AGENDA AS OF 9 OCTOBER 2024

Important: This preliminary program is subject to changes. It is strongly recommended to check back regularly.

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TIMETABLE 23RD WIND & SOLAR INTEGRATION WORKSHOP

TUESDAY 08 OCTOBER 2024

Workshop Day 1

	AS OF 08:00: REGISTRATION / FOYER
	LUNCH 13:00 – 14:00
14:00 – 16:00	FENNIA I + II **SESSION 1 – KEYNOTE SESSION**
	COFFEE BREAK & GROUP PHOTO (30 MIN)

16:30 – 18:40	FENNIA II	FENNIA I	NORDIA
	SESSION 2A: GRID FORMING ASPECTS I	**SESSION 2B:** IEA: INTEGRATION OF VRE	**SESSION 2C** HYBRID POWER PLANTS IEA WIND TASK 50

18:40	
	POSTER SESSION / WORKSHOP NETWORKING EVENT – Foyer –

WEDNESDAY 09 OCTOBER 2024

Workshop Day 2

08:30– 10:10	FENNIA II	FENNIA I	NORDIA	PRESS ROOM
	SESSION 3A: GRID FORMING ASPECTS II	**SESSION 3B:** HYBRID POWER PLANTS	**SESSION 3C:** GRID CODE CERTIFICATION I	**SESSION 3D:** POWER SYSTEM ASPECTS I
	COFFEE BREAK (30 MIN)			
10:40 – 12:30	FENNIA II	FENNIA I	NORDIA	PRESS ROOM
	SESSION 4A: GRID FORMING I	**SESSION 4B:** RESSOURCE ADEQUACY ASSESSEMENT	**SESSION 4C:** STABILITY ASPECTS I	**SESSION 4D:** IEA WIND AND PVPS TASK 51 AND 16
	LUNCH 12:30 – 13:30			

13:30 – 15:30	FENNIA II	FENNIA I	NORDIA	PRESS ROOM
	SESSION 5A: GRID FORMING II	**SESSION 5B:** HYDROGEN GRID INTEGRATION	**SESSION 5C:** GRID CODE CERTIFICATION II	**SESSION 5D:** FORECASTING ASPECTS
	COFFEE BREAK (30 MIN)			

16:00 – 18:40	FENNIA II	FENNIA I	NORDIA	PRESS ROOM
	SESSION 6A: GRID FORMING AND WIND POWER	**SESSION 6B:** POWER SYSTEM STUDIES	**SESSION 6C:** STABILITY ASPECTS II	**SESSION 6D:** HYDROGEN ASPECTS I

19:00	
	WORKSHOP NETWORKING EVENT / DINNER – to be booked separately –

THURSDAY 10 OCTOBER 2024

Workshop Day 3

	FENNIA II	FENNIA I	NORDIA	PRESS ROOM
08:30– 10:15	**SESSION 7A:** POWER SYSTEM ASPECTS II	**SESSION 7B:** COUNTRY STUDIES I	**SESSION 7C** SOLAR INTEGRATION ASPECTS	**SESSION 7D:** WIND TURBINE ASPECTS
	COFFEE BREAK (25 MIN)			
10:40 – 12:30	**SESSION 8A:** GRID FORMING III	**SESSION 8B:** POWER SYSTEM ASPECTS III	**SESSION 8C:** OFFSHORE WIND POWER	
	LUNCH 12:30 – 13:30			
13:30 – 15:30	**SESSION 9A:** GRID FORMING IV	**SESSION 9B:** ELECTROLYZER INTEGRATION	**SESSION 9C:** GERMAN EXAMPLES	**SESSION 9D:** IEC SC8A - IEA FORECASTING STANDARD
	COFFEE BREAK (30 MIN)			
16:00 – 18:30	**SESSION 10A:** BATTERY ASPECTS	**SESSION 10B:** HYDROGEN ASPECTS II	**SESSION 10C:** DISTRIBUTION GRID ASPECTS	**SESSION 10D:** WIND POWER ASPECTS
18:30	**POSTER SESSION & ENERGYNAUTICS EVENING**			

FRIDAY 11 OCTOBER 2024

Workshop Day 4

	FENNIA II	FENNIA I	NORDIA
09:00– 10:40	**SESSION 11A:** POWER SYSTEM ASPECTS IV	**SESSION 11B:** COUNTRY STUDIES II	**SESSION 11C:** POWER QUALITY ASPECTS
	COFFEE BREAK (20 MIN)		
11:00 –12:20	**SESSION 12A:** POWER SYSTEM ASPECTS V	**SESSION 12B:** INTEGRATION SOLUTIONS	**SESSION 12C:** GRID INTEGRATION ASPECTS
	SHORT BREAK 12:20 – 12:30		
12:30 – 13:30	**SESSION 13:** **CLOSING SESSION** **PANEL DISCUSSION**		
	LUNCH 13:30 – 14:30		

TUESDAY, 08 OCTOBER 2024

08:00 Start Registration

All times in the session tables show the on-site time in Helsinki, Finland (Eastern European Summer Time /EEST = UTC+3), the highlighted stripes show the starting times of the respective sessions in additional time zones.

14:00 – 14:20	WELCOME
07:00 New York | 08:00 Rio de Janeiro | 13:00 Berlin | 16:30 New Delhi | 18:00 Jakarta | 19:00 Beijing | 20:00 Tokyo | 22:00 Sydney	

- **Welcome Note and Workshop Introduction**
  Dr. Thomas Ackermann (Energynautics, Germany)

14:20 – 16:00	SESSION 1 – KEYNOTE SESSION
07:20 New York | 08:20 Rio de Janeiro | 13:20 Berlin | 16:50 New Delhi | 18:20 Jakarta | 19:20 Beijing | 20:20 Tokyo | 22:20 Sydney	
> Session Chair	Thomas Ackermann (Energynautics, Germany)
14:20 – 15:40	Presentations (20 min. each)

- **Fingrid's Welcome Address**
  Tuomas Rauhala (Director / Senior Vice President System Operations at Fingrid) (Submission-ID WISO24-333)
- **Grid Development and Addressing the Stability Issues of Increased Share of Inverters in Finland**
  Anti Harjula (Fingrid, Finland) (Submission-ID WISO24-334)
- **Power System Stability Enhancement with Grid Forming Controls and Process towards Grid Forming Grid Code**
  Pauli Partinen, O.-P. Janhunen, A. Harjula, L. Linnamaa (Fingrid Oyj, Finland) (Submission-ID WISO24-009)
- **TSO Experience with Converter Driven Stability Management in Outage Planning.**
  Riku Korhonen, V. Hytti, P. Partinen, M. Lindroos (Fingrid, Finland) (Submission-ID WISO24-105)

15:40 – 16:00	Discussions

16:00 – 16:30 COFFEE BREAK | GROUP PHOTO

16:30 – 18:40 SESSION 2A – GRID FORMING ASPECTS I

09:30 New York | 10:30 Rio de Janeiro | 15:30 Berlin | 19:00 New Delhi | 20:30 Jakarta | 21:30 Beijing | 22:30 Tokyo | 00:30 Sydney

> Session Chair Julia Matevosyan (ESIG, USA)

16:30 – 18:30 Presentations (20 min. each)

- **Status of phase II of the ENTSO-E Task Group "Grid Forming capability of Power Park Modules" (TG GFC) working on defining the basis for the Implementation Guidance Document (IDG) for NC RfG 2.0**
  J. Fortmann (HTW Berlin - University of Applied Sciences, Germany), N. Mario (Tennet, Germany), N. Farrokhseresht (Elia Grid, Luxembourg) (Submission-ID WISO24-268)
- **Assessing Compliance of Power Park Modules with Future Grid-Forming Capability Requirements**
  C. Zanabria, T. Prevost, A. Guironnet, V. Costan, C. Cardozo (RTE, France) (Submission-ID WISO24-124)
- **Actual Considerations for Instantaneous Reserve Provided by DC Connected Offshore Wind Farms**
  S. Höhn, F. Rauscher, G. Deiml (TenneT TSO, Germany) (Submission-ID WISO24-033)
- **Real-Time Software-in-the-Loop EMT Models of Wind Turbine and Power Plant Controller: Applicability and Experiences**
  G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy, Denmark | Technical University of Denmark – DTU, Denmark), L. Negi, D. Medina, K.V. Kkuni, R. Sharma, I. Szczesny (Siemens Gamesa Renewable Energy, Denmark), S. Ghimire (Siemens Gamesa Renewable Energy, Denmark | Technical University of Denmark – DTU, Denmark), K. V. Vilerá (Technical University of Denmark – DTU), T. Dreyer (Siemens Gamesa Renewable Energy, Germany), G. Yang (DTU Wind & Energy Systems, Denmark) (Submission-ID WISO24-068)
- **Framework to Identify and Evaluate Dynamic Performance Characteristics of Inverter-Based Resources in a Transmission Network**
  A. Siler (Telos Energy, USA), S. Thakar (Electric Power Research Institute – EPRI, USA), M. Richwine (Telos Energy, USA), **D. Ramasubramanian** (Electric Power Research Institute – EPRI, USA), N. Miller (HickoryLedge, USA), J. Matevosyan (Energy Systems Integration Group – ESIG, USA) (Submission-ID WISO24-047)
- **Grid-Forming Plant Controls for Self-Supply and Black Start Applications of Battery Energy Storage Systems**
  I. Arvanitis, S. Henninger (Fluence Energy, Germany) (Submission-ID WISO24-227)

