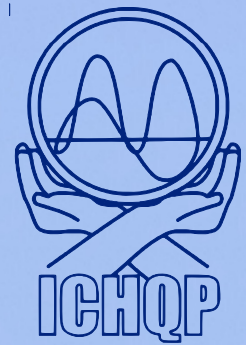


ICHQP 2026

22nd International Conference on Harmonics and Quality of Power

August 31st – September 3rd, 2026
Dresden, Germany



Conference program





22nd International Conference on Harmonics and Quality of Power

ICHQP is one of the premier international conferences in the field of electrical power engineering, and the only IEEE Power & Energy Society (PES) conference exclusively dedicated to the area of Power Quality. ICHQP 2026 continues this tradition, offering an excellent opportunity for professionals from academia and industry to meet, exchange ideas, and advance the state of the art. In this spirit the conference highlights technical excellence at the forefront of Power Quality.

Technically supported by

IEEE Power and Energy Society

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Welcome Message

Dear colleagues, Dear friends,

it is my great pleasure and honor to host the 22nd edition of the International Conference on Harmonics and Quality of Power (ICHQP) in Dresden. Over more than 40 years ICHQP has become the leading conference in Power Quality providing a platform for networking and knowledge exchange among experts in this field from around the world.

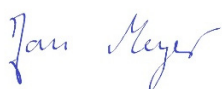
This conference would not have been possible without the dedicated help and support of many people, a lot of them working behind the scenes. I sincerely want to thank everyone, including the industry supporters, who contributed to making the conference a great and unforgettable event.

We live in a dynamic and rapidly changing world, facing a lot of new challenges. Many of these challenges directly or indirectly touch the field of Power Quality. The transition to an environmentally friendly, sustainable electricity supply and the demand for more flexibility would not be as successful as they are without our community. The large-scale integration of inverter-based generation, the increasing spread of DC networks and the growing share of electric vehicles are only a few examples, where each individual's contribution plays a vital role. It is simply impossible to imagine our society today or in the future without Power Quality.

With keynote speeches, panel discussions, interactive poster presentations and the technical sessions, the conference shall provide a broad platform for exchange on all those burning topics that affect us all. I would also like to encourage you to visit our Power Quality Art exhibition, which showcases the beauty of Power Quality from a unique and different perspective. Please vote for your favorite piece!

In today's fast-paced world, time has become a precious treasure. Thank you for taking the time to travel to Dresden and attend the conference. I sincerely hope the conference provides you with an opportunity to pause and find your inspiration in Power Quality.

Again, a very warm welcome to the 2026 ICHQP conference, and I wish you an enjoyable and successful time.



Jan Meyer
General Chair of 22nd ICHQP 2026

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Program at a Glance

Day 1 - Monday, August 31

13:00 - 19:00	Registration and Information Desk (Lobby)		
	Speaker Ready Room (Room C)		
14:00 - 15:30	Tutorial Track 1 CIGRE TB976 - Methods for Identification of Frequency Response Characteristic of Voltage Measurement Systems Room A	Tutorial Track 2 Decomposition into Currents' Physical Components: the Fundamental of Power Theory and Compensation Room D	Tutorial Track 3 Understanding the Stochasticity of Harmonic Impedances and Injections for Hosting Capacity Calculation – Part A Room B
15:30 - 16:00	Coffee break		
16:00 - 17:30	Tutorial Track 1 The impact of Geomagnetically Induced Currents on Power Quality Room A	Tutorial Track 2 Electric Vehicle Charging Systems: Power Quality, Metering Accuracy, and On-Site Verification Room D	Tutorial Track 3 Understanding the Stochasticity of Harmonic Impedances and Injections for Hosting Capacity Calculation – Part B Room B
Opens: 18:30 Starts: 19:00 Ends: 22:00	Welcome Reception Nymphenbad, Dresdner Zwinger Theaterplatz 1, 01067 Dresden-Altstadt		

Day 2 - Tuesday, September 1

07:30 – 18:00	Registration and Information Desk (Lobby)			
08:00 – 18:00	Speaker Ready Room (Room C)			
08:00 – 18:00	Power Quality Art Contest (Kunsthalle)			
08:30 - 09:00	Opening Ceremony Kunsthalle			
09:00 - 10:30	Keynote speeches Kunsthalle			
10:30 - 11:00	Coffee break			
11:00 - 12:30	Panel 1 Field Experiences in Managing Compliance with Emission Limits Kunsthalle	Panel 2 Opportunities and Challenges in Large- Scale Power Quality Data Analysis Room A		
12:30 - 14:00	Lunch break Room Z and Restaurant			
14:00 - 15:30	Panel 3 Power Quality Challenges in AC and DC Networks with a High Share of Power Electronics Kunsthalle	Panel 4 Advanced Metrology for New Power Quality Applications Room A		
15:30 – 16:00	Coffee break			
16:00 - 17:30	TS 1 Power Quality in DC grids Kunsthalle	TS 2 Emission of Electric Vehicle Charging and Data Centers Room A	TS 3 Trend Identification and Forecasting Room B	TS 4 Impedance Measurement Techniques Room Y
Opens: 18:30 Starts: 19:00 Ends: 22:00	Women in Power Quality Felix Restaurant, Dresden City Center Kleine Brüdergasse 1-5, 01067 Dresden-Altstadt			

Day 3 - Wednesday, September 2

08:30 – 18:00	Registration and Information Desk (Lobby) Speaker Ready Room (Room C)			
08:30 – 18:00	Power Quality Art Contest (Kunsthalle)			
09:00 – 10:30	TS 5 Requirements and Performance of Grid-forming Inverters Kunsthalle	TS 6 Connection Studies and Compliance Assessment Room A	TS 7 Advanced Simulation Techniques Room B	TS 8 PMUs and Harmonic Phasor Estimation Room Y
10:30 – 11:00	Coffee break			
11:00 – 12:30	TS 9 Characterization and Modelling of Inverter-Based Resources Kunsthalle	TS 10 Harmonic Emission Limits and Allocation Methods Room A	TS 11 Distortion in Low Voltage Networks and Neutral Conductor Loading Room B	TS 12 Advanced Metrics and Measurement Methods Room Y
12:30 – 14:00	Lunch break Room Z and Restaurant			
14:00 – 15:30	Poster Session Kunsthalle			
15:30 – 16:00	Coffee break			
16:00 – 17:30	TS 13 Sub-synchronous Oscillations and Harmonic Stability Kunsthalle	TS 14 Harmonic Modelling and Aggregation Room A	TS 15 Sensitivity of Equipment Room B	TS 16 Reproducibility of Measurements and Sensor Accuracy Room Y
Opens: 18:30 Starts: 19:00 Ends: 22:00	Gala Dinner Boat "August der Starke", Sächsische Dampfschiffahrt Augustusbrücke, Terrassenufer 2, 01067 Dresden-Altstadt			

Day 4 - Thursday, September 3

08:30 – 13:00	Registration and Information Desk (Lobby) Speaker Ready Room (Room C)			
09:00 - 10:30	TS 17 Harmonic Analysis and Mitigation Case Studies Room A	TS 18 Hosting Capacity and Supply Voltage Management Room B	TS 19 Analysis and Mitigation of Voltage Sags Room Y	TS 20 Power Metrics and Definitions under Nonsinusoidal Conditions Room D
10:30 - 11:00	Coffee break			
11:00 - 12:05	TS 21 Impedance Simulations and Measurement Campaigns Room A	TS 22 Harmonic Emission of Other Sources Room B	TS 23 Fault detection and location techniques and Continuity of Supply Room Y	TS 24 Platforms and Methods for Large Data Analysis Room D
12:15 - 12:30	Closing ceremony Room A			
12:30 - 13:30	Lunch break Room Z			
Boarding: 13:30 Departure: 14:00 Return: 19:00	Excursion 1 — Meißen: Porcelain Manufactory and Historic City Center			

Day 5 - Friday, September 4

Boarding: 08:30 Departure: 09:00 Return: 18:00	Excursion 2 — Saxon Switzerland: Königstein Fortress and Bastei Bridge
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Tutorials

Tutorials offer an excellent opportunity for training and development in power quality topics ranging from fundamental concepts to state-of-the-art developments.

Tutorial track 1

CIGRE TB976 - Methods for Identification of Frequency Response Characteristic of Voltage Measurement Systems (1,5h)

Presenter: Erik Sperling

This tutorial summarizes the CIGRE technical brochure (TB 976) regarding the frequency response of voltage measurement systems in modern networks. It explores the design and accuracy of conventional (inductive and capacitive) and low-power instrument transformers (voltage dividers and optical sensors). Key performance characteristics, like ratio error, phase displacement, and resonance frequencies, are examined alongside mathematical modelling techniques such as vector fitting and digital twins. Additionally, grid requirements and performance characteristics are discussed and considered. Modern test technologies are provided for identifying the frequency-dependent transmission behaviour. Finally, the tutorial provides a classification mapping to help professionals identify measurement requirements, grid characteristics and future power system applications to select the best instrument transformer technology.

The impact of Geomagnetically Induced Currents on Power Quality (1,5h)

Presenters: Roger Alves de Oliveira, Rafael de Souza Salles and Math Bollen

This tutorial explores geomagnetically induced currents (GICs) and their impact on power quality. It covers measurement results, monitoring methods based on measurements, geographic validation studies from research conducted by the speakers. The main goal of the tutorial is to explain what causes geomagnetic disturbances, how they affect power quality, and mainly on how to detect them from PQ measurements. The tutorial provides a practical workflow for understand the PQ variations and events during geomagnetic disturbances.

Tutorial track 2

Decomposition into Currents' Physical Components (CPC): the Fundamental of Power Theory and Compensation (1,5h)

Presenter: Leszek S. Czarnecki

This tutorial introduces the Currents' Physical Components (CPC) decomposition as a framework for understanding power properties in electrical circuits with nonsinusoidal voltages and currents. It examines the physical phenomena responsible for energy transfer degradation in complex systems, including single-phase and three-phase circuits with nonlinear or unbalanced loads. The session focuses on how the CPC method facilitates the development of reactance and hybrid switching compensators to improve system efficiency. By addressing long-standing theories and utilizing practical numerical examples, the tutorial provides a comprehensive approach to investigating and optimizing power properties in modern electrical grids.

Electric Vehicle Charging Systems: Power Quality, Metering Accuracy, and On-Site Verification (1,5h)

Presenter: Helko van den Brom

This tutorial addresses the technical challenges of ensuring reliable energy metering and power quality monitoring in modern electric vehicle charging systems. It explores how realistic grid conditions, such as network disturbances and network impedance, can affect charging efficiency and meter accuracy. Participants will learn about advanced laboratory test benches for AC and DC charging systems up to 44 and 350 kW, respectively, the use of load emulators for reproducible testing, and new on-site verification procedures designed to meet international legal standards. The session provides practical guidance for professionals to navigate emerging metrological frameworks and improve infrastructure performance.

Tutorial track 3

Understanding the Stochasticity of Harmonic Impedances and Injections for Hosting Capacity Calculation (3h)

Presenters: Amauri Martins Britto and Jinwen Xiang and Hakan Ergun

This tutorial explores the technical challenges of large-scale industrial electrification driven by the European Green Deal. As industries integrate high-power electrical drives and power-electronic converters, rising harmonic distortion threatens grid stability and industrial productivity and competitiveness. The tutorial introduces methodologies from the HARMONIC project to assess harmonic hosting capacity. Key topics include uncertainty quantification for cable impedances, harmonic phasor distributions of power converters, and optimisation-based stochastic harmonic hosting capacity determination. This tutorial will guide participants from component-level uncertainty to system-wide hosting capacity assessment, equipping them with the analytical tools needed to model various aspects of harmonics in the power system.

