulating Materials Exposed to High AC Voltage

9:30-9:45 ID 90 Petra Krištof, Simon Podkoritnik, Peter Osenčič, et. al.
Long term diagnostic experience in measuring and evaluating leakage current for 110 kV surge arresters

9:45-10:00 ID 92 Klemen Knez, Boštjan Blažič
Analysis of the impact of Q(U) curve and flexibility on the integration of PVs in a low-voltage network

10:00-10:15 ID 107 Thomas Gräf, Sascha Schiebler
Analysis and evaluation of ageing phenomena of low-voltage and high-voltage high-rupture capacity fuses due to longterm operation

10:15-10:30 ID 47 Pascal Froehlich, Fabian Öttl
Rotor Winding Diagnosis using Sweet Frequency Response Analysis with Comparison to RSO

10:45 - 11:00 CONFERENCE CLOSING & STUDENT AWARD

11:30-12:30 VISEGRAD InPOL Meeting

13:00-14:00 IEEE CS YP AG Meeting