18:30 – 18:40 Discussions

16:30 – 18:40 SESSION 2B – IEA: GLOBAL EXPERIENCE AND EMERGING CHALLENGES FOR VRE INTEGRATION

09:30 New York | 10:30 Rio de Janeiro | 15:30 Berlin | 19:00 New Delhi | 20:30 Jakarta | 21:30 Beijing | 22:30 Tokyo | 00:30 Sydney

> Session Chair Juha Kiviluoma (VTT, Finland)

16:30 – 18:10 Presentations (20 min. each)

- **Integrating Solar and Wind: Global experience and emerging challenges**
  J. Jorquera (IEA, France) (Submission-ID WISO24-326)
- **Emerging Challenges in the Future Swedish Power Systemdyson**
  O. Lennerhag (Svenska kraftnät, Sweden) (Submission-ID WISO24-328)
- **Benefits of Interregional Transmission for Resilience**
  D. Lew (ESIG, USA) (Submission-ID WISO24-032)
- **Increasing Curtailment of Wind and Solar in the Australian NEM: Observations and Solutions for Continuing Success**
  J. Dyson (Greenview Strategic Consulting, Australia) (Submission-ID WISO24-213)
- **Recommended Practices for Wind and Solar Integration Studies**
  H. Holttinen (Recognis Oy / IEA Wind Task 25 Operating Agent, Finland), J. Kiviluoma, N. Helistö (VTT, Finland), D. Flynn (UCD, Ireland), N. Cutululis (DTU, Denmark), B. Frew (NREL, USA), M. Korpås (NTNU, Norway) (Submission-ID WISO24-145)

18:10 – 18:40 Discussions

16:30 – 18:40	SESSION 2C – HYBRID POWER PLANTS – IEA WIND TASK 50
09:30 New York | 10:30 Rio de Janeiro | 15:30 Berlin | 19:00 New Delhi | 20:30 Jakarta | 21:30 Beijing | 22:30 Tokyo | 00:30 Sydney	
> Session Chair	Vahan Gevorgian (NREL, USA) + Kaushik Das (DTU – Technical University of Denmark, Denmark)
16:30 – 18:10	Presentations (20 min. each)

- **Open-Source Modelling of Electrical Control of Hybrid Power Plants**
  K. Das (DTU – Technical University of Denmark, Denmark) (Submission-ID WISO24-318)
- **Experiences from Control, Test and Demonstration of Hybrid Power Plants**
  V. Gevorgian (NREL, USA) (Submission-ID WISO24-319)
- **A Developer's View on Design Factors for Hybrid Power Plants**
  H. Abildgaard (Better Energy, Denmark) (Submission-ID WISO24-320)
- **New IEC Work on Validation of Frequency Domain and EMT Models**
  P. Sørensen (DTU, Denmark) (Submission-ID WISO24-337)
- **Control Architectures for the Interoperability of Hybrid Power Plants**
  D. V Pombo (EPRI Europe, Ireland) (Submission-ID WISO24-317)

18:10 – 18:40	Discussions

18:40 – 20:00 POSTER SESSION / NETWORKING EVENT

Foyer

WEDNESDAY, 09 OCTOBER 2024

08:30 – 10:10 SESSION 3A – GRID FORMING ASPECTS II

01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney

> Session Chair Carmen Cardozo (RTE, France)

08:30 – 09:50 Presentations (20 min. each)

- **Assessing the Subsynchronous Damping Capability of an HVDC Link Using Grid-Forming Control**
  V. Costan, C. Cardozo, P. Rault (RTE, France) (Submission-ID WISO24-041)
- **Post-Fault Load Flow Control through Grid Forming Wind Turbines Connected to Bipolar HVDC System With Offshore AC-Side Pole Coupling**
  C. Klein, P. Düllmann, W. Leterme (IAEW RWTH Aachen, Germany) (Submission-ID WISO24-089)
- **Transient Stability Enhancement of Multi-Infeed AC Offshore Islands for Large-Scale HVDC Interconnection and Wind Integration**
  E. Tsotsopoulou, V. Psaras (WSP, United Kingdom), A. Paspatis (Manchester Metropolitan University, United Kingdom), D. Vozikis, J. Li, A. Emhemed (WSP, United Kingdom) (Submission-ID WISO24-059)
- **InterOPERA: Enabling Multi Terminal Multi Vendor HVDC Grids**
  S. Ghimire (Siemens Gamesa, Denmark) (Submission-ID WISO24-307)

09:50 – 10:10 Discussions

08:30 – 10:10 SESSION 3B – HYBRID POWER PLANTS

01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney

> Session Chair Jan-David Schmidt (Energynautics, Germany)

08:30 – 10:00 Presentations (18 min. each)

- **Hybrid Power Plant Control in Weak Grids: Grid Following vs.Grid Forming**
  F. Shahnazian, K. Das (Technical University of Denmark – DTU, Denmark), R. Yan (University of Queensland, Australia), P. E. Sørensen (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-088)
- **Formal Grid Integration of Photovoltaic and Wind Power Using the Model Reference Control Approach**
  H. Schulte, J. Fortmann, J. Brunner (University of Applied Sciences Berlin – HTW, Germany) (Submission-ID WISO24-287)
- **Profitability of Solar-based Hybrid Power Plant in Northern Europe**
  M. Gupta, J. P. Murcia Leon, M. Friis-Møller, K. Das (DTU Wind, Denmark) (Submission-ID WISO24-256)
- **Ultra-Resilient Dynamic Microgrid Formation with Renewable Integration**
  C. Lin, **P. Zhang,** Y. A. Shamash (Stony Brook University, USA), Z. Lin (University of Virginia, USA) (Submission-ID WISO24-294)
- **Software Tool for the Feasibility Analysis of Stationary Battery Energy Storage Systems**
  J. I. Pérez-Díaz, D. Fernández-Muñoz (Universidad Politécnica de Madrid, Spain) (Submission-ID WISO24-264)

10:00 – 10:10 Discussions

08:30 – 10:10 SESSION 3C – GRID CODE CERTIFICATION I

01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney

> Session Chair Björn Andresen (Aarhus University, Denmark)

08:30 – 09:50 Presentations (20 min. each)

- **IEC 61400-21-4: Measurement and Assessment of Electrical Characteristics – A Standardized Way to Perform Grid Compliance Test & Measurements at Component and Subsystem Level for Wind Turbines**
  B. Andresen (Aarhus University, Denmark), U. Jassmann (R&D Test Systems, Denmark), T. Dreyer (Siemens Gamesa Renewable Energy, Germany), F. Santjer (FGW e.V., Germany), G. Quistorf, A. Zuga (Fraunhofer IWES, Germany) (Submission-ID WISO24-138)
- **WTG Grid Compliance Testing and Validation Part 1: Grid-Converter Test Rig Measurement and Verification based on the IEC 61400-21-4**
  O. Curran (Siemens Gamesa Renewable Energy, Ireland), M. Neshati (Siemens Gamesa Renewable Energy, Denmark), G. M. G. Guerreiro (Siemens Gamesa Renewable Energy | Technical University of Denmark – DTU, Denmark), T. Dreyer (Siemens Gamesa Renewable Energy, Germany), S. Tentzerakis (UL International, Germany) (Submission-ID WISO24-182)
- **WTG Grid Compliance Testing and Validation Part 2: Combined Test Rig- and Prototype WTG-Based Model Validation Proposal**
  G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy | Technical University of Denmark – DTU, Denmark), R. Sharma (Siemens Gamesa Renewable Energy, Denmark), O. Curran (Siemens Gamesa Renewable Energy, Ireland), M. Neshati, P. Kumar (Siemens Gamesa Renewable Energy, Denmark) (Submission-ID WISO24-172)
- **30 MW Test Facility for Validation of Multi-Megawatt Wind Turbine Models in Future Offshore Energy Systems**
  G. Quistorf, T. Jersch (Fraunhofer IWES, Germany) (Submission-ID WISO24-200)

09:50 – 10:10 Discussions

08:30 – 10:10 SESSION 3D – POWER SYSTEM ASPECTS I

01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney

> Session Chair Nigel Schofield (University of Huddersfield, United Kingdom)

08:30 – 09:50 Presentations (20 min. each)

- **Utilizing Dynamic Capacity of VSC-HVDC Systems for Improved Congestion Management**
  K. Agrawal (CITCEA-UPC, Spain | Hitachi Energy Research | Technical University Munich – TUM, Germany), K. Schönleber (Hitachi Energy Research, Germany), M. Dominguez Librandi (Technical University of Munich – TUM, Germany), E. Prieto Araujo, O. Gomis-Bellmunt (CITCEA-UPC, Spain) (Submission-ID WISO24-234)
- **Who will Pay for Offshore Wind Integration? Impact of Bidding Zone Design**
  P.-P. Schierhorn, **R. Alsayyed**, A. Hösl (Energynautics, Germany) (Submission-ID WISO24-301)
- **Demonstration of Run-of-river Hydropower Plant and Battery as a Black-start Capable Unit**
  W. Yan, **V. Gevorgian** (NREL, USA) (Submission-ID WISO24-229)
- **Coordinated Black Start Feasibility from a Bipolar MTDC Network Integrating Multiple Offshore Wind Power Plants**
  A. Scott, A. Khan, B. Gomersall, B. Marshall (The National HVDC Centre, United Kingdom) (Submission-ID WISO24-201)