Keynote speakers



Sarah Rönnberg is Professor and Head of the Electric Power Engineering group at Luleå University of Technology, a position she has held since 2025. She received her PhD in Electric Power Engineering from the same university in 2013. She has been involved in a range of research projects in electric power systems and has published in journals and conferences within the field. Her work includes both academic research and collaboration with industry. Her research focuses on distribution grids and power quality, with particular attention to harmonics and supraharmonics, especially in systems with a high share of power electronic equipment. In addition to her research activities, she is actively involved in teaching and supervision of graduate students. She is a Senior Member of IEEE.



Zia Emin has worked for 14 years with the UK transmission owner/operator National Grid and 12 years in consultancy as Chief Power System Engineer and Technical Director. Since 2023 he has been working at Electric Power Research Institute as Technical Executive. He has extensive knowledge in all aspects of power system modelling including steady-state, frequency and time domain modelling and substantial experience in harmonic performance specifications of power electronic interfaced devices (HVDC converter stations, FACTS, renewable generation connections etc). He worked actively in many international projects dealing with power quality issues and more recently he has been reviewing harmonics management policies for major transmission system operators. He has been active in many CIGRE (International Council on Large Electric Systems) working groups. From 2016 to 2022 he was the chairman of CIGRE SC C4 and its Strategic Advisory Group. He is a Fellow of the Institute of Engineering and Technology (IET – UK), a Senior Member of IEEE, a Distinguished and Honorary Member of CIGRE, a registered European Engineer, and a Chartered Engineer in the United Kingdom.



S. Mark Halpin is a Professor in the Department of Electrical and Computer Engineering at Auburn University. His teaching interests include power systems, control systems, and network analysis. His research interests are in the areas of power system dynamic performance and power quality. He is active in the IEEE Power Engineering Society where he was the Chair of IEEE 519, in CIGRE where he serves as Convener of the Working Group charged with revising the IEC Technical Reports dealing with emission limits for harmonics, voltage fluctuations, and unbalance, and in IEC where he serves as Chair of TC77/SC77A which is responsible for standardization in all aspects of low-frequency conducted disturbances (power quality) in power systems. He is an IEEE Fellow.



Marco Lindner is currently with the German transmission system operator TransnetBW as a lead engineer for power system stability with a particular focus on sub-/supersynchronous and harmonic stability. His research interests include power electronics coupled systems (e.g., HVdc, storage, FACTS) and their interactions and stability issues in a wide frequency range with a system perspective. For this work, he draws on four years of experience in the areas of specification, engineering, offline and real-time simulation studies, verification measurements and commissioning of power electronics-based systems. He is co-convenor of the German 4TSO working group on power quality and is actively contributing to the working group for control interactions and stability. He is active in CIGRE where he is a key member of the joint IEEE/CIGRE task force on "Reassessment of Power System Stability Definitions and Classifications for Converter-Dominated Grids", whose goal is the revision of IEEE TR77. In addition, he participates in several CIGRE working groups dealing with Power-Quality (limits for emission, limit allocation, verification studies) and EMT interaction studies.

Panel Sessions

Panel 1: Field Experiences in Managing Compliance with Emission Limits

Chair:

Herwig Renner, Graz University, Austria

Herwig Renner received his PhD in 1995 at Graz University, where he currently holds a position as associate professor at the Institute of Electrical Power Systems. His research is in the field of power system control and stability as well as in power quality, with special focus on industrial disturbers. He is a member of the CIRED TC and was member of several CIGRE working groups dealing with power quality.

Outline:

Emission compliance ensures that electrical equipment and systems do not inject excessive disturbances, such as harmonics, voltage fluctuations, and flicker into the power grid. Relevant standards include amongst others the IEC 61000 series and IEEE 519 and IEEE 1453. For large customer installations connected to HV and EHV systems, individual and comprehensive system studies to manage compliance are required. This includes the allocation of emission limits in the planning phase, the design of measures to handle the emission and measurements to verify the compliance during the commissioning phase. For customer installations connected to LV and MV networks, such detailed compliance studies are usually not feasible due to the number of connectees as well as the missing knowledge of the required data both on the grid side (e.g. network harmonic impedance) and the customer side (technologies to be used). The challenges and experiences of compliance assessment, both at distribution and transmission level will be presented and discussed in this panel session.

Panelists:

1. Resonance damping in HV networks
Christian Dresel, Condensator Dominit, Germany
2. Interharmonics related to wind turbine converters
Irina Subotic, ABB, Schweiz
3. Experiences with the connection of large renewable plants in South Africa
Brandon Peterson, NTCSA (former Eskom), South Africa
4. Challenges in harmonic compliance studies
Davor Vujatovic, VandA Engineering Limited, United Kingdom
5. Harmonic compliance when repowering renewable installations
Seth Treasure, National Grid Distribution, United Kingdom

Panel 2: Opportunities and Challenges in Large-Scale Power Quality Data Analysis

Chair:

Gary Chang, National Chung Cheng University, Taiwan

Gary W. Chang obtained his PhD from the University of Texas at Austin in 1994. He served as Chair of the IEEE PES Power Quality Subcommittee (2016-2017) and the IEEE PES Transmission and Distribution Committee (2019-2020). Presently, Prof. Chang serves as a Senior Editor of IEEE Transactions on Power Delivery and as an Associate Editor of IEEE Power Engineering Letters.

Outline:

The increasing deployment of power quality (PQ) monitoring systems is generating unprecedented volumes of measurement data, creating opportunities and challenges for the power sector. This panel brings together stakeholders from academia, instrument manufacturers, and DSO/TSO organizations to discuss large-scale PQ data analysis, including data management, interoperability, analytics, and decision-making. Through short presentations and discussion, the session will explore benefits, limitations, and directions for extracting value from expanding PQ data resources.

Panelists:

1. Statistical Assessment of Power Quality Compliance in Public Electricity Network (Australia)
Robert Barr, Electric Power Consulting Pty Ltd, Australia
2. Power Quality Monitoring at State Grid China – Needs and Findings
Tongxun Wang, China Electric Power Research Institute, China
3. Large Scale Harmonic Monitoring and Root Cause Analysis in Gigawatt Offshore Wind Farms
Ulrich Lettau, iba AG, Germany
4. Application Examples of Power Quality Data Analytics Beyond the Mainstream
Walmir Freitas, University of Campinas, Brazil
5. What have we learnt from the PQ measurements in the transmission grid and what are our future ambitions?
Jeroen van Waes, TenneT TSO B.V./Eindhoven University of Technology, Netherlands

Panel 3: Power Quality Challenges in AC and DC Networks with a High Share of Power Electronics

Chair:

Xavier Yang, Électricité de France (EDF), France

Xavier Yang works for more than 30 years at Électricité de France (EDF) within the Research & Development Institute. His research interests include electric power grid modelling, power electronics applications, on-site power quality mitigation, international standardization, and the development of power system modelling and simulation tools. Presently he serves as an expert and working group convener in several international technical committees, including IEC SC77A, IEC SC8B, and CIGRE.

Outline:

Modern power systems with a high penetration of power electronic converters face significant power quality challenges, including harmonic resonances involving passive and active network components, shifts in disturbance source characteristics (current- versus voltage-source behavior), the need for advanced modeling and parameter identification techniques, and harmonic convergence issues in numerical simulations. More on-site investigations and case studies are needed to support the development of international standards that can keep pace with the evolving electric power grid.

Panelists:

1. Challenges of simulation-based resonance stability studies
Robert Pardatscher, DlgSILENT GmbH, Germany
2. The Future Architecture of the Network Project
Neville Watson, University of Canterbury, New Zealand
3. Emission limits in power electronics dominated AC networks
Sebastien Gouraud, EDF, France
4. Metrology for grid-forming converters (European project GridForm)
Stefano Lodetti, National Physicals Laboratory (NPL), United Kingdom
5. Converter Dominated Grids: Between Control Algorithms and Grid Physics
Stefan Laudahn, Reinhausen GmbH, Germany

Panel 4: Advanced Metrology for New Power Quality Applications

Chair:

Guglielmo Frigo, Federal Institute of Metrology (METAS), Switzerland

Guglielmo Frigo is Senior Scientist at the Federal Institute of Metrology in Bern, Switzerland. Since October 2025, he is the convenor of IEC SC77A WG9 "Power Quality Measurement Methods." In this role, Dr. Frigo is promoting the establishment of new reference methods for DC power quality and network impedance measurements, and the definition of a rigorous metrological framework for harmonic and supraharmonic measurements which suits the needs of both EMC and power system analysis.

Outline:

The ongoing transformation of electric power systems driven by renewable generation, modern power electronic equipment, energy storage, electric mobility, and emerging DC infrastructures is profoundly reshaping the concept of power quality and the associated measurement challenges. In this rapidly evolving scenario, metrology plays a central role in ensuring reliable assessment methods, meaningful EMC coordination, and trustworthy monitoring techniques for future grids. This panel at IEEE ICHQP 2026 brings together experts from academia and industry to discuss some of the most pressing and timely issues in modern power-quality measurement.

Panelists:

1. Long-term experience with a monitoring system for switching transients in the medium-voltage level
Roberto Schulze, OMICRON electronics GmbH, Germany
2. The need for an improved flickermeter considering LED lamps
Leoš Kukačka, Technical University of Liberec, Czech Republic
3. Remaining gaps towards a rigorous framework for DC Power Quality measurement
Helko van den Brom, National Metrology Institute VSL, Netherlands
4. The need for standardized Impedance measurement in the frequency range up to 150 kHz
Alexander Gallarreta, University of the Basque Country, Spain
5. Opportunities and challenges of supraharmonic measurements for an instrument manufacturer
Stephane Do, Powerside, USA

Technical presentations

We kindly ask all oral presenters to observe the following guidance to ensure a smooth and efficient conference program:

- Please use the PowerPoint template provided on the conference website for preparing your slides.
- All presentations must be uploaded in the Speaker Ready Room (Room C, second floor). The use of own notebooks, USB Sticks, etc. is not possible. The opening hours of the Speaker Ready Room can be found in the "Program at a Glance".
- Please submit your presentation the day before your assigned session to allow sufficient time for technical checks.
- Each oral presentation is allocated 15 minutes, consisting of 12 minutes for the presentation and 3 minutes for questions and discussion.