09:50 – 10:10 Discussions

10:10 – 10:40 COFFEE BREAK

10:40 – 12:30 SESSION 4A – GRID FORMING I

03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney

> Session Chair Bernhard Schowe-von der Brelie (FGH Research Association, Germany)

10:40 – 11:40 Presentations (20 min. each)

- **GFM Benchmark: A Cross-Vendor Comparison of Grid Forming Converters based on Lab Testing**
  R. Singer, P. Ernst (Fraunhofer ISE, Germany), C. Schöll (TransnetBW, Germany), S. Küchler (50Hertz Transmission, Germany), F. Rauscher (TenneT TSO, Germany), J. Massmann (Amprion, Germany), S. Rogalla (Fraunhofer ISE, Germany) (Submission-ID WISO24-123)
- **Needs of the German Power System and the Coming New Ancillary Service for Inertia**
  H. Popella (Amprion, Germany) **E. Quitmann** (ENERCON Global, Germany) (Submission-ID WISO24-216)
- **Technical Requirements and Validation Procedure for the Participation in the German Inertia Market**
  K. Malekian (ENERCON Global, Germany), **T. Buelo** (SMA Solar Technology, Germany) (Submission-ID WISO24-314)

  Paper:
- **Requirements and Verification Procedures for Grid-Forming Units – the German Approach to Ensure Power System Stability under Very High Penetration of Inverter-Based Sources**
  K. Malekian, **E. Quitmann** (ENERCON Global, Germany), T. Bülo (SMA Solar Technology, Germany), J. Massmann (Amprion, Germany), M. Schmieg (DIgSILENT, Germany), C. Wulkow (VDE FNN, Germany) (Submission-ID WISO24-216)

11:40 – 12:30 Discussions

10:40 – 12:30 SESSION 4B – RESOURCE ADEQUACY ASSESSMENT

03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney

> Session Chair Marlene Petz (APG, Austria)

10:40 – 11:40 Presentations (20 min. each)

- **Resource Adequacy Assessment – Steps of Development from Early Analyses until Implementation of the Current EU Legislative Framework**
  R. Pfeiffer (Amprion, Germany), M. Petz (Austrian Power Grid, Austria) (Submission-ID WISO24-131)
- **European Resource Adequacy Assessment (ERAA) - methodological development and challenges**
  G. Iotti (Austrian Power Grid, Austria), N. Müller (Amprion, Germany) (Submission-ID WISO24-132)
- **ESIG-Report: New Resource Adequacy Criteria for the Energy Transition: Modernizing Reliability Requirements**
  J. Okullo (ESIG, USA) (Submission-ID WISO24-324)

11:40 – 12:30 Discussions

10:40 – 12:30 SESSION 4C– STABILITY ASPECTS I

03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney

> Session Chair Jian Sun (Rensselaer Polytechnic Institute, USA)

10:40 – 12:00 Presentations (20 min. each)

- **Investigation of HVDC Controller Interaction in Meshed AC Grid using Impedance-Based Stability Criterion**
  R. Steinert, L. I. Colina Jiménez, M. Latinovic (TenneT TSO, Germany) (Submission-ID WISO24-253)
- **Bridging Theory and Practice: Managing Stability in the Future Swedish Power System**
  O. Lennerhag, R. Rogersten (Svenska kraftnät, Sweden) (Submission-ID WISO24-290)
- **Immittance-based Black-Box Model Identification via Vector Fitting Methods for Offshore Wind Power Plant Components**
  J. Haugaard, F. Malmquist, **S. Ghimire**, G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy, Denmark | Technical University of Denmark – DTU, Denmark), E. Guest (Siemens Gamesa Renewable Energy, Denmark), G. Yang (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-267)
- **Impedance-Based Power System Stability Analysis Based on a Power Quality Assessment Toolbox – Advantages and Challenges**
  B. Weise, T. Würl (DIgSILENT, Germany) (Submission-ID WISO24-255)

12:00 – 12:30 Discussions

10:40 – 12:30 SESSION 4D – IEA WIND AND PVPS TASK 51 AND 16

03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney

> Session Chair John Zack (MESO, USA)

10:40 – 12:00

IEA Wind and PVPS Task 51 and 16: Review and Panel discussion on Forecasting and Data needs for the Weather driven Energy System

- **Overview of IEA Wind Task 51 "Forecasting for the Weather-driven Energy System" Activities**
  C. Möhrlen (WEPROG, Denmark), J. Zack (MESO, USA), Denmark), G. Giebel (Technical University of Denmark – DTU, Denmark), C. Draxl (EPRI, USA), H. Frank (Deutscher Wetterdienst, Germany) (Submission-ID WISO24-272)
- **Overview of IEA PVPS Task 16 activities**
  K. P. Nielsen (Danish Meteorological Institute – DMI, Denmark) (Submission-ID WISO24-308)
- **Review of the Minute-Scale Forecasting Workshops and Resulting Activities**
  J. Zack (MESO, USA) (Submission-ID WISO24-313)
- **Panel Discussion of Forecasting and Data Needs for the Weather Driven Energy System**
  Moderator: **Corinna Möhrlen** (WEPROG, Denmark)
  Panelists: **Kristian Pagh** Nielsen (DMI, Denmark), **John Zack** (MESO, USA), **Amir Moshari** (EirGrid, Ireland), **Jie Yan** (North China Electric Power University – NCEPU, China), **Leonard Hülsmann** (Energynautics, Germany), **Hannele Holttinen** (Recognis, Finland) (Submission-ID WISO24-310)

12:00 – 12:30 Discussions

12:30 – 13:30 LUNCH BREAK

13:30 – 15:30 SESSION 5A– GRID FORMING II

06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney

> Session Chair Roland Singer (Fraunhofer ISE, Germany)

13:30 – 15:10 **Presentations (20 min. each)**

- **An Overview of the Damping Behavior of a Grid-Forming Converter**
  L. Salagamsetty, L. Cai (University of Rostock, Germany) (Submission-ID WISO24-170)
- **Technology Specific Challenges of Grid Forming Capabilities: Aspects to Consider when Setting Up GFM Requirements**
  T. Bülo, B. Fischer, A. Knobloch (SMA Solar Technology, Germany) (Submission-ID WISO24-189)
- **Analysis of the Influence of Grid Forming Control on Power System Oscillations in Large Power Systems**
  L. Cai (University of Rostock, Germany), Y. Hou (Shandong Academy of Sciences, China), U. Karaagac (Hong Kong Polytechnic University, China) (Submission-ID WISO24-140)
- **Comparative Analysis of a Virtual Synchronous Machine and a Synchronverter Based on Grid-Forming Benchmark Scenarios**
  P. Weber, A. Bisseling, L. Hörmann, M. Suriyah, T. Leibfried (IEH Karlsruhe Institute of Technology – KIT, Germany) (Submission-ID WISO24-142)
- **Transient Challenges of a BESS Grid-Forming Integration Project**
  J.-F. Haché, O. Saad (Hydro-Québec, Canada), H. Honvo (EVLO, Canada), P.-L. Martel, R. Desrochers, A. D. Sy (Hydro-Québec, Canada) (Submission-ID WISO24-008)

15:10 – 15:30 **Discussions**

13:30 – 15:30 SESSION 5B– HYDROGEN GRID INTEGRATION

06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney

> Session Chair Bernd Engel (TU Braunschweig – elenia, Germany)

13:30 – 14:50 **Presentations (20 min. each)**

- **Grid friendly Hydrogen – How Advanced Power Electronics Can Support Power Grids when Connecting Large Scale Electrolysis Projects**
  A. Unruh (SMA Altenso, Germany) (Submission-ID WISO24-198)
- **Grid Connection Requirements for Power-to-Gas Facilities**
  R. Bogner (TenneT TSO, Germany), J. Weidner (50Hertz Transmission, Germany), V. Schulz, H. Popella (Amprion, Germany), C. Schöll (TransnetBW, Germany) (Submission-ID WISO24-260)
- **Hydrogen Economy in Finland**
  P. Salokoski (CLIC Innovation, Finland) (Submission-ID WISO24-331)
- **Power-to-Liquid Fuel Export Potential from Chile to Europe on the Pathway to Carbon Neutrality**
  L. Jansen, E. Duque Pérez, B. Häckner (Fraunhofer IEE | University of Kassel, Germany), M. Pfennig (Fraunhofer IEE, Germany) (Submission-ID WISO24-233)

14:50 – 15:30 **Discussions**

13:30 – 15:30	SESSION 5C– GRID CODE CERTIFICATION II
06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney	
> Session Chair	Owen Curran (Siemens Gamesa Renewable Energy, Ireland)
13:30 – 15:18	Presentations (18 min. each)