Tuesday, September 1

Technical Session 1 - Power Quality in DC grids

Chair: Cristian Lazaroiu

Room: Kunsthalle

16:05 - 16:20	74	Evaluation of a Power Quality Measurement Campaign in an Industrial 700 V DC Grid Ondrej Krpciar ; Robert Stiegler; Jan Meyer; Juergen Blum; Stefan Fierlbeck
16:20 - 16:35	146	DC Power Quality Issues in Next-Generation Railway Systems with Smart Traction Substations and Integrated Renewable Energy Sources Hamed Jafari Kaleybar ; Morris Brenna; Dario Zaninelli
16:35 - 16:50	91	Characterisation of Voltage and Current Distortion up to 150 kHz in a 325 V DC Home Laboratory Ondrej Krpciar; Ana Maria Blanco ; Jan Meyer; Hamish Avery; Neville Watson
16:50 - 17:05	127	Power Quality Characterization in LVDC Networks: Measurement Method Proposal for 0-9 kHz Distortions Yara Daaboul; Xavier Yang ; Ludovic Bertin; Yann Le Bihan; Daniela Istrate
17:05 - 17:20	71	Mitigation of DC Ripple Measurement Errors: Compensation Techniques for O/L Hall Transducers Guglielmo Frigo ; Adriano Demetrio; Christian Laurano; Sergio Toscani

Technical Session 2 - Emission of Electric Vehicle Charging and Data Centers

Chair: Paola Verde

Room: A

16:05 - 16:20	53	Assessment of harmonic and supraharmmonic emission limits for V2G charging stations based on high frequency grid impedance measurements – a practical approach Bernhard Grasel ; Helmut Weiss; José Baptista; Daniel Csadek; Stefan Wilker
16:20 - 16:35	83	Preliminary Assessment of Harmonic Emissions from Electric Vehicle Charging Quang Bach Phan; Obaidur Rahman ; Sean Elphick; Duane Robinson
16:35 - 16:50	TP2	Data-Driven Probabilistic Modeling of EV Harmonic Emissions Based on Field Measurements Fayezeh Mahmoudnezhad; Araceli Hernández ; Pablo Rodríguez-Pajarón; Alberto Contreras; Jovica V. Milanović
16:50 - 17:05	108	Impact of Electric Vehicle Battery Chargers on Harmonic Levels in LV Residential Networks Haroon Zafar; Sasa Z. Djokic ; Roberto Langella
17:05 - 17:20	141	Analysis of Harmonic-Induced Skin-Effect Losses in Data Center Power Distribution under Dynamic Loads Ridvan Dogan; Liling Huang

Technical Session 3 - Trend Identification and Forecasting

Chair: Antonio Bracale

Room: B

16:05 - 16:20	114	Preprocessing Techniques Considering Trends and Seasonality to Improve Probabilistic Short-Term Harmonic Forecasting Antonio Bracale; Pierluigi Caramia; Pasquale De Falco ; Max Domagk; Jan Meyer
16:20 - 16:35	52	Analysis of Probabilistic Harmonic Distortion Trends in Industrial Medium Voltage Power Networks Sulaiman Elrajoubi ; Markus Faesing; Hans-Jörg Eckoldt; Ferdinanda Ponci; Antonello Monti
16:35 - 16:50	111	Analysis and Reporting of Power Quality Data: A Power Quality Compliance Audit Update Sean Elphick ; Gerrard Drury; Duane Robinson
16:50 - 17:05	24	Ensemble Forecasting of Power Quality Parameters Max Domagk ; Peter Feistel; Jan Meyer; Marco Lindner; Jako Kilter
17:05 - 17:20	115	Forecasting of Harmonic Current Emission in Tertiary Sector Building using an IoT PQ Sensor Juan-José González-Ramos ; Joaquín Garrido-Zafra; Aurora Gil-de-Castro; Francisco de-Larriva-Serrano; Rafael-David Rodriguez-Cantalejo; Antonio Moreno-Munoz

Technical Session 4 - Impedance Measurement Techniques

Chair: Sarath Perera

Room: Y

16:05 - 16:20	66	Voltage-based Frequency-dependent Impedance Measurement Method for Characterising Interconnected HVDC Systems Ceren Yurt ; Shrinath Kannan; Omar F. Jasim
16:20 - 16:35	86	Supraharmonic grid impedance analysis based on controlled switching and advanced digital signal processing Bernhard Grasel ; José Baptista; Juan Velasquez; Helmut Weiss; Manfred Tragner
16:35 - 16:50	134	Improving PRBS-Based Broadband Impedance Estimation via SNR-Driven Clock Combination André de Kock ; Fredrick Mwaniki
16:50 - 17:05	TP3	Characterization of the Long-Term Impedance Variations Due to Electric Vehicle Charging From 20 kHz to 500 kHz Jon González-Ramos ; Itziar Angulo; Igor Fernández; Bernhard Grasel; Alexander Gallarreta; Amaia Arrinda; David de la Vega
17:05 - 17:20	109	Impact of Background Voltage Distortion and Unbalances on Harmonic Emission due to Phase-Crossed-Frequency Coupling Wélington B. Rodrigues; Paulo F. Ribeiro; Fernando N. Belchior; Carlos A. Duque; Roberto Langella

Wednesday, September 2

Technical Session 5 - Requirements and Performance of Grid-forming Inverters

Chair: Roberto Langella

Room: Kunsthalle

9:05 - 9:20	95	Review of functional specifications and requirements for grid-forming converters to support power quality Stefano Lodetti ; Peter Davis; Sakshi Chalia; Ana Maria Blanco; Jan Meyer
9:20 - 9:35	54	Requirements on Grid-Forming Converters: From Standards to a Laboratory Testbed Luiz Felipe A. Silveira ; Stefano Lodetti; Sharmistha Bhattacharyya; Gert Rietveld
9:35 - 9:50	118	Black-Box Harmonic Impedance Identification of Grid Forming Converters via Single-Tone Current Injections Rémy Prieur ; Sakshi Chalia; Jan Meyer; Xavier Guillaud; Frédéric Colas; Maria Veizaga; Sébastien Gouraud; Léonard Bacaud
9:50 - 10:05	143	Comparison of Harmonic Performance of a Commercial Inverter for Low Voltage Networks in Grid Following and Grid Forming Mode Santiago Tassin Wallace ; Sakshi Chalia; Jan Meyer
10:05 - 10:20	100	Harmonic mitigation using grid forming inverter-based resources Johan Beukes ; Males Tomlinson

Technical Session 6 - Connection Studies and Compliance Assessment

Chair: Duane Robinson

Room: A

9:05 - 9:20	49	Multi-Point Analysis of "Destructive" and "Constructive" Harmonic Currents to the Voltage Quality in a Reference German MV Grid Kia Malekian Boroujeni ; Hisham Sherief; Fatemeh Abedini; Jens Teuscher
9:20 - 9:35	79	Application of prevailing phasors: a case for evaluating continuous assessment of harmonic emission Brandon Peterson ; Johan Rens; Gerhard Botha
9:35 - 9:50	106	Continuous Determination of Harmonic Emission at Industrial Customer Aljaz Spelko ; Anže Zaletel; Simon Podkoritnik; Klemen Spruk; Mattewos Tefferi
9:50 - 10:05	82	On the assessment of voltage flicker emission in distribution grids hosting renewable power plants Keegan Byleveldt; Johan Rens ; Brandon Peterson; Gerhard Botha
10:05 - 10:20	144	Integrated Approach for Identification and Assessment of Unbalance Voltage Sources Dmytro Kaliuzhnyi ; Jan Meyer; Davide Falabretti

Technical Session 7 - Advanced Simulation Techniques

Chair: Ana Maria Blanco

Room: B

9:05 - 9:20	63	Voltage Variation Analysis of Distribution Grids Using Probabilistic Load Modelling and Copulas Peter Wohlfart ; Christian Kresnik; Martina Schelander; Stephan Brandl; Herwig Renner
9:20 - 9:35	36	Harmonic Power Flow Mapping Model Based on Gaussian Process Regression Yinsheng Chen ; Ying Wang; Xianyong Xiao
9:35 - 9:50	113	Probabilistic Assessment of Harmonic Distortion under Harmonic Phase Diversity Using Monte Carlo Simulation Kelechi Anthony Aluge ; Jiri Drapela
9:50 - 10:05	128	A New Approach to Assess Uncertainty of Estimates in Harmonic State Estimation based on Synchronized Measurements Carlo Muscas; Paolo Attilio Pegoraro; Carlo Sitzia ; Antonio Vincenzo Solinas; Sara Sulis
10:05 - 10:20	88	A Proposed Holistic Harmonic Management and Compliance Process Victor Lo ; Steven Howell

Technical Session 8 - PMUs and Harmonic Phasor Estimation

Chair: Erik Sperling

Room: Y

9:05 - 9:20	19	Power Quality Disturbances and the Role of Phasor Measurement Units in Distribution Grids for Particle Accelerators: Insights from CERN Isabel Amundarain Argüello ; Nikolaos Sapountzoglou; Riccardo Vasapollo; Giuseppe Cappai; Paolo Romano; Mario Parodi; Jean-Paul Burnet
9:20 - 9:35	55	Applicability of Commercial PMUs for Rate of Change of Frequency Measurements Uku Salumäe; Mari Löper; Jako Kilter
9:35 - 9:50	72	Impact of Measurement Method on Harmonic Phasor Evaluation in Field Measurements Guglielmo Frigo ; Jan Meyer; Robert Stiegler
9:50 - 10:05	107	Performance of Harmonic Measurement during Dynamic Change of Frequency Lukas Duhme ; Jonathan Wittkop; Gerd Bumiller
10:05 - 10:20	16	Interpolated Filter Bank for Harmonic Phasor Estimation with Kalman Frequency Tracking Victor M. Ribeiro; Victor V. Moraes; Ricardo R. Rapozo; Leandro R. M. Silva; Carlos A. Duque

Technical Session 9 - Characterization and Modelling of Inverter-Based Resources

Chair: Johan Beukes

Room: Kunsthalle

11:05 - 11:20	81	A Comparison of Transfer Function and Simulation Harmonic Impedance Models of a Two Parallel Grid-Connected Inverter System Efaf Bikdeli Mazlaghani; Duane A. Robinson ; Sean Elphick
11:20 - 11:35	46	Islanding Detection Method based on Notch Filter and Mathematical Morphology Ana Carolina A. A. Viana; Danton D. Ferreira ; Augusto S. Cerqueira; Robson R. de Lima; Erivelton G. Nepomuceno; Flávio Bezerra Costa
11:35 - 11:50	64	Experimental Evaluation of Sequence Separation for Power-Quality-Oriented LVRT in Grid-Following Inverters Benyamina Faycal ; Achour Yahia; Benrabah Abdeldjabar; Hafiz Ahmed; Benbouzid Mohamed
11:50 - 12:05	9	Data-Efficient Physics-Informed Learning to Model Synchro-Waveform Dynamics of Grid-Integrated Inverter-Based Resources Shivanshu Tripathi ; Hossein Mohsenzadeh Yazdi; Maziar Raissi; Hamed Mohsenian-Rad
12:05 - 12:20	101	EMT Simulation of Synchronization of Islands in Parallel Restoration of Converter Dominated Grids Hasini De Silva ; Mithulananthan Nadarajah; Mejbaul Haque; Scott Hagaman; Mobin Naderi; Hong Chen

Technical Session 10 - Harmonic Emission Limits and Allocation Methods

Chair: Igor Papic

Room: A

11:05 - 11:20	7	Implementation of EN 50160 by the Czech Transmission System Operator and Diagnostic of Harmonics Frantisek Rajskey ; Daniel Vesely
11:20 - 11:35	69	Unlocking Harmonic Headroom through a Novel Methodology Based on Weighted Individual Harmonic Allocation Yue Feng ; Afshin Pashaei; Ahmad Mosah; Tatiana Assis
11:35 - 11:50	73	Contemporary Harmonic Management Challenges in the England & Wales Transmission Network James Cooper ; Sai Sowmya Nagam
11:50 - 12:05	117	Harmonic Emission Limit Allocation Based on a Headroom Approach within the IEC/TR 61000-3-6 Framework Jude Suchithra ; Jason David; Duane A Robinson; Sean Elphick
12:05 - 12:20	136	Methodology for Harmonic Distortion Allocation in the Irish Transmission System Daphne Schwanz ; Mariana de Souza

Technical Session 11 - Distortion in Low Voltage Networks and Neutral Conductor Loading

Chair: Pasquale De Falco

Room: B

11:05 - 11:20	93	Preliminary Supraharmonics Observations in the Low Voltage Network in South Africa Gerrit Christiaan Oosthuizen ; Fredrick Mukundi Mwaniki
11:20 - 11:35	94	Measurement and analysis of harmonics in 400 V AC industrial grids - impact of frequency converters on grid quality Oliver Stamm ; Falk Liebold; Tom Künstler
11:35 - 11:50	87	Time Dependent Characteristics of the Fifth Harmonic in Japanese Downtown Distribution Networks Naotaka Okada
11:50 - 12:05	122	Triplen Harmonic Analysis of Low Voltage Networks at CERN Igor Sirotic
12:05 - 12:20	70	Waveform Distortion and Stray Currents in Irregular Earthing Interface at a Traction Converter Station LV Power Supply Connection Rafael S. Salles; Tommy Hjertberg ; Mats Wahlberg; Sarah K. Rönnerberg

Technical Session 12 - Advanced Metrics and Measurement Methods

Chair: Dario Zaninelli

Room: Y

11:05 - 11:20	10	Assessment of Errors of Fundamental Frequency Estimation Methods in the Presence of Voltage Fluctuations and Distortions Antonio Bracale; Pasquale De Falco; Piotr Kuwałek ; Grzegorz Wiczyński
11:20 - 11:35	17	Toward an Ideology of Waveform Analytics: How to Automate Transient Point-on-Wave Analysis for Actionable Information Jeffrey A. Wischkaemper ; B. Don Russell; Carl Benner; Karthick Manivannan
11:35 - 11:50	35	A Portable Frequency-Response Analysis System for Voltage Measurement Systems Erik Sperling ; Roberto Schulze; Thomas Bischof; Felix Feustel
11:50 - 12:05	65	Portable-Meter-Calibrated THD Estimation at an Industrial PCC Using Smart-Meter Data Yifan Zhao ; Ying Wang; Yunzhu Chen; Shunyi Li
12:05 - 12:20	133	Differential Geometry Invariants as Power Quality Indices for Real-Time Event Identification Francisco G. Montoya; Jorge Ventura-Gil ; Francisco J. Moreno-Manzano

Technical Session 13 - Sub-synchronous Oscillations and Harmonic Stability

Chair: Carlos Duque

Room: Kunsthalle

16:05 - 16:20	149	Comparative Analysis of Grid Connection Requirements for Conventional Power Plants and Renewable Energy Sources in Romania Georgiana Balaban; George Cristian Lazaroiu ; Mariacristina Roscia; Alexandru Nistor
16:20 - 16:35	84	Reinforcement Learning Based Adaptive Smoothing Strategy for Enhancing Photovoltaic Power Quality and Mitigating Output Fluctuations Cheng-I Chen; Shao-Huai Wu ; Jen-Chieh Hsieh; Zi-Xuan Huang
16:35 - 16:50	121	Small-Signal Stability Analysis of Grid-Forming Inverters with Virtual Impedance Nicholas Peter ; Henru Hugo; Johan Beukes; Fredrick Mwaniki
16:50 - 17:05	137	Aggregation of windpark models for subsynchronous, supersynchronous and harmonic stability studies Heinrich Ellmann ; Sven Ratajczak; Simon KrahI; Hanane Boutalakht
17:05 - 17:20	25	Sub-synchronous Oscillations and Interharmonics with High IBR Penetration - The Dutch 3.5 Hz Case T.M.H Slangen ; Aleksandar Boričić; Sam J Frohn; M.Sjanssen; F.J Wensink

Technical Session 14 - Harmonic Modelling and Aggregation

Chair: Araceli Hernandez

Room: A

16:05 - 16:20	68	A Quasi-Monte Carlo Approach to Assessing Cumulative Harmonic and Supraharmonic Emissions from EV Charger Giovanni Mercurio Casolino; Antonio Bracale; Pierluigi Caramia; Pasquale De Falco; Iqrar Hussain; Varilone Pietro; Paola Verde
16:20 - 16:35	112	Harmonic Domain WECC Photovoltaic Plant Modeling and Simulation Abner Ramirez; Jesus Morales
16:35 - 16:50	135	Markov Chain Modelling of Wind Turbine Total Harmonic Emission Ida Natriello ; Vincenzo Di Giorgio; Roberto Langella; Sasa Z. Djokic
16:50 - 17:05	103	Harmonic Probability Model for Industrial Rectifier Load Considering Parameter Uncertainty Jinwen Xiang ; Amr Saad; Jef Beerten
17:05 - 17:20	147	Harmonic-Domain Machine Learning for Voltage-Dependent Current Waveform Reconstruction in Active-PFC LED Lamps Hasan Abdulmajeed ; Peter Kiss

Technical Session 15 - Sensitivity of Equipment

Chair: Neville Watson

Room: B

16:05 - 16:20	41	Impact of Supply Voltage Magnitudes on Current Harmonics Generated by Household Appliances Dinidu Jeewandara ; Sean Elphick; Jeff Moscrop; Duane A. Robinson
16:20 - 16:35	47	Experimental Assessment of Electrical Characteristics in Residential Appliances under Sustained Supply Voltage Magnitudes Dinidu Jeewandara ; Sean Elphick; Jeff Moscrop; Duane A. Robinson
16:35 - 16:50	62	Experimental Evaluation of EV Charger Performance Under Supply Voltage Harmonics Obaidur Rahman ; Sean Elphick; Duane A. Robinson; Quang Bach Phan
16:50 - 17:05	77	Flicker of LED Lamps due to Wideband Interharmonic Emission from Active Front-End Systems Robert Stiegler ; Markus Alexander Lietzberg; Jan Meyer; Jiří Drápela; Roberto Langella; Leoš Kukačka
17:05 - 17:20	130	New Method for Evaluating Equipment Sensitivity to Single Voltage Dips and Dip Sequences Jinyue Liu; Qiqi Jin; Sasa Djokic ; Roberto Langella

Technical Session 16 - Reproducibility of Measurements and Sensor Accuracy

Chair: Alessandro Mingotti

Room: Y

16:05 - 16:20	15	Challenges in the Proper Metrological Verification of Smart Energy Meters Antonio Bracale; Jakub Janowicz; Piotr Kuwałek ; Grzegorz Wiczyński
16:20 - 16:35	26	Testbed for the Traceable Measurement of Supraharmonics (2 – 150 kHz) Angela Espin-Delgado; Tobias Bergsten ; Hanna Bergman; Stefan Svensson; David Svensson; Daniel Reimhult; Bernhard Grasel; Linus Krantz; Jürgen Blum
16:35 - 16:50	123	Capability of a P-HIL System to Reproduce Harmonic Emissions of Nonlinear Loads under Different Network Conditions Ana Maria Blanco; Jan Meyer; M. Adnan Shihab; Sergio Contreras ; Johanna Myrzik
16:50 - 17:05	57	Use of Rogowski Coils for Leakage Current Detection: Analysis and Case Studies Lukas Malfait ; Emile Clarisse; Colin Debruyne; Jos Knockaert; Jan Desmet
17:05 - 17:20	139	Overcoming the Limitations of Grid Voltage Sensors through Digital Filtering Gaurav Singh; Jason Johns ; Md. Maidul Islam

Thursday, September 3

Technical Session 17 - Harmonic Analysis and Mitigation Case Studies

Chair: Aurora Gil-de-Castro

Room: A

9:05 - 9:20	2	Practical approach for mitigating resonance in a seed growth chamber due to LED lighting Bart Verhelst ; Johan Rens; Jan Desmet; Jos Knockaert
9:20 - 9:35	21	Harmonic Analysis of an Industrial Green Ammonia Plant Supplied by Large- Scale Electrolyzers Katherine Andrade Acosta ; Alessandro Bosisio
9:35 - 9:50	96	Analysis of harmonic emissions and the performance of an active power filter in a wastewater treatment plant Falk Liebold; Oliver Stamm
9:50 - 10:05	44	Measurement and analysis of harmonic voltage disturbances at Vädermotet charging site Egil Schultz ; Alexander Wallberg; Lars Christoffersson; Karin Thomas
10:05 - 10:20	78	Harmonic Distortion in Distribution Grids: A Case Study on Electric Vehicle Integration Iraj Davood Abadi; Vladimir Terzija; Matthew Deakin; Mahmood Jamali

Technical Session 18 - Hosting Capacity and Supply Voltage Management

Chair: Max Domagk

Room: B

9:05 - 9:20	104	EV Hosting Capacity and Voltage Quality: A Capability Chart Assessment of Modern Electric Systems Giovanni Mercurio Casolino; Iqrar Hussain; Arturo Losi; Pietro Varilone; Paola Verde
9:20 - 9:35	31	Hosting capacity and reactive-power compensation for low and medium-voltage customers Math H.J Bollen ; Tais Tavares de Oliveira
9:35 - 9:50	6	A Series Voltage Buffer Unit for Medium-Voltage Distribution Networks: Loss-Aware Series Voltage Regulation under Power-Quality Constraints Xingyan Niu ; Jiao Zhang; Cheng Kang
9:50 - 10:05	45	A Power-Sharing Algorithm for Converter Groups in High-Power Charging Stations to Improve Energy Efficiency and Power Quality Szymon Werminiński ; Sebastian Kupp; Amirali Mahjoob; Andreas Ulbig
10:05 - 10:20	125	Reconfiguration of Unbalanced Distribution Network: Case Study IEEE 33 Bus Milad Rahimipour Behbahani ; Alireza Jalilian

Technical Session 19 - Analysis and Mitigation of Voltage Sags

Chair: Sharmistha Bhattacharyya

Room: Y

9:05 - 9:20	30	Optimized Configuration Method for Multi-Type Mitigation Devices against Voltage Sag Qiming Zhong ; Ying Wang; Xianyong Xiao; Shunyi Li; Shuyuan Zhang; Xuqing Tang
9:20 - 9:35	38	Enhancement of VFD Tolerance under Voltage Sag based on Designed Control System Shuyuan Zhang ; Ying Wang; Xianyong Xiao
9:35 - 9:50	126	Enhanced Voltage Ride Through Capability of Grid Connected Converters with Current Based Model Predictive Pulse Pattern Control Panagiotis Syrpas ; Ioannis Tsoumas
9:50 - 10:05	32	Voltage Sag Analysis at DC side of PV Inverter in the Large Scale PV Cluster Transmission System Qing Zhong; Hongyi Wu; Wei Huang ; Junjie Feng; Jianzhong Wu; Jan Meyer
10:05 - 10:20	29	Impact of Transformer Ratio and Line Parameters Uncertainty on Accuracy of Transient State Estimation Tomáš Šedivý ; Patrik Paclík; Jiří Drápela

Technical Session 20 - Power Metrics and Definitions under Nonsinusoidal Conditions