- **IECRE OD 009 - A New International Certification Scheme on Grid Connection Requirements**
  B. Schowe-von der Brelie (FGH Research Association, Germany), M. Holzapfel (Vestas Wind Systems, Denmark) (Submission-ID WISO24-273)
- **EMT Models for Grid Integration: International Requirements, Validation Challenges, and Compliance**
  M. Ali, B. Schowe-von der Brelie, J. Doell, E. Makki, Y. Ayadi (FGH, Germany) (Submission-ID WISO24-276)
- **Compliance Criteria for Power Oscillation Damping Functions in Power Electronic Interfaced Resources**
  P. Demey (RTE, France), J. Noupowo (University of Paris-Saclay – CNRS, France), **C. Cardozo**, A. Guironnet, G. Torresan (RTE, France), S. Tliba (University of Paris-Saclay – CNRS, France) (Submission-ID WISO24-045)
- **Application of Vector-Based Validation Measures in Power-Hardware-In-The-Loop Testing of Wind Turbines**
  F. Hans, S. Mondal, A. Zuga, G. Quistorf (Fraunhofer IWES, Germany) (Submission-ID WISO24-117)
- **Lifetime Grid Compliance & Voltage Sensitivity**
  P. H. Nielsen, M. Holzapfel, I. Pereira Barreira (Vestas Wind Systems, Denmark) (Submission-ID WISO24-127
- **Frequency Scan Testing of Grid-Forming Resources**
  S. Shah, W. Yan, P. Koralewicz, V. Gevorgian, R. Wallen (National Renewable Energy Laboratory, USA) (Submission-ID WISO24-283)

15:18 – 15:30	Discussions

13:30 – 15:30	SESSION 5D– FORECASTING ASPECTS
06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney	
> Session Chair	Andreas Hösl (Energynautics, Germany)
13:30 – 14:50	Presentations (20 min. each)

- **Quality-Assessment of High-Resolution Weather Forecasts and Gap-Filling of Real-Time Measurements for Improved Predictability in Extreme Events**
  C. Möhrlen, J. U. Jørgensen (WEPROG, Denmark), J. Arnqvist (University of Uppsala, Sweden) (Submission-ID WISO24-208)
- **Solar Forecasting by Meso-Ensemble Prediction System – Case Study of Hokkaido Area in Japan and Challenges in Areas with Winter Snowfall**
  H. Ohtake, T. Takamatsu, K. Nakajima, T. Oozeki (National Institute of Advanced Industrial Science and Technology – AIST, Japan), K. Yamaguchi (Japan Weather Association – JWA, Japan), T. Nakaegawa (Meteorological Research Institute, Japan) (Submission-ID WISO24-173)
- **Estimation and Aggregation of Wind Power Forecasts Utilizing Master Data and Zero-Shot Learning**
  D. Beinert, J. Schütz, A. Braun (Fraunhofer IEE, Germany) (Submission-ID WISO24-114)
- **Residential Baseload-Forecasting by Applying Recurrent Neural Networks with Gated Recurrent Units on Field Data**
  M. Lüdecke, M. Bialojahn, M. Meinert, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-212)

14:50 – 15:30	Discussions

15:30 – 16:00 COFFEE BREAK

16:00 – 18:30 SESSION 6A – GRID FORMING AND WIND POWER

09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney

> Session Chair Jens Fortmann (HTW Berlin - University of Applied Sciences, Germany)

16:00 – 18:00 Presentations (20 min. each)

- **Stability and Interaction Analysis of Grid-Forming Type IV Wind Turbines**
  H. Udawatte (Monash University, Australia), M. H. Ravanji (Sharif University of Technology, Iran), B. Bahrani (Monash University, Australia) (Submission-ID WISO24-146)
- **Enabling Islanding and Re-Synchronization of Grid-Forming Offshore Wind Turbine Generators**
  S. Ghimire, (Siemens Gamesa Renewable Energy, Denmark | Technical University of Denmark – DTU, Denmark), G. Amico (Siemens Gamesa Renewable Energy, United Kingdom), K. Vatta Kkuni (Siemens Gamesa Renewable Energy, Denmark), G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy, Denmark | Technical University of Denmark – DTU, Denmark), K. H. Jensen (Siemens Gamesa Renewable Energy, Denmark), G. Yang (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-065)
- **Extended Functionalities for Stable Wind Farm Interconnections with GFM Inverters and Energy Storage**
  A. Falk, **D. Duckwitz**, A. Knobloch, R. Bhatia, A. Gerdemann (SMA Solar Technology AG, Germany) (Submission-ID WISO24-199)
- **Grid-Forming Control and Operational Strategies for Offshore Wind Turbines Incorporating Electrical and Mechanical Modelling**
  C. Neumann, H.-G. Eckel (University of Rostock, Germany) (Submission-ID WISO24-129)
- **Grid Support with Hybrid GFL and GFM Converter in Type IV Wind Generator**
  E. Watanabe (COPPE / Federal University of Rio de Janeiro, Brazil), F. Lima (Federal University of Ceará | COPPE / Federal University of Rio de Janeiro, Brazil), L. Lima (COPPE / Federal University of Rio de Janeiro, Brazil), C. Fernandes, G. Neves (COPPE / Federal University of Rio de Janeiro, | CEFET - RJ, Brazil), B. Zoghdar, M. El-Sied (TotalEnergies, Brazil) (Submission-ID WISO24-191)
- **The Integration Characteristics Analysis and Practice of Grid Forming Wind Turbine**
  J. Zhang, W. Wang, Q. Li, S. Li, S. Qin (China Electric Power Research Institute, China) (Submission-ID WISO24-100)

18:00 – 18:30 Discussions

16:00 – 18:30 SESSION 6B – POWER SYSTEM STUDIES

09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney

> Session Chair Debra Lew (ESIG, USA)

16:00 – 18:00 Presentations (20 min. each)

- **Wide-area Oscillations Damping Services by IBRs without Pre-curtailment**
  V. Gevorgian (NREL, USA) (Submission-ID WISO24-016)
- **A Deeper Perspective on IBR-Driven Oscillations**
  D. Brahma, M. O'Malley, B. Chaudhuri, J. Bialek (Imperial College London, United Kingdom) (Submission-ID WISO24-316)
- **Navigating Power Fluctuations in Renewable-Dominated Grids with Inertia Management**
  D. V Pombo (EPRI Europe, Ireland), **D. Alonso Sørensen** (Arteche | University of the Basque Country, Spain) (Submission-ID WISO24-081)
- **Sub-Synchronous Oscillation Damping by means of Large-Scale Inverter-Based PV and Energy Storage Systems**
  A. Knobloch (SMA Solar Technology, Germany), M. Hau (Fraunhofer IEE, Germany), D. Duckwitz (SMA Solar Technology, Germany), M. Wecker (Fraunhofer IEE, Germany), F. Castro Elgueta, G. Lammert, C. Hardt (SMA Solar Technology, Germany) (Submission-ID WISO24-185)
- **Interrelation Between Inertia and Frequency-Dependent Active Power Control in Case of System Splits**
  S. Walujski, T. Sauer, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-025)
- **Real World Case Study of Impedance-Based Analysis of System-wide Subsynchronous Oscillations Involving IBRs**
  S. Shah (National Renewable Energy Laboratory, USA), J. Lu, N. Modi (Australian Energy Market Operator – AEMO, Australia) (Submission-ID WISO24-282)

18:00 – 18:30 Discussions

16:00 – 18:30 SESSION 6C – STABILITY ASPECTS II

09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney

> Session Chair Jian Sun (Rensselaer Polytechnic Institute, USA)

16:00 – 18:00 Presentations (20 min. each)

- **Stability and Power Quality Considerations for Energy Augmentation of BESS Projects**
  A. Jenkins, S. Deeney, C. Stauffer (Mitsubishi Electric Power Products, USA) (Submission-ID WISO24-206)
- **Frequency Domain Modelling of the First Australian Renewable Energy Zone: Stability and Harmonic Emissions Assessment**
  J. David (ACEREZ, Australia), **S. Bolik** (Siemens PTI, United Kingdom), K. Summers, M. Seidaliseifabad, E. Rivero-Barneto (ACEREZ, Australia) (Submission-ID WISO24-288)
- **Frequency-Domain Network Modelling for the Identification of Converter-Grid Resonance During Power System Restoration**
  B. Sütő, D. Raisz (Budapest University of Technology and Economics, Hungary) (Submission-ID WISO24-226)
- **Broadband Impedance Measurement Method and Device for Renewable Energy Power Units**
  Y. Xiao, G. Li, W. Wang, G. He (China Electric Power Research Institute, China) (Submission-ID WISO24-070)
- **Impact of Active Current Priority IBR Controls on Grid Voltage Stability**
  C. Padinjara Thathayil (GE Vernova, India) D. Howard (GE Vernova, USA) (Submission-ID WISO24-193)
- **Small-Signal Stability Analysis of Energy Island Type Systems Considering Parallel Operation of Grid-Following and Grid-Forming Converters**
  J. Bollerslev (Energinet, Denmark), H. Wu (Aalborg University, Denmark), X. Wang (Aalborg University, Denmark | KTH Royal Institute of Technology , Sweden), J. Kwon, Y. Liao (Energinet, Denmark) (Submission-ID WISO24-043)

18:00 – 18:30 Discussions

16:00 – 18:15 SESSION 6D – HYDROGEN ASPECTS I

09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney

> Session Chair Hannele Holttinen (Clic Innovation, Finland)

16:00 – 17:40 Presentations (20 min. each)

- **The Role of Hydrogen Storage and Pipelines in Highly Sector Coupled European Energy Systems**
  M. Koivisto, S. Yamujala (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-079)
- **Flexible Electrolysers as a Tool for Renewable Energy Integration and Congestion Management: Comparison of Different Allocation Methods in a Transmission System Case Study for Germany 2030**
  J. Kisse, P. Hahn (University of Kassel, Germany), Y. Harms, M. Braun (University of Kassel | Fraunhofer IEE, Germany) (Submission-ID WISO24-176)
- **Fault Ride-Through Challenges of Colocation of Renewable Hydrogen Power Plant**
  Y. Sun (Shell Global Solutions International | Eindhoven University of Technology, Netherlands), **L. Beloqui Larumbe** (Shell Global Solutions International, Netherlands), H. Mu, D. Yang (Eindhoven University of Technology, Netherlands) (Submission-ID WISO24-271)
- **Towards Optimization of Harmonic Currents Emissions in Plants for Production of Green Hydrogen**
  G. Arnold, K. Virani (Fraunhofer IEE, Germany) (Submission-ID WISO24-223)
- **Levelised Cost Based Approach for Integration of Renewable Hydrogen in Industrial Processes**
  M. Rizwan (DNV, Norway), D. Geerdink (DNV, Netherlands), M. S. Bogen (DNV, Norway), M. Eijgelaar (DNV, Netherlands), E. A. Hektor (DNV, Norway) (Submission-ID WISO24-031)

17:40 – 18:15 Discussions

19:30 NETWORKING EVENT/DINNER

– To be booked separately –

18:45 Meeting Time
19:00 – 19:30 Welcome

THURSDAY, 10 OCTOBER 2024

08:30 – 10:15 SESSION 7A – POWER SYSTEM ASPECTS II

01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney

> Session Chair Jako Kilter (Tallinn University of Technology – TalTech, Estonia)

08:30 – 09:50 Presentations (20 min. each)

- **Prospective Short-Circuit Current in the Future Dutch 380 kV Transmission Network**
  T. Mai, B. v. Hulst, R. Versteegen (TenneT TSO, Netherlands) (Submission-ID WISO24-136)
- **Managing High Voltage Constraints in Transmission Grids**
  J. His, E. Monnot, (EDF R&D, France), **L. Chatonnet** (EDF DTG, France) (Submission-ID WISO24-053)
- **Flow Based Market Coupling Motivated Network Modelling for High-VRE Future Scenarios**
  A. Hösl, R. Alsayyed (Energynautics, Germany) (Submission-ID WISO24-300)
- **Modelling and Validation of the Nordic Transmission System Based on Open Data**
  H. Hodel, **P. Chen**, L. Göransson, O. Carlson (Chalmers University of Technology, Sweden) (Submission-ID WISO24-030)

09:50 – 10:15 Discussions

08:30 – 10:15 SESSION 7B – COUNTRY STUDIES I

01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney

> Session Chair Eckard Quitmann (ENERCON, Germany)

08:30 – 09:50 Presentations (20 min. each)

- **Japan's Green New Deal Scenario for 2035 and 2050**
  J. Asuka (Tohoku University, Japan), K. Sato (Tokyo Keizai University, Japan), S.-J. Park (Kansai Gakuin University, Japan), H. Matsubara (Institute for Sustainable Energy Policies, Japan, **Y. Yasuda** (Institute for Sustainable Energy Policies, Japan | University of Strathclyde, United Kingdom), M. Utagawa (National Institute of Advanced Industrial Science and Technology, Japan) (Submission-ID WISO24-165)
- **High-Fidelity Modeling Framework of Grid Forming Inverter-Based Resources to Improve Dynamic Stability of a Future Japanese Power System**
  R. Pandey, K. Kirihara, T. Yoshihara, O. Tomobe (Hitachi R&D, Japan) (Submission-ID WISO24-220)
- **Possible Transition of Japan's Power System with Flexibility Supply from Distributed Resources**
  K. Ogimoto, Y. Iwafune, K. Kataoka (The University of Tokyo, Japan), S. Segawa, H. Azuma, A. Isonaga, S. Fukutome (J-POWER Business Service, Japan) (Submission-ID WISO24-214)
- **Assessment of Power Quality of Renewable Plants: Experience of Western Region of India**
  V. Puppala, M. V. Rao, P. K. Sanodiya, S. Chitturi, **O. Kumbhar**, S. S. Raghuwanshi, P. Seshadri (Grid Controller of India, India) (Submission-ID WISO24-103)

09:50 – 10:15 Discussions

08:30 – 10:00	SESSION 7C – SOLAR INTEGRATION ASPECTS
01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney	
> Session Chair	Damian Flynn (University College Dublin, Ireland)
08:30 – 09:30	Presentations (20 min. each)

- **Evaluating the Synthetic Inertia of a Real Solar Photovoltaic Power Facility**
  R. Villena-Ruiz, **J. Jiménez-Ruiz**, A. Honrubia-Escribano (University of Castilla-La Mancha, Spain), J. C. Hernández (University of Jaén, Spain), E. Gómez-Lázaro (University of Castilla-La Mancha, Spain) (Submission-ID WISO24-019)
- **Tackling Solar Energy Integration Challenges on the Ireland and Northern Ireland Power System**
  A. Moshari, S. Aldahmor, M. Hurtado, T. Kërçi, S. Tweed, E. Kennedy (EirGrid, Ireland) (Submission-ID WISO24-261)
- **Country Study Case: PV Integration Grand Bahama**
  P. Henzel, P.-P. Schierhorn (Energynautics, Germany) (Submission-ID WISO24-299)

09:30 – 10:00	Discussions

08:30 – 10:00	SESSION 7D – WIND TURBINE ASPECTS
01:30 New York | 02:30 Rio de Janeiro | 07:30 Berlin | 11:00 New Delhi | 12:30 Jakarta | 13:30 Beijing | 14:30 Tokyo | 16:30 Sydney	
> Session Chair	Sigrid Bolik (Siemens PTI, United Kingdom)
08:30 – 09:30	Presentations (20 min. each)

- **Extended Chopper Capability for Wind Turbines with Doubly Fed Induction Generator in Wind Farms with Weak Grid Connection**
  C. Prignitz, M. Laubrock, C. Wessels (Nordex Energy SE, Germany) (Submission-ID WISO24-112)
- **Development of Type IV WTG Short Circuit Model and Integration into Commercial Short Circuit Software**
  G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy, Denmark | Technical University of Denmark – DTU, Denmark), T. Nguyen, C. Weldy (ASPEN, USA), R. Abritta (Norwegian University of Science and Technology – NTNU, Norway), C. Briscoe, P. Mahat, R. Sharma (Siemens Gamesa Renewable Energy, Denmark) (Submission-ID WISO24-236)
- **Validation and Performance Aspects of a MFRT Event for a Type 3 Windfarm in Australia**
  M. Laubrock (Nordex Energy, Germany), M. Gordon (Nordex Oceania, Australia), M. Gómez Nogales, L. Pérez Andrés (ACCIONA Energía, Spain), M. Shafiei (ACCIONA Energía, Australia) (Submission-ID WISO24-196)

09:30 – 10:00	Discussions

10:00 – 10:40 COFFEE BREAK

10:40 – 12:30	SESSION 8A – GRID FORMING III
03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney	
> Session Chair	Malte Laubrock (Nordex Energy SE, Germany)
10:40 – 12:00	Presentations (20 min. each)

- **Estimation of Grid-Supporting Parameters of Generation Units Tested by Passive FRT-Tester**
  R. Klosse (EESYST, Germany), F. Santjer (FGW, Berlin) (Submission-ID WISO24-239)
- **Grid-Forming Control: Identification through Benchmark and Hardware-in-the-Loop Testing**
  P. Hackl, Z. Zhang, R. Schuerhuber (Graz University of Technology, Austria) (Submission-ID WISO24-036)
- **Frequency Analysis of Droop-Controlled Grid-forming Inverter: Introducing a Current Feed-Forward Control**
  A. Hebing, L. Jung, A. Pfendler, J. Hanson (TU Darmstadt, Germany) (Submission-ID WISO24-119)
- **Capability of IBR Technologies to Exhibit Small-Signal Voltage Source Characteristics**
  D. Howard, I. Vieto, S. Rao (GE Vernova Consulting Services, USA) (Submission-ID WISO24-163)

12:00 – 12:30	Discussions

10:40 – 12:30	SESSION 8B – POWER SYSTEM ASPECTS III
03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney	
> Session Chair	Ralph Pfeiffer (Amprion, Germany)
10:40 – 12:00	Presentations (20 min. each)

- **The Impact of Variable Renewable Energy (VRE) on the Power System Stability – The Renaissance of Synchronous Condensers**
  R. Neumann, G. Maier, S. Kadam, W. Ladstätter (Andritz Hydro, Austria) (Submission-ID WISO24-315)
- **Advanced Production Simulation and Unit Commitment in PyPSA**
  P.-P. Schierhorn, **R. Alsayyed**, A. Hösl, S. Hempel (Energynautics, Germany) (Submission-ID WISO24-298)
- **Pushing the Limits in a Modified Nordic Test System with High Penetration of Renewable Energy Sources**
  E. Scheiner, I. Burlakin (Friedrich-Alexander-University Erlangen-Nuremberg – FAU, Germany), A. Kuri (Siemens, Germany), G. Mehlmann, M. Luther (Friedrich-Alexander-University Erlangen-Nuremberg – FAU, Germany) (Submission-ID WISO24-257)
- **Decision Dependent Uncertainty Modelling Methodology for Renewable-dominant Power Systems**
  W. Wang, Z. Wang, S. Feng (China Electric Power Research Institute, China), F. Liu (Tsinghua University, China), Y. Hou (The University of Hong Kong, China), B. Hu (State Key Laboratory of Power Transmission Equipment & System Security and New Technology, China) (Submission-ID WISO24-054)