Chair: Mihaela Albu

Room: D

9:05 - 9:20	14	Why Fryze's Approach to Developing Power Theory has Failed? Leszek S. Czarnecki
9:20 - 9:35	34	IEEE Std 1459-2025: A Critical Analysis of Power Definitions That Admit Their Own Limitations Francisco G. Montoya ; Jorge Ventura; Alfredo Alcayde; Julio Gómez; Francisco M. Arrabal-Campos
9:35 - 9:50	12	Why Power Quality Billing Should Be Based on Currents Rather Than Powers Francisco G. Montoya ; Jorge Ventura; Alfredo Alcayde; Julio Gomez; Francisco M. Arrabal-Campos
9:50 - 10:20	92	Direction of Power Flow Based Power Definitions Gerd Bumiller ; Lukas Duhme

Technical Session 21 - Impedance Simulations and Measurement Campaigns

Chair: Fred Mukundi Mwaniki

Room: A

11:05 - 11:20	43	A Supraharmonic Impedance Measurement Campaign in Low-Voltage Networks and Recommendations for Propagation Studies Rafael S. Salles ; Manav Giri; Mats Wahlberg; Sarah K. Rönnerberg; Jon González-Ramos; Igor Fernández; Itziar Angulo; David de La Vega
11:20 - 11:35	102	Analysis of Grid Impedance Resonances in the Presence of Power Electronic Converters in the 20-500 kHz Frequency Range Jon González-Ramos ; Itziar Angulo; Igor Fernández; David de la Vega; Rafael S. Salles; Sarah K. Rönnerberg
11:35 - 11:50	80	Evaluation of Internal and External Parameter Variations on Inverter Harmonic Impedance Efaf Bikdeli Mazlaghani; Duane A. Robinson ; Sean Elphick
11:50 - 12:05	116	Impact of Distributed Generation Driven Network Reconfiguration on Harmonic Impedance and Disturbance Levels Christopher Goodwin ; Jan Meyer

Technical Session 22 - Harmonic Emission of Other Sources

Chair: Johanna Myrzik

Room: B

11:05 - 11:20	22	Harmonics and interference to railway signalling originating from DC traction rectifier open-arm fault Sahil Bhagat ; Andrea Mariscotti
11:20 - 11:35	58	Quantifying Harmonic-Induced Active Power Losses in MV Cables Benjamin Jacobsen
11:35 - 11:50	97	A practical study on the impact of a large heat pump on harmonic distortion Ehsan Najafi ; Illia Diahovchenko; Rory O'Sullivan
11:50 - 12:05	TP1	Harmonic Anomalies Due to Geomagnetically Induced Currents as a Potential Cause of Protection Mal-Trips at the South Atlantic Anomaly Area Roger Alves de Oliveira ; Rafael S. Salles; Sarah K. Rönnberg; Miguel Pires de Carli; Roberto Chouhy Leborgne

Technical Session 23 - Fault detection and location techniques and Continuity of Supply

Chair: Jiri Drapela

Room: Y

11:05 - 11:20	56	Performance Degradation Analysis and Reformulation of a Hybrid Fault Locator for Distribution Networks with Distributed Generation Rui Sampaio dos Santos Cantuária ; Paulo Estevão Teixeira Martins; Moisés Junior Batista Borges Davi; Mário Oleskovicz
11:20 - 11:35	61	Selective Fault Detection in Wind Farm Collector Systems via Differential-Evolution-Optimized Thresholds and Neural Networks Matheus do V. Oliveira ; Moisés J. B. B. Davi; Mário Oleskovicz
11:35 - 11:50	85	Optimisation of Switch Placement in Distribution Networks Using a Genetic Algorithm Brodie Howson ; Duane Robinson; Sean Elphick; Edward Smith
11:50 - 12:05	TP4	"High-Impedance Fault Detection" Revisited: Why the Term Has Lost Its Meaning and Should Be Abandoned Jeffrey A. Wischkaemper ; Don Russell; Carl L. Benner; Karthick Manivannan

Technical Session 24 - Platforms and Methods for Large Data Analysis

Chair: Stefano Lodetti

Room: D

11:05 - 11:20	142	A Cloud-Edge-End Collaborative Control System for Distribution Network Power Quality with Wide- Frequency Sensing: Design and Application Wang Tongxun ; Ma Wenxiao; Feng Dandan; Wang Zhikai; Li Zhaoliang; Wang Yang
11:20 - 11:35	59	Digital platform integrating high-reporting rate information for light Power Quality assessment Radu Plamanescu; Anca Petruta Brincoveanu; Catalin Constantin; Ana-Maria Dumitrescu; Mihaela Albu
11:35 - 11:50	50	Identification and Visualization of Correlation Structures in Large-Scale Power Quality Data Max Domagk ; Jan Meyer; Marco Lindner
11:50 - 12:05	105	Implementation of a DTW-Based Novelty Detection Application on a Substation Edge Device for Power Quality Signals Ana Luisa B. de Castro; Victor M. Ribeiro; Eder B. Kapisch; Leandro R. M. Silva; Carlos A. Duque

Poster session

The interactive poster session is carried out in the room Kunsthalle on Wednesday, 2nd September 14:00 – 15:30. Each paper that is only presented in the poster session has the opportunity for a short pitch presentation. We hope this format will encourage lively discussions and provide additional opportunities for participants to connect with colleagues.

We kindly ask all poster presenters to observe the following recommendations to ensure a smooth and efficient session.

Poster setup

- All posters must be put up in the Kunsthalle on Wednesday from 8:00 to 9:00 AM. Please use only this time slot, as other presentations will be taking place in the room after this time slot.
- Paper numbers are indicated on each board. Please use only the board that is allocated to your paper.
- Please use only the provided tape and do not use pins.

Session procedure

The poster session consists of two parts:

1. Poster Pitches (14:00 – 14:40)
 - Authors whose papers are not part of the oral sessions can give a 1-minute pitch presentation.
 - The pitch presentation should briefly introduce the topic and main findings of the paper.
 - Presenters must prepare one slide containing the key information of their work for the pitch presentation. The slide must be upload not later than 9:00 on Wednesday in the speakers ready room (Room C).
2. Poster Discussion and Networking (remainder of the session)
 - Following the pitches, participants are invited to visit the posters and discuss the presented work with the authors.
 - Poster presenters are kindly requested to remain near their posters and be available for questions.

Poster removal

- Posters must be removed on Wednesday from 17:30 to 18:00.
- Posters remaining after 18:00 will be removed and discarded by the staff.

Posters will be accessible during the whole Wednesday including lunch and coffee breaks.

Posters with pitch presentation

- 5 A Comparative Study of TFA-based Power Quality Post-Processing Assessment for Nonstationary Waveforms
Gary Chang; **Wei-Yun Huang**; Guan-Yi Li
- 8 Suppression Method of Voltage Flicker by Automatic Adjustment of Frequency Feedback Gain for Interconnected Inverters in Distribution System
Kusaba Ayano; **Kawasaki Shoji**
- 11 Implementation of Three-phase Three-wire Shunt Active Power Filter Control Based on IEEE Standard 1459
Gary Chang; **Wei-Yun Huang**; Guan-Yi Li
- 18 Examples of Diagnostic Capabilities of Voltage Fluctuation Indices
Grzegorz Wiczynski, **Piotr Kuwałek**
- 20 RMS-Based Fault Disturbance Characterization and Zone-Level Identification in Inverter-Dominated Wind Farm Collector Systems
Talita Mitsue Onose Araujo Cunha; Moisés Junior Batista Borges Davi; **Mário Oleskovicz**
- 23 Challenges with power quality at the DC side
Martin Pettersson; Abdallah Ammar Hoseny Uosef; Math Bollen; Manav Giri; Rafael De Souza Salles; Alyaa Abdelraouf Ali Shalabi; Alyaa Abdelraouf Ali Shalabi; Peter Haigh; Rajith Welikannage
- 27 Redistribution of Reactive Power Demand from Q(V) for Operating Point Optimization integrated on HEMS using Smart Meter Data
Julien Essers; Robin F.Herman; Eike Niehs; Bernd Engel
- 28 Modeling Harmonic Emissions of Battery Converters for Grid Simulations
Robin Herman; Christian Fröhlich; **Alexander Vanselow**; Julien Essers; Bernd Engel
- 37 Power Quality Disturbance Identification Using Gramian Angular Field-Based Two-Dimensional Feature Representation and Deep Learning framework
Sasan Dehghan; **Hamed Jafari Kaleybar**; Morris Brenna; Dario Zaninelli
- 39 Voltage Sag Mitigation Method in Industrial Parks Equipped with an Energy Storage System
Shuyuan Zhang; Ying Wang; Xianyong Xiao; Shunyi Li
- 40 Wideband Oscillations in Real-world Wide-Area Synchro-Waveforms: Onset Detection and Source Localization
Hossein Mohsenzadeh-Yazdi; Hamed Mohsenian-Rad; David Daigle; **Shivanshu Tripathi**
- 42 A Study on Harmonic Source Estimation in Three-Phase Unbalanced High-Voltage Distribution Systems Including Automatic Power Factor Regulators
Taishi Karasawa; Shoji Kawasaki; Yuki Hotta

- 48 Study on the Estimation of Utility Harmonic Impedance Based on Black-winged Kite Algorithm Optimized Kolmogorov-Arnold Networks
Liangshu Huang; **Jiaqi Wang**; Yulin Chu; Jing Shi; Aoyu Lei; Hongkun Chen
- 51 A Topology-Driven Framework for Staged PMU Placement with Nested Observability and Decision Transparency
Fardin Noori; Roberto Tinarelli; Lorenzo Peretto; **Alessandro Mingotti**; Massimo Bartolucci; Luigi Petrianni
- 60 Beyond Conventional Methods: Machine Learning-Driven Fault Location in Wind Farms
Miguel Rodrigues Fonseca; Moisés J. B. B. Davi; Mário Oleskovicz
- 75 Calibration of a Broadband Voltage Measuring System for Monitoring of Switching Transients
Roberto Schulze; Erik Sperling
- 89 A Method for Quantifying Time-Varying Harmonic Contributions Based on Feature Points Identification of Spatial Curve
Qing Zhong; Gaoge Zheng; Tingting Cui; Zhong Xu; **Wei Huang**; Jan Meyer
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Alessandro Mingotti; Lorenzo Peretto; Roberto Tinarelli
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Peter Davis; Stefano Lodetti; **Frederick Wilkins**; Deborah Ritzmann
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Viktorija Andersson; Oscar Lennerhag; Math Bollen
- 138 Application of Data-Driven Generative Models for Harmonic Assessment in Low-Voltage Networks: Case Studies on Four Residential Feeders
Fayezeh Mahmoudnezhad; Araceli Hernandez; Pablo Rodriguez-Pajaron
- 145 Analysis of Harmonic Content in the Magnetizing Current of Power Transformers Under Geomagnetically Induced Currents
Alexander Fröhlich; Philipp Schachinger; Herwig Renner

Posters without pitch presentation

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- 38 Enhancement of VFD Tolerance under Voltage Sag based on Designed Control System
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- 45 A Power-Sharing Algorithm for Converter Groups in High-Power Charging Stations to Improve Energy Efficiency and Power Quality
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17	12	
18		x
19	8	x
20		x
21	17	
22	22	
23		x
24	3	
25	13	
26	16	
27		x
28		x
29	19	
30	19	
31	18	x
32	19	
34	20	
35	12	
36	7	x
37		x
38	19	x
39		x
40		x

ID	TS	PS
41	15	
42		x
43	21	
44	17	
45	18	x
46	9	
47	15	
48		x
49	6	
50	24	x
51		x
52	3	
53	2	
54	5	
55	8	
56	23	
57	16	
58	22	
59	24	
60		x
61	23	
62	15	
63	7	
64	9	
65	12	x
66	4	
68	14	
69	10	x
70	11	x
71	1	x
72	8	
73	10	
74	1	
75		x
77	15	

ID	TS	PS
78	17	
79	6	
80	21	
81	9	
82	6	
83	2	
84	13	
85	23	
86	4	
87	11	
88	7	
89		x
91	1	
92	20	
93	11	
94	11	x
95	5	
96	17	
97	22	
98		x
100	5	
101	9	
102	21	x
103	14	
104	18	
105	24	
106	6	
107	8	
108	2	
109	4	
110		x
111	3	
112	14	
113	7	
114	3	

ID	TS	PS
115	3	x
116	21	
117	10	
118	5	
119		x
120		x
121	13	x
122	11	
123	16	
124		x
125	18	x
126	19	
127	1	
128	7	
130	15	
133	12	
134	4	
135	14	x
136	10	
137	13	
138		x
139	16	
141	2	
142	24	
143	5	
144	6	
145		x
146	1	
147	14	x
149	13	
TPP1	22	
TPP2	2	
TPP3	4	
TPP4	23	

ID – Paper ID; TS – Technical Session; PS – Poster Session

Social Events and Excursions

In addition to the technical program, ICHQP 2026 offers three social events that provide opportunities to network and experience the cultural highlights of Dresden in a relaxed atmosphere. Additionally, ICHQP 2026 also organized two excursions offering the opportunity to explore some of the most beautiful and culturally significant destinations in the region.