12:00 – 12:30	Discussions

10:40 – 12:30	SESSION 8C– OFFSHORE WIND POWER
03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney	
> Session Chair	Frank Martin (European Energy, Denmark)
10:40 – 12:00	Presentations (20 min. each)

- **Control of an MMC-Based HVDC Link for Offshore Wind Farms to Enable Reliable Ancillary Service Provision via Wind Turbines**
  M. Hildebrandt, C. Neumann, N. Hammes, M. Schütt, H.-G. Eckel (University of Rostock, Germany) (Submission-ID WISO24-071)
- **Adaptive Fault Current Limiting Control of MMC for Protection of Multiterminal HVDC Systems**
  P. Huang, **S. Shah** (National Renewable Energy Laboratory, USA) (Submission-ID WISO24-281)
- **Enhanced Voltage Control in Offshore Wind Farms with Fast-Tapping On-Load Tap-Changers**
  I. Burlakin, E. Scheiner, G. Mehlmann, M. Luther (Friedrich-Alexander-Universität Erlangen-Nürnberg – FAU, Germany), S. Rehkopf, M. Wolfram, C. Hurm (Maschinenfabrik Reinhausen, Germany) (Submission-ID WISO24-245)
- **Protection Challenges and Solutions for Offshore Wind Power: Towards a Converter-Dominated Power System**
  A. Novikov (Technical University of Denmark – DTU \| Siemens Gamesa Renewable Energy, Denmark), N. Cutululis (Technical University of Denmark – DTU, Denmark), R. Sharma, D. Vitoldas (Siemens Gamesa Renewable Energy, Denmark), F. Martin (European Energy, Denmark), G. Yang (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-133)

12:00 – 12:30	Discussions

12:30 – 13:30 LUNCH BREAK

13:30 – 15:30 SESSION 9A– GRID FORMING IV

06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney

> Session Chair Jacob Bollerslev (Energinet, Denmark)

13:30 – 15:10 Presentations (20 min. each)

- **Case Study: Interoperability of Two Independently Designed Grid-Forming Converters**
  R. Denninger (Fraunhofer ISE, Germany), **T. Erckrath** (Fraunhofer IEE, Germany), P. Ernst, S. Rogalla, R. Singer (Fraunhofer ISE, Germany), P. Unruh, M. Jung, R. Brandl (Fraunhofer IEE, Germany), (Submission-ID WISO24-072)
- **Power Oscillation Damping with Grid-Forming Converters: A Simulative and System-Theoretical Analysis**
  L. Piepka, C. Schöll, L. Gerber (TransnetBW, Germany) (Submission-ID WISO24-110)
- **Grid-Forming Capability of Power Plant Control: Optimization through Battery Energy Storage Integration**
  S. Kamalhosseini (Friedrich-Alexander-Universität Erlangen-Nürnberg – FAU | Siemens, Germany), I. Burlakin (Friedrich-Alexander-Universität Erlangen-Nürnberg – FAU, Germany), A. Kuri (Siemens, Germany), G. Mehlmann, M. Luther (Friedrich-Alexander-Universität Erlangen-Nürnberg – FAU, Germany) (Submission-ID WISO24-249)
- **Stability Analysis of Grid-Forming Converters under Hybrid Synchronous Control Mode**
  Z. Zhang, P. Hackl, R. Schuerhuber (Graz University of Technology, Austria) (Submission-ID WISO24-014)
- **Control Performance Optimization of Grid-Forming VSCs for the Power Reference Regulation**
  L. Zhao, X. Wang (KTH Royal Institute of Technology, Sweden) (Submission-ID WISO24-279)

15:10 – 15:30 Discussions

13:30 – 15:30 SESSION 9B– ELECTROLYZER INTEGRATION

06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney

> Session Chair Bernd Weise (DIgSILENT, Germany)

13:30 – 15:10 Presentations (20 min. each)

- **Analysis of the Systemic Potential and Normal Operation Behaviour of Grid-Forming Electrolysers to Cover the Future Inertia Demand**
  T. Sauer, J. Grobler, B. Dammann, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-107)
- **Dynamic Modelling and Grid Integration of Thyristor Connected PEM Electrolysis Plants**
  A. Salman, S. Eichner, A. Wunsch, I. Franzetti, **R. Singer** (Fraunhofer ISE, Germany), S. Höhn, F. Rauscher, D. Robin, G. Deiml (TenneT TSO, Germany) (Submission-ID WISO24-026)
- **Validation of a Two Phase Fluid Model for Transient Simulation of Alkaline Electrolysers**
  H. Wiggenhauser, F. Sedeqi, F. Egert, F. Razmjooei, A. Ansar (German Aerospace Center – DLR, Germany) (Submission-ID WISO24-238)
- **Comparison of Aggregated and Detailed Large-Scale Hydrogen Electrolyzer Plant Models for Grid Integration Studies**
  T. Heins (RWTH Aachen University, Germany), T. Heynen (IAEW RWTH Aachen University, Germany), S. Simon (Shell Deutschland, Germany), S. K. Gurumurthy (RWTH Aachen University, Germany), A. Monti (RWTH Aachen University, Germany | Fraunhofer FIT, Germany) (Submission-ID WISO24-102)
- **Systematic Review on Fast Frequency Ancillary Services Provided by Large-Scale Hydrogen-Electrolyzer Plants**
  T. Heynen (IAEW RWTH Aachen University, Germany), T. Heins (RWTH Aachen University, Germany), M.Kuhn, W. Leterme (IAEW RWTH Aachen University, Germany), A. Monti (RWTH Aachen University, Germany | Fraunhofer FIT, Germany) (Submission-ID WISO24-091)

15:10 – 15:30 Discussions

13:30 – 15:30 SESSION 9C – GERMAN EXAMPLES

06:30 New York | 07:30 Rio de Janeiro | 12:30 Berlin | 16:00 New Delhi | 17:30 Jakarta | 18:30 Beijing | 19:30 Tokyo | 21:30 Sydney

> Session Chair Eckehard Tröster (Energynautics, Germany)

13:30 – 15:10 **Presentations (20 min. each)**

- **Empowering Collective Self-Consumption in Multi-Family Houses: User-Based Multi-Use of Residential Battery Storage Systems**
  H. Wagner, C. von Lützow, M. Lüdecke, M. Meinert, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-252)
- **Implementation of Operational Flexibility for the Control of the Smart Grid: Evaluation of an Exemplary Residential District in Germany**
  F. Peñaherrera V. (OFFIS - Institute for Information Technology, Germany | Carl von Ossietzky University of Oldenburg, Germany), S. Fayed (University of Applied Sciences Emden/Leer, Germany), J. P. Hörding (OFFIS - Institute for Information Technology, Germany | Carl von Ossietzky University of Oldenburg, Germany), H. Wagner (TU Braunschweig – elenia, Germany), A. Nieße (OFFIS - Institute for Information Technology, Germany | Carl von Ossietzky University of Oldenburg, Germany) (Submission-ID WISO24-217)
- **Implementing Prosumer-to-Prosumer Communication in the German Smart Meter Infrastructure**
  E. Niehs, J. Essers, **J. Rothert**, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-254)
- **Dynamic Line Rating in Germany: Integrating Machine Learning and Terrain Data for Improved Forecasts**
  A. Wessel, D. E. Hollermann, G. Hein, T. Kanefendt (Fraunhofer IEE, Germany) (Submission-ID WISO24-286)
- **Optimal Dynamic Allocation of Wind and Solar Power Forecasts and Generation to Substation Transformers in Transmission Grids**
  D. Beinert, **D. Jost**, M. Siefert (Fraunhofer IEE, Germany) (Submission-ID WISO24-056)

15:10 – 15:30 **Discussions**

13:30 – 15:30 SESSION 9D – IEC SC8A - IEA FORECASTING STANDARD

03:40 New York | 04:40 Rio de Janeiro | 09:40 Berlin | 13:10 New Delhi | 14:40 Jakarta | 15:40 Beijing | 16:40 Tokyo | 18:40 Sydney

> Session Chair Corinna Möhrlen (WEPROG, Denmark)

13:30 – 15:00

Let's talk Standard for Forecasting and Evaluation of Wind and Solar in an Energy System with 100% Renewables

- **Introduction to the IEC and IEA liaison for the Collaborative Development of a Standard for Renewables Forecasting and Forecast Evaluation** (15 min)
  C. Möhrlen (WEPROG, Denmark), **J. Zack** (Meso Inc., USA), **J. Yan** (North China Electric Power University, China), G. Giebel (DTU Wind, Denmark) (Submission-ID WISO24-259)
- **Inspirational Short-Talk (3 x 10 min)**
  F. Martin (European Energy, Denmark), S. Feng (CEPRI, China), **J. Yan** (North China Electric Power University – NCEPU, China) (Submission-ID WISO24-311)
- **Panel Discussion on Needs and Interests for the Development of a Standard** (45 min)
  Moderator: **John Zack**
  Panelists: S. Feng (CEPRI, China), **F. Martin** (European Energy, Denmark), **J. Yan** (NCEPU, China), **D. Lew** (ESIG, USA), **J. Dyson** (Greenview Strategic Consulting, Australia), **C. Möhrlen** (WEPROG) (Submission-ID WISO24-312)

15:00 – 15:30 **Discussions**

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00 SESSION 10A – BATTERY ASPECTS

09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney

> Session Chair Jonathon Dyson (Greenview Strategic Consulting, Australia)

16:00 – 17:20 Presentations (20 min. each)

- **Lessons Learned from Operating a Large-Scale Battery Storage System – Challenges and Improvements**
  L. Koltermann, M. Celi Cortes, J. Van Ouwerkerk (RWTH Aachen University | Jülich Aachen Research Alliance – JARA-Energy, Germany), D. U. Sauer (RWTH Aachen University | Jülich Aachen Research Alliance – JARA-Energy | Helmholtz-Institute Münster, Germany) (Submission-ID WISO24-04)
- **Blackstart Capability Demonstration of a Battery Energy Storage System Using EMT Simulation and On-Site Measurement**
  P.-L. Martel, O. Saad (Hydro-Québec, Canada), H. Honvo (EVLO Energy Storage, Canada), J.-F. Haché, C. Morin (Hydro-Québec, Canada), (Submission-ID WISO24-015)
- **Data-Driven Modeling of Inverter Efficiency Curves for the Digital Twin of a Large-Scale Battery Storage System**
  M. Celi Cortés, L. Koltermann (RWTH Aachen University | Jülich Aachen Research Alliance – JARA-Energy, Germany), S. Shresta (RWTH Aachen University, Germany), J. van Ouwerkerk, D. U. Sauer (RWTH Aachen University | Jülich Aachen Research Alliance – JARA-Energy, Germany) (Submission-ID WISO24-147)
- **Battery Storage Sizing for Wind Power Plant Hybridization Considering Economic and Environmental Aspects**
  A. Anand, I. Herdiatmaja, H. Hoghooghi, C. L. Bottasso (Technical University Munich – TUM, Germany) (Submission-ID WISO24-197)

17:20 – 18:00 Discussions

16:00 – 18:30 SESSION 10B – HYDROGEN ASPECTS II

09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney

> Session Chair Sevgi Can Erensoy Mendes (Energynautics, Germany)

16:00 – 18:00 Presentations (20 min. each)

- **Powering the Future: Integrating Hydrogen-Based Power Plants in the Grid**
  M. Ali, B. Schowe-von der Brelie, **J. Döll** (FGH, Germany) (Submission-ID WISO24-274)
- **Investigating Degradation Effects on Electrolyzers How to Avoid Safety and Economic Risks of Electrolyzers Through Modeling and Monitoring**
  N. Eggers (Fraunhofer IFF, Germany | University of Applied Sciences Hamburg, Germany), T. Birth-Reichert (University of Applied Sciences Hamburg, Germany), M. Scheffler, S. Jentsch (Fraunhofer IFF, Germany), P. Komarnicki (Magdeburg-Stendal University of Applied Sciences, Germany) (Submission-ID WISO24-002)
- **Optimal Design of a Hydrogen System of Grid-Connected Flexible Industrial Microgrids**
  P. Muñoz-Peña, L. Bruno (CITCEA – Polytechnical University of Catalonia, Spain), A. Señís, M. Fajardo (Schneider Electric, Spain), M. Cheah-Mane, O. Gomis-Bellmunt, E. Prieto-Araujo (CITCEA - Polytechnical University of Catalonia, Spain) (Submission-ID WISO24-152)
- **Experimental and Simulative Design of Isothermal High Temperature Electrolyser Controller for Coupling with Renewable Energies**
  D. Fortunati, M. Riegraf, M. P. Heddrich, S. A. Ansar (German Aerospace Center – DLR, Germany) (Submission-ID WISO24-224)
- **Subsea Hydrogen Long Duration Energy Storage**
  A. Labes (TechnipFMC, USA) T. Mhyre, **H. Rønning Ausen** (TechnipFMC, Norway) (Submission-ID WISO24-210)
- **Blackstart of Small Islanded Renewables for Scottish Islands**
  J. Merriweather, A. Egea-Alvarez, L. Xu (University of Strathclyde, United Kingdom) (Submission-ID WISO24-251)

18:00 – 18:30 Discussions

16:00 – 18:30	SESSION 10C – DISTRIBUTION GRID ASPECTS
09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney	
> Session Chair	Leonard Hülsmann (Energynautics, Germany)
16:00 – 18:00	Presentations (20 min. each)

- **Undesired Effects of Widespread Implementation of Control And Optimization Algorithms in Residential Electricity Grids**
  M. Eijgelaar, R. Singh, T. Bosma, **E. Petkovski** (DNV R&D, Netherlands) (Submission-ID WISO24-080)
- **On the Large-Scale Integration of Renewable Energy Communities into the Distribution Network**
  F. T. Strebl, B.-V. Rao, D. Reihs, D. Schwabeneder, H. Brunner, M. Stefan, F. Kupzog (AIT Austrian Institute of Technology, Austria), B. Klöckl (Vienna University of Technology, Austria) (Submission-ID WISO24-248)
- **Simulation Modeling of PV Systems in Low Voltage Networks according to Grid Codes**
  T. Weinmann, S. Seifried, T. Lechner, M. Finkel (University of Applied Sciences Augsburg, Germany), G. Kerber (University of Applied Sciences Munich, Germany), T. Garn, B. Engel (TU Braunschweig, Germany) (Submission-ID WISO24-150)
- **Design of a Robust Grid-Forming Control for Low-Voltage Grids**
  B. O. Winter, **N. Schulz**, M. Gand, F. Tiedt, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-092)
- **An Integrated Open-Source Algorithmic Approach for Comprehensive Operating Limit Management in Low Voltage Grids**
  S. Fayed (University of Applied Sciences Emden/Leer, Germany), F. Peñaherrera V. (OFFIS Institute for Information Technology, Germany), H. Wagner (TU Braunschweig – elenia, Germany), A. Nieße (OFFIS Institute for Information Technology, Germany \| Carl von Ossietzky University of Oldenburg, Germany), J. Rolink (University of Applied Sciences Emden/Leer, Germany), (Submission-ID WISO24-244)
- **Predictability of the Operating Behaviour of Different Types of Heat Pump Systems**
  J. Dobschinski (Fraunhofer IEE, Germany \| University of Kassel, Germany), P. Giron, A.-K. Goldmaier, D. E. Hollermann, **D. Jost**, J. Rodriguez Santiago (Fraunhofer IEE, Germany) (Submission-ID WISO24-134)

18:00 – 18:30	Discussions

16:00 – 18:15	SESSION 10D – WIND POWER ASPECTS
09:00 New York | 10:00 Rio de Janeiro | 15:00 Berlin | 18:30 New Delhi | 20:00 Jakarta | 21:00 Beijing | 22:00 Tokyo | 00:00 Sydney	
> Session Chair	Luis Caro (Energynautics, Germany)
16:00 – 17:40	Presentations (20 min. each)

- **Investigation of Aggregation and Clustering Approaches for Modelling Onshore Wind Energy Generators**
  C. Wirtz, M. Murglat (FGH, Germany), A. Zwikirsch (RWTH Aachen University, Germany), S. Krahl (FGH, Germany), A. Moser (IAEW RWTH Aachen University, Germany) (Submission-ID WISO24-225)
- **Control Parameter Estimation Encompassing Time and Frequency Domain Test Cases Using Particle Swarm Optimization**
  K. V. Vilera (Typhoon HiL, Serbia \| Technical University of Denmark – DTU, Denmark), G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy, Denmark \| Technical University of Denmark – DTU, Denmark), N. Darii (Typhoon HiL, Serbia \| Siemens Gamesa Renewable Energy, Denmark), D. Majstorovic (Typhoon HIL, Serbia), **G. Yang** (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-060)
- **Calculating the Infeed of Wind and PV-Systems for Future Grid Planning Based on Real Measurement Data**
  S. Seifried, **S. Storch**, D. Storch, R. Helmschrott (University of Applied Sciences Augsburg, Germany), K. Schaarschmidt (LEW Verteilnetz, Germany), M. Finkel (University of Applied Sciences Augsburg, Germany) (Submission-ID WISO24-211)
- **Type 5 Wind Turbine Technologies: Three main candidates compared**
  G. Henderson (SyncWind Power, New Zealand), V. Gevorgian, W. Yan (NREL, USA), D. Flynn, W. Mendieta (University College Dublin, Ireland), S M Shafiul Alam (Idaho National Laboratory, USA) (Submission-ID WISO24-158)
- **Hydrostatic Transmission Technology for Wind Turbines: Grid-Forming, System Service and Maintenance Capabilities**
  W. Mendieta, **D. Flynn** (University College Dublin, Ireland) (Submission-ID WISO24-280)

17:40– 18:15	Discussions

18:30 – 21:30 Poster Session and Energynautics Lounge

FRIDAY, 11 OCTOBER 2024

09:00 – 10:40 SESSION 11A – POWER SYSTEM ASPECTS IV

02:00 New York | 03:00 Rio de Janeiro | 08:00 Berlin | 11:30 New Delhi | 13:00 Jakarta | 14:00 Beijing | 15:00 Tokyo | 17:00 Sydney

> Session Chair Nicolaos Cutululis (DTU, Denmark)

09:00 – 10:20 Presentations (20 min. each)