Welcome Reception — Dresdner Zwinger (Nymphenbad)

Date: Monday, August 31, 2026

Doors open: 18:30

Event starts: 19:00

Event ends: 22:00

Venue: Nymphenbad, Dresdner Zwinger, Theaterplatz 1, 01067 Dresden-Altstadt

Participants: All conference participants and accompanying persons, who registered previously in the registration form

Fee: Free of charge, kindly supported by Reinhausen GmbH

The Welcome Reception takes place in the unique setting of the **Nymphenbad at the Dresdner Zwinger**, one of Dresden's most famous Baroque landmarks.

Participants are invited to enjoy a **cocktail reception** in the open-air courtyard, surrounded by historic architecture and fountains. A festive atmosphere offers a perfect opportunity to meet colleagues and begin the conference in a relaxed and inspiring environment.

Women in Power Quality — Evening Reception

Date: Tuesday, September 1, 2026

Doors open: 18:30

Event starts: 19:00

Event ends: 22:00

Venue: Felix Restaurant, Kleine Brüdergasse 1-5, 01067 Dresden-Altstadt

Participants: Female conference participants, who registered previously

Fee: Free of charge, kindly supported by ABB

The **Women in Power Quality** Evening Reception is dedicated to female participants of ICHQP 2026. The aim of this event is to strengthen professional connections, foster exchange, and encourage collaboration among women active in Power Quality research and practice.

Held at the **Felix Restaurant** in the heart of Dresden, the reception provides a relaxed and inspiring setting to meet other female researchers, share experiences, and explore potential cooperation opportunities across institutions and countries.

Gala Dinner — Elbe River Boat Cruise to Pillnitz Palace

Date: Wednesday, September 2, 2026

Boarding: 18:30

Departure: 19:00

Event ends: 22:00

Venue: Boat “August der Starke”, Sächsische Dampfschiffahrt, Augustusbrücke, Terrassenufer 2, 01067 Dresden-Altstadt

Participants: All conference participants and accompanying persons, who registered previously in the registration form.

Fee: Free of charge, kindly supported by Condensator Dominit

The conference gala dinner takes place during a **scenic boat cruise on the Elbe River**, offering a unique perspective on the city of Dresden and its surroundings. The cruise will depart from the Dresden City Center and travel along the Elbe toward **Pillnitz Palace**. During the cruise, participants will enjoy a **dinner buffet** with accompanying music. This evening event is designed to provide a memorable social experience and to give opportunity for informal exchange in an exceptional setting.

Please note: The departure platform for the boat *August der Starke* will be announced on the day of the event. Please check at the information desk for the platform assignment and allow sufficient time to reach the departure point. The embarkation location is approximately 1.2 km (about 20 minutes on foot) from the conference venue.

Excursion 1 — Meißen: Porcelain Manufactory and Historic City Center

Date: September 3, 2026 (half-day)

Bus boarding: 13:30

Departure: 14:00

Return: around 19:00

Participants: Available only to participants who registered in advance

Fee: Free of charge

The program includes either a guided visit to the famous **Meissen Porcelain Manufactory** or a **guided tour to the Historic City Center and the Albrechtsburg Castle**.

The manufactory visit offers the opportunity to learn about the centuries-old tradition of porcelain production and to observe artisans at work. An insight into the craftsmanship and history that made Meissen porcelain renowned worldwide is followed by a stroll along the enormous diversity of porcelain objects in the Porcelain Museum.

Second option allows to enjoy a guided tour to the **Historic City Center of Meißen**, characterized by its medieval streets, picturesque squares and views of the Elbe River. It will continue to the Albrechtsburg Castle, Germany's oldest, late-Gothic castle.

Please note that parts of the guided city tour involve cobblestone streets and stairs. Participants with mobility impairments are encouraged to contact us at the information desk in advance so we can advise on the best options.

Excursion 2 — Saxon Switzerland: Königstein Fortress and Bastei Bridge

Date: September 4, 2026 (full-day)

Bus boarding: 08:30

Departure: 09:00

Return: around 18:00

Participants: Available only to participants who registered in advance.

Fee: Additional fee applies

The second excursion is a full-day trip to the spectacular **Saxon Switzerland National Park**, one of the most impressive natural landscapes in Germany.

The excursion starts with a visit to **Königstein Fortress**, one of the largest hilltop fortresses in Europe. Situated high above the Elbe River, the fortress provides fascinating insights into regional history as well as outstanding views of the surrounding landscape. Lunch will be offered here.

The tour also includes a visit to the famous **Bastei Bridge rock formation**, offering breathtaking panoramic views over the Elbe Sandstone Mountains and the Elbe River valley. Participants will have the opportunity to walk across the iconic Bastei Bridge and enjoy the unique rock formations and scenic viewpoints. Depending on weather and physical condition participants are invited to experience the nature of Saxon Switzerland National Park by a short hike.

This excursion combines natural beauty, outdoor experience, and historical exploration, making it an ideal complement to the technical conference program.

Please note that this excursion, especially the hike, involves significant stairs and uneven terrain. It is not fully accessible for participants with mobility impairments. If you have specific accessibility needs, please contact us at the information desk in advance, so we can advise the best options.

Best Paper Awards and Power Quality Art Contest

Constantin Budeanu Best Paper Award

The Constantin Budeanu Best Paper Award recognizes work of outstanding value in the field of power quality. All papers are automatically considered and the winner will be announced during the conference gala dinner.

Alex Emanuel Best Student Paper Award

The Alex Emanuel Best Student Paper Award is dedicated to extraordinary research submitted and presented by a student. To be eligible, the first author must be an enrolled student at the time of submission (an official enrollment certificate is required). The winner will be announced at the conference gala dinner.

Power Quality Art Contest

Research in the field of Power Quality is not only very interesting, it can also have a very beautiful appearance. To reveal the beauty of Power Quality, this conference will feature for the first time a gallery "The Art of Power Quality". The most beautiful and expressive images related to Power Quality research will be presented during the conference.

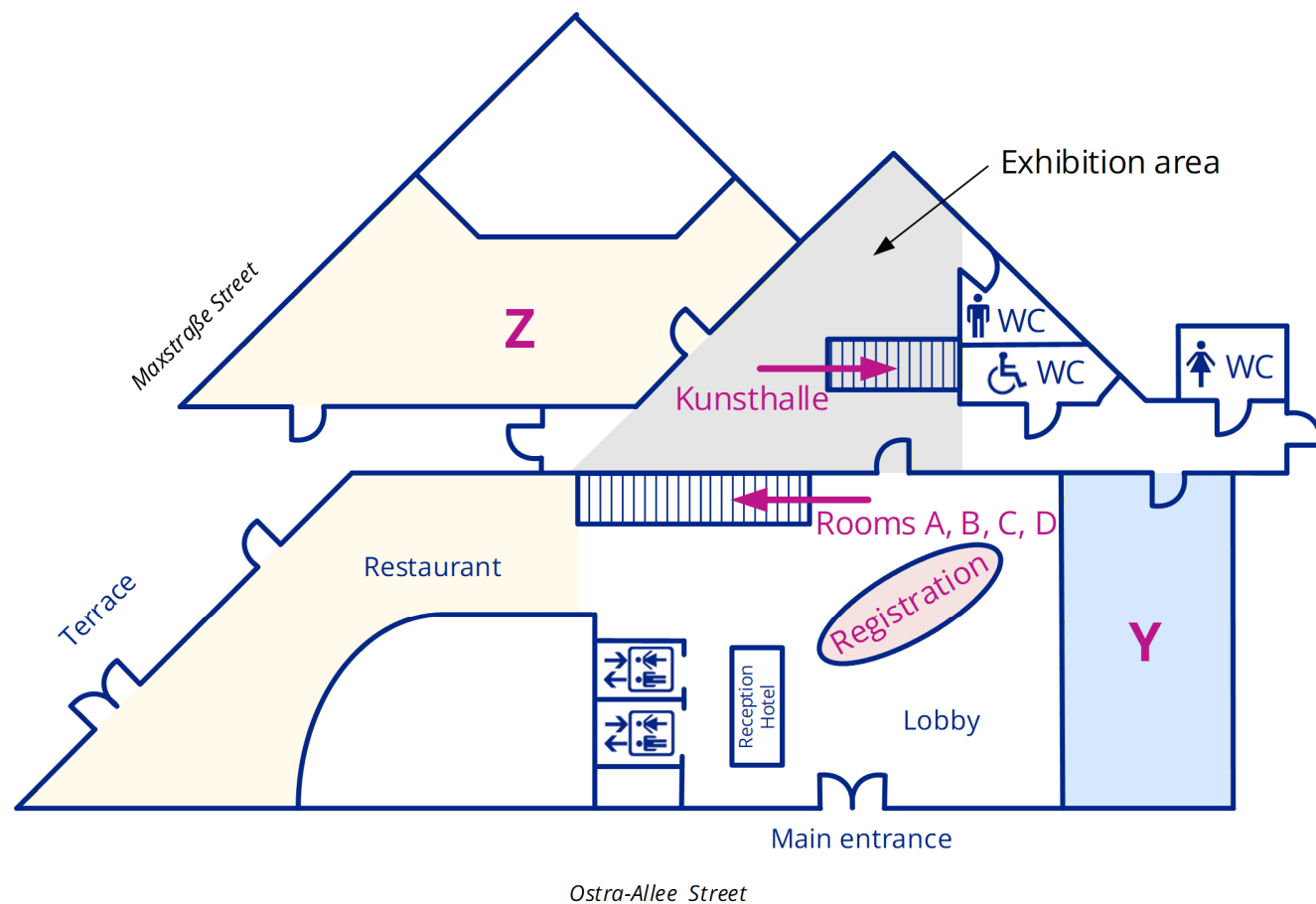
Ten impressive submissions are pre-selected by a jury and are displayed in the Kunsthalle. All attendees are encouraged to vote for their favorite image:

1. Register on the conference app
2. Go to Power Quality Art Contest
3. Vote for your favorite image (Each attendee has one vote)

The winner will be announced during the gala dinner.

Map of conference venue

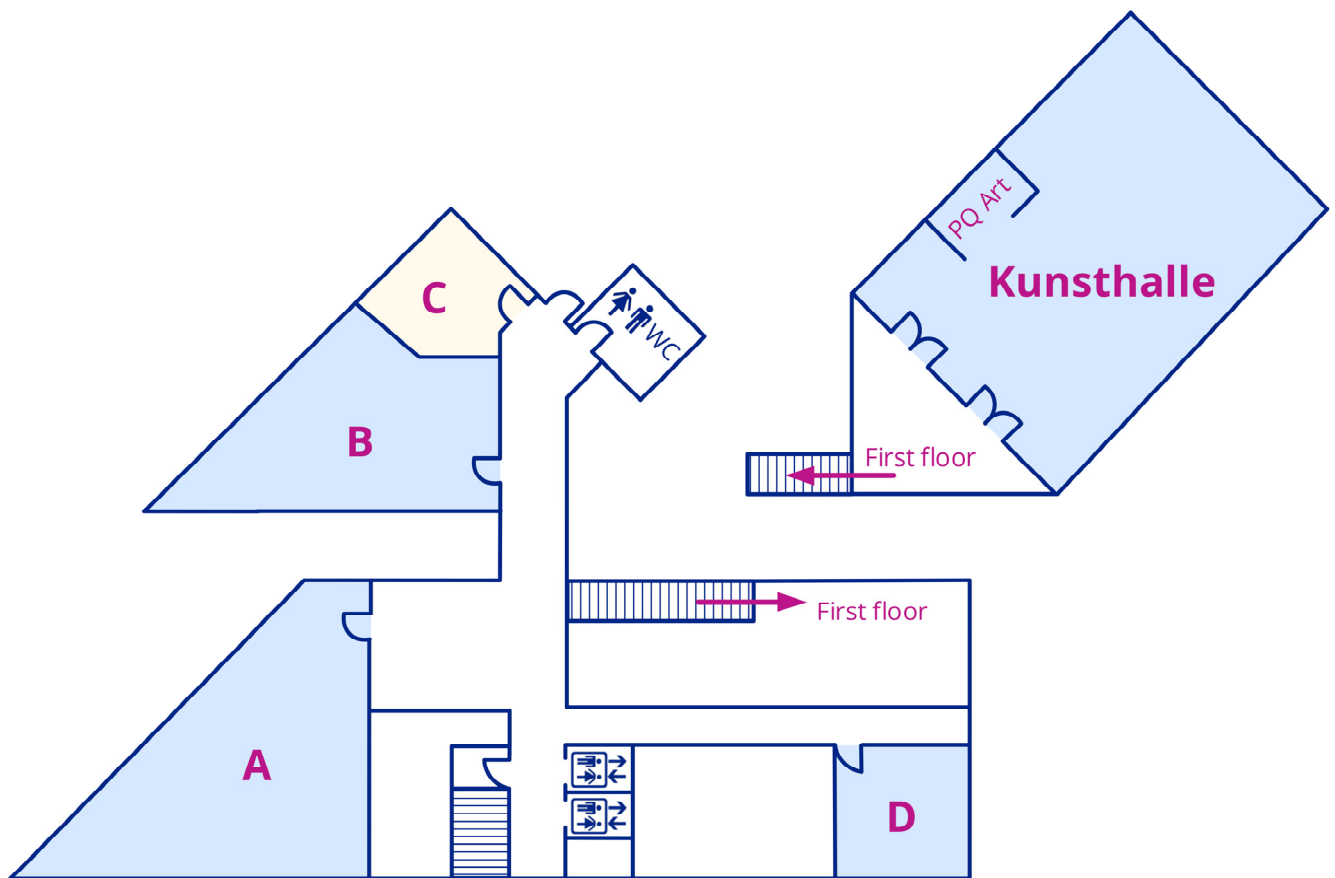
First/Ground floor



- Room Y: Technical sessions
- Room Z and Restaurant: Lunch area
- Lobby: Registration

Please refer to the Supporters section for more information about the exhibition

Second floor

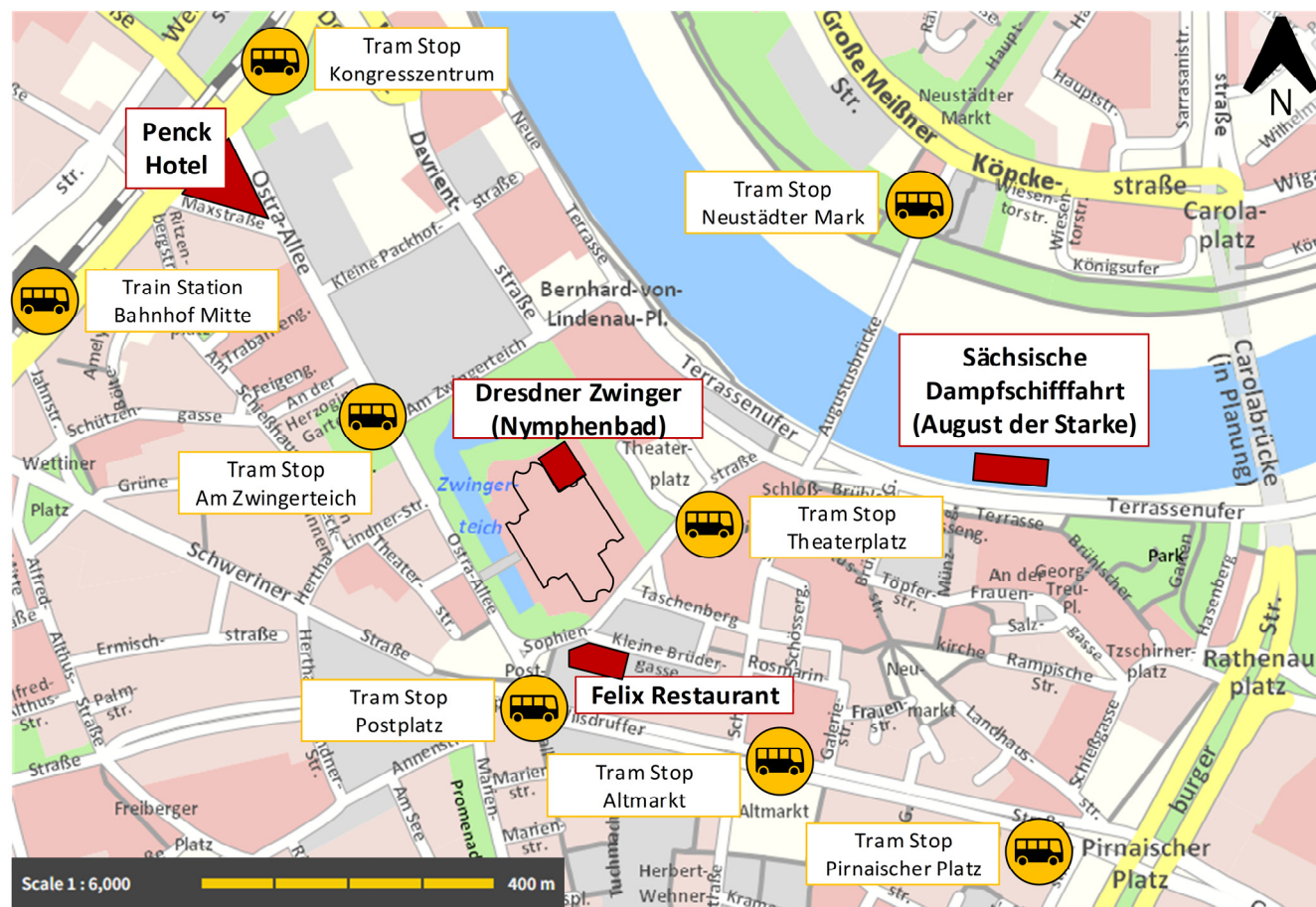


- Kunsthalle: Opening ceremony, Keynotes, Panel sessions, Technical sessions, Poster session, Power Quality Art Contest
- Rooms A: Tutorials, Panel sessions, Technical sessions
- Room B: Tutorials, Technical sessions
- Room D: Tutorials, Technical sessions (Thursday only)
- Room C: Speaker Ready Room

General Information

The conference will be held at the Penck Hotel Dresden, Ostra-Allee 33, 01067 Dresden.

The Hotel is just a short walk from the Zwinger (Welcome Reception), the Felix Restaurant (Women in Power Quality), and the Sächsische Dampfschiffahrt (Gala Dinner).



Copyright: Themenstadtplan Dresden, <https://themenstadtplan.dresden.de>

Distances:

- From Penck Hotel to Dresdner Zwinger: 750 m, approx. 10 Minutes walking distance
- From Penck Hotel to Felix Restaurant: 800 m, approx. 12 Minutes walking distance
- From Penck Hotel to Sächsische Dampfschiffahrt: 1.2 km, approx. 20 Minutes walking distance

If you prefer public transportation, take tram 11 (direction Zschertnitz) from the tram stop Kongresszentrum to the tram stop Postplatz. This is the closest tram stop to restaurant Felix. To reach Dresdner Zwinger (Nymphenbad) and Sächsische Dampfschiffahrt you can change to trams 3 (direction Wilder Mann), 4 (direction Weinböhl) or 9 (direction Kaditz) and get off at tram stop Theaterplatz. The trip takes about 15–20 minutes.

Wi-Fi

Two free Wi-Fi networks are available at the conference venue:

- Penck Hotel Guest
- Penck Hotel Event

No access code is required for either network. You simply need to connect and accept the terms of use.

Conference Identification Badge

A conference identification badge is included in the conference material provided upon registration. Please wear the badge clearly visible during all conference activities. Without the conference badge admittance to sessions and social events is not possible.

Attendance certificate

A certificate of attendance will be sent by email to all registered participants after the conference.

Coffee breaks

During breaks, refreshments will be served free of charge to all registered participants.

Lunches

Buffet lunches are included will be served free of charge at lunchtime in Room Z and the hotel restaurant area to all registered participants.

Conference App

Please download the conference app using the QR code provided at the backside of the booklet or the following link:



You need to register using the email address you provided when buying your ticket. Once you have logged in, you can access your browser settings and select 'Add to Home Screen' to make the app available offline on your mobile phone. If you have any problems registering, please contact our IT staff in Room C (Speaker Ready Room).

Contact information

The registration / information desk (Lobby) and the Speaker Ready Room (Room C) will be open each day. Please feel free to approach us there if you have any questions or require assistance. You can also contact us using the details below:

- Phone: +49 1551 1288184 (from 07:00 to 22:00)
- Email: info@ichqp2026.org

Supporters

The ICHQP Organizing Committee would like to thank all of our supporters for their generous support. We invite all participants to visit the exhibition area on the first/ground floor. Additionally, please visit the Job Wall, also located on the first/ground floor, to explore a variety of career opportunities offered by our supporters.

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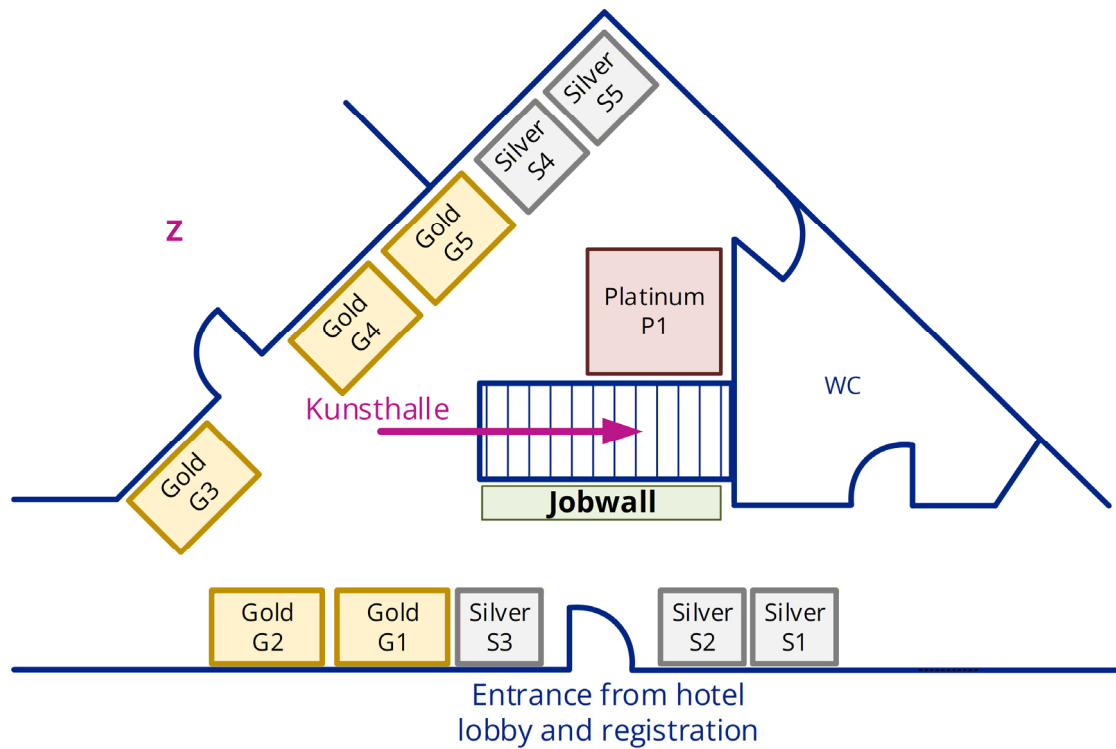
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Exhibition area

First/Ground floor



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Omicron

OMICRON



OMICRON is an international company that works passionately on ideas for making electric power systems safe and reliable. Our pioneering solutions are designed to meet our industry's current and future challenges. We always go the extra mile to empower our customers: we react to their needs, provide extraordinary local support, and share our expertise.

Within the OMICRON group, we research and develop innovative technologies for all fields in electric power systems. When it comes to electrical testing for medium- and high-voltage equipment, protection testing, digital substation testing solutions, and cybersecurity solutions, customers all over the world trust in the accuracy, speed, and quality of our user-friendly solutions. We continuously strive to improve our solutions, and we are always eager to work on groundbreaking innovations.

Founded in 1984, OMICRON draws on their decades of profound expertise in the field of electric power engineering. A dedicated team of more than 1.300 employees provides solutions with 24/7 support at 25 locations worldwide and serves customers in more than 170 countries.



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ABB



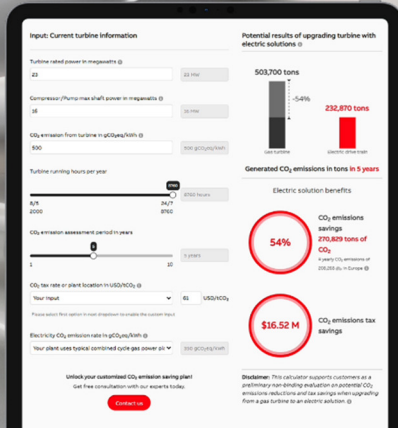
ABB Motion, a global leader in motors and drives, is at the core of accelerating a more productive and sustainable future. We innovate and push the boundaries of technology to contribute to energy efficient, decarbonizing and circular solutions for customers, industries and societies. With our digitally enabled drives, motors and services we support our customers and partners to achieve better performance, safety and reliability. To help the world's industries outrun – leaner and cleaner, we deliver motor-driven solutions for a wide range of applications in all industrial segments. Building on over 140 years of domain expertise in electric powertrains, our more than 23,000 employees across 100 countries learn and improve every day. go.abb/motion



Calculate your potential savings

Estimate CO₂ reduction, cost savings, and business benefits.

Turbine-2-Electric savings calculator



Input: Current turbine information

- Turbine rated power in megawatts (M): 23 MW
- Compressor (Pump) max shaft power in megawatts (M): 18 MW
- CO₂ emission from turbine in gCO₂/kWh (g): 900
- Turbine running hours per year: 8760 hours
- CO₂ emission assessment period in years: 5 years
- CO₂ tax rate at plant location in USD/tonCO₂ (g): \$5 USD/tonCO₂
- Electricity CO₂ emission rate in gCO₂/kWh (g): 100 gCO₂/kWh
- Your plant uses basic combined cycle gas power (g): 100 gCO₂/kWh

Potential results of upgrading turbine with electric solutions (g)

- Current CO₂ emissions: 503,700 tons
- Electric solution savings: 232,870 tons (-46%)
- Generated CO₂ emissions in tons in 5 years: 2,518,500 tons
- Electric solution benefits:
 - CO₂ emissions savings: 232,870 tons of CO₂ (46% reduction of emissions at plant location)
 - CO₂ emissions tax savings: \$16.52 M

Unlock your customized CO₂ emission saving plan!
See how your company can save with our experts today.

Disclaimer: This calculator supports customers as a preliminary non-binding evaluation on potential CO₂ emissions reductions and tax savings when upgrading from a gas turbine to an electric solution (g).

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a-eberle



A. Eberle GmbH & Co. KG, headquartered in Nuremberg, Germany, develops and manufactures measurement and regulation technology for electrical power systems. Utilities, grid operators, industrial companies and infrastructure operators use our solutions to improve grid transparency, maintain voltage quality and operate electrical networks reliably and efficiently. The portfolio covers power quality measurement and monitoring, voltage regulation, fault detection, earth fault compensation, low-voltage regulation, grid automation and software solutions for analysis, reporting and system integration.

A. Eberle focuses on practical experience from decades of power quality measurements, continuous PQ monitoring and the evaluation of power quality phenomena in real electrical networks. Our solutions support temporary field measurements, fixed monitoring, fault recording, automated reporting and standards-based long-term analysis in medium-voltage, high-voltage and low-voltage grids. This includes the assessment of harmonics, voltage events, disturbances and other power quality parameters relevant for reliable and transparent power system operation.

A. Eberle will be represented at ICHQP 2026 by Jürgen Blum, Product Manager »PQMobil«, who brings extensive practical and technical expertise in the field of power quality measurement and field analysis.

»PQSys« 

For continuous PQ monitoring and grid transparency.




More information

»PQMobil« 

For temporary PQ measurements and troubleshooting.




More information

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DigSilent



DlgSILENT GmbH is an independent software and consulting company specializing in electrical power supply for transmission, distribution, generation, and industrial grids, as well as for renewable energy systems. DlgSILENT's innovative product portfolio includes the market-leading grid calculation software PowerFactory, the asset management system StationWare, and the multifunctional measuring system Monitoring Systems.

Environmental awareness and a focus on renewable energy are top priorities for DlgSILENT. A distinctive feature of the company's history is its innovative and consistent focus on the simulation of energy supply systems, with the integration of renewable energy sources beginning at a very early stage. Through the development of highly innovative software and hardware solutions, the company is thus making an important contribution to the future of energy.

With over 40 years of experience, 9 DlgSILENT subsidiaries worldwide, and over 180 employees, the steadily growing company stands out through the ambitious further development and market adaptation of its products, as well as the above-average quality standards of its technically sophisticated solutions.

DIGSILENT IN FIGURES

> 40
established for more than 40
years

9
international companies

> 180
employees world-wide

> 90%
of our employees are
university graduates

< 5%
staff turnover rate in our
company

> 170
countries in which our
software is used

> 42,000
users of our software
products

> 4,100
international customers

100%
of our annual energy is
covered by our own solar
energy plant

Gold Supporter

iba AG



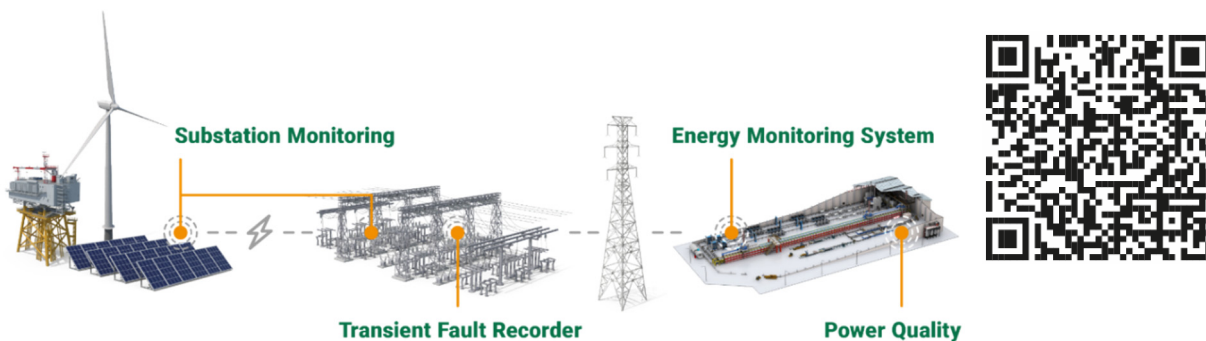
Energy Solutions

iba AG provides dedicated solutions for energy monitoring, substation monitoring, power monitoring, and event monitoring, enabling operators to achieve maximum transparency and reliability across their energy systems. The solutions support power generation, transmission, distribution, and industrial applications with tailored hardware and software products. Existing infrastructures can easily be enhanced with iba technology, helping users improve operational performance, increase asset availability, and achieve greater efficiency through data-driven optimization.

Data Acquisition & Connectivity

The iba system for data acquisition and analysis delivers high-resolution recordings of process and electrical measurements together with key performance indicators for diverse applications. Coordinated hardware and software components ensure reliable operation and efficient analysis. Extensive connectivity to processes and third-party devices makes the iba system highly scalable. Interfaces to databases, message brokers, cloud platforms, and additional file formats enable efficient storage, sharing, and analysis of measurement data.

Power and Process Data – Everything in One System



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MR



Reinhausen

The business purpose of Reinhausen is to ensure load flow, power quality, and availability of critical grid assets for manufacturers and operators. Half of the world's electricity consumption is regulated using MR solutions, making them highly relevant to the success of the energy transition.

Through 50 affiliated companies, the organization is represented in 27 countries at 57 locations. Most recently, 5,500 employees generated revenues of EUR 1.5 billion. The history of the family-owned company spans six generations (since 1868), includes the granting of fundamental patents (1926), and is characterized by continuous, innovation-driven growth

Power Quality

Quality starts with the Voltage

A stable energy supply with a standard-compliant voltage is an important economic success factor for all applications and is often a prerequisite for grid connection. System perturbations due to insufficient voltage quality result in increased costs and could even cause business processes to break down.

Power quality solutions at your place of business contribute to voltage stabilization, compliance with standards and grid connection requirements and a significant increase in grid efficiency. We offer tailor-made solutions for a variety of applications, such as electric mobility, data centers, and airports.



Notes

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Scan to access the ICHQP2026
Conference App