- **Representative Power Profiles for Inertia Provision by a Grid-Forming Inverter in the Low-Voltage Power Grid**
  J. Grobler, T. Sauer, M. Gand, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-128)
- **Orchestrated Active Fault Management for Offshore Wind High Voltage DC Grids**
  Z. Jiang, **P. Zhang** (Stony Brook University, USA), X. Liu (Eversource Energy, USA) (Submission-ID WISO24-289)
- **Power System Stability in Island Offshore Grids with Wind Turbine Generators**
  J. Kolb (Unitech Power Systems, Norway), B. Abecia Rejado (Siemens Gamesa Renewable Energy, Denmark), B. Pushpanathan, B. Monsen (Equinor, Norway), B. Ek (Unitech Power Systems, Norway) (Submission-ID WISO24-010)
- **Comparison and Combination of Axial Induction and Wake Redirection Control for Wind Farm Power Output Maximization and Grid Power Reference Tracking**
  A. Dittmer (German Aerospace Center – DLR, Germany), B. Sharan, H. Werner (Hamburg University of Technology, Germany) (Submission-ID WISO24-228)

10:20 – 10:40 Discussions

09:00 – 10:40 SESSION 11B – COUNTRY STUDIES II

02:00 New York | 03:00 Rio de Janeiro | 08:00 Berlin | 11:30 New Delhi | 13:00 Jakarta | 14:00 Beijing | 15:00 Tokyo | 17:00 Sydney

> Session Chair Thomas Ackermann (Energynautics, Germany)

09:00 – 10:20 Presentations (20 min. each)

- **Estimation of the Risk of Generation Curtailment of Renewable Energy Sources in the Perspective of the Development of the Polish Power System in 2030-2040**
  P. Kacejko, M. Wancerz (Lublin University of Technology, Poland) (Submission-ID WISO24-164)
- **Impact of Offshore Wind Farms to the Brazilian Interconnected Power System**
  G. Taranto, D. Falcão, B. Oliveira (COPPE – Federal University of Rio de Janeiro, Brazil), T. Campello, W. Ribeiro (COPPE – Federal University of Rio de Janeiro | CEFET/RJ, Brazil) (Submission-ID WISO24-143)
- **Least Cost Generation Capacity Expansion Planning in Sint Maarten**
  A. Turnell, S. Hempel, T. Ackermann (Energynautics, Germany) (Submission-ID WISO24-302)
- **Overvoltage Ride Through Requirements in the Finnish Converter Dominated Power System**
  M. Lindroos, O.-P. Janhunen (Fingrid, Finland) (Submission-ID WISO24-078

10:20 – 10:40 Discussions

09:00 – 10:40	SESSION 11C – POWER QUALITY ASPECTS
02:00 New York | 03:00 Rio de Janeiro | 08:00 Berlin | 11:30 New Delhi | 13:00 Jakarta | 14:00 Beijing | 15:00 Tokyo | 17:00 Sydney	
> Session Chair	Oscar Lennerhag (Sevenska kraftnät, Sweden)
09:00 – 10:20	Presentations (20 min. each)

- **Adaptive Narrowband Damping for Improving Harmonic Stability of Modular Multilevel Converters**
  P. Huang, **S. Shah** (National Renewable Energy Laboratory, USA) (Submission-ID WISO24-284)
- **An Impedance-Based Approach for Harmonic Emission Assessment of Power Generation Plants**
  S. Rogalla (Fraunhofer ISE, Germany), **B. Weise** (DIgSILENT, Germany), F. Safargholi (Fraunhofer IEE, Germany), S. Kaiser (Fraunhofer ISE, Germany) (Submission-ID WISO24-073)
- **Offshore Wind Farm Grid Integration: Challenges and Solutions for Harmonic Distortion**
  A. Kannan, S. Oliver, A. Atallah, A. H Manchola (Siemens Energy Global, Germany), I. A Aristi (Siemens Energy, Denmark) (Submission-ID WISO24-012)
- **Power Quality Solutions for Inertial Challenges in the Grids of the Future**
  A. Owens, R. Heydari, **A. Stiger** (Hitachi Energy, Sweden) (Submission-ID WISO24-022)

10:20 – 10:40 **Discussions**

10:40 – 11:00 COFFEE BREAK

11:00 – 12:20	SESSION 12A – POWER SYSTEM ASPECTS V
04:00 New York | 05:00 Rio de Janeiro | 10:00 Berlin | 13:30 New Delhi | 15:00 Jakarta | 16:00 Beijing | 17:00 Tokyo | 19:00 Sydney	
> Session Chair	Pia Henzel (Energynautics, Germany
11:00 – 12:00	Presentations (20 min. each)

- **Multi-Objective Evolutionary Tuning of Synchronous and Non-Synchronous Generation Control For Power Oscillation Damping**
  M. Skwarski (Better Energy, Denmark \| Warsaw University of Technology, Poland), H. Abildgaard (Better Energy, Denmark), S. Robak (Warsaw University of Technology, Poland) (Submission-ID WISO24-034)
- **Methodology of MILP Capacity Expansion Planning for Island Grids in PyPSA**
  V. Breburda, S. Hempel, P.-P. Schierhorn (Energynautics, Germany) (Submission-ID WISO24-327)
- **Investigating the Accuracy of Feasible Operating Regions in Meshed Grid Topologies by Using Grid Equivalents**
  F. Korff, M. Schwenke, J. Hanson (TU Darmstadt, Germany) (Submission-ID WISO24-106)

12:00 – 12:20 **Discussions**

11:00 – 12:20	SESSION 12B – INTEGRATION SOLUTIONS
04:00 New York | 05:00 Rio de Janeiro | 10:00 Berlin | 13:30 New Delhi | 15:00 Jakarta | 16:00 Beijing | 17:00 Tokyo | 19:00 Sydney	
> Session Chair	Eckehard Tröster (Energynautics, Germany)
11:00 – 12:00	Presentations (20 min. each)

- **Smart Windfarm Controller - Concept and Pilot Test Campaign**
  D. F. Coimbra, **J. S. Fischer** (Energiekontor, Germany) (Submission-ID WISO24-021)
- **Using Weather Forecast Uncertainty Minimises Electricity Costs in Low Flexibility Power Systems**
  H. Bents, L. von Bremen, B. Schyska (German Aerospace Center – DLR, Germany) (Submission-ID WISO24-029)
- **Modelling Aspects on Cables in the Frequency Domain**
  A. F. Negrete Romero (University of the Basque Country, Spain), M. De La Hoz, **D. Alonso Sørensen** (Electrotécnica Arteche Smart Grid, Spain) (Submission-ID WISO24-258)

12:20 – 12:20 **Discussions**

11:00 – 12:20	SESSION 12C – GRID INTEGRATION ASPECTS
04:00 New York | 05:00 Rio de Janeiro | 10:00 Berlin | 13:30 New Delhi | 15:00 Jakarta | 16:00 Beijing | 17:00 Tokyo | 19:00 Sydney	
> Session Chair	Yoh Yasuda (Institute for Sustainable Energy Policies, Japan | University of Strathclyde, United Kingdom)
11:00 – 12:00	Presentations (20 min. each)

- **Renewable Integration and Electricity Spot Prices: Trends, Drivers, and Economic Implications**
  S. Yamujala, M. Koivisto, S. Nayak (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-137)
- **Hardware-in-the-loop Dynamic Testing of a New Control of Heat Pumps' Active Power Modulation for Grid Stability**
  D. Chèze (University Grenoble Alpes – CEA, France), T. Prevost (RTE, France), F. Bruyat (University Grenoble Alpes – CEA, France) (Submission-ID WISO24-058)
- **Optimization of Prosumer Household with Solar, Battery and Electric Vehicle: Enhancing Residential Energy Management Considering Non-Constant Efficiency**
  J. Essers, E. Niehs, B. Engel. (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-205)

12:00– 12:20	Discussions

12:20 – 12:30 SHORT BREAK

12:30 – 13:30	SESSION 13 – CLOSING SESSION
05:30 New York | 06:30 Rio de Janeiro | 11:30 Berlin | 15:00 New Delhi | 16:30 Jakarta | 17:30 Beijing | 18:30 Tokyo | 20:30 Sydney	
> Session Chair	Bernd Engel (TU Braunschweig – elenia) – TBC
12:30 – 13:00	Panel discussion

TOPICS ADDRESSED: THE ROLE OF HYDROGEN IN FUTURE POWER GRIDS

Panelists:

- Alexander Unru (SMA, Germany)
- Matti Juhani Koivisto (Technical University of Denmark – DTU, Denmark)
- Johannes Döll (FGH, Germany)
- TBA

13:00 – 13:25	Discussions
13:25 – 13:30	Closing Remarks

13:30 – 14:30 LUNCH

POSTER PRESENTATIONS

- **Fair Cost and Needed Power and Energy of BESS and PV for a Unbalance Control in LV Grids**
  C. Biedermann, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-003)
- **Design and Implementation of Static Voltage Support via Q-V Characteristics on Grid-Forming Inverters in Combined Operation with Grid-Following Inverters**
  B. O. Winter, **T. Garn**, R. F. Herman, B. Engel (TU Braunschweig – elenia, Germany) (Submission-ID WISO24-013)
- **A Hybrid Method Enabling Predictive Digital Twin during the Design Phase of Wind Turbines**
  E. Kandemir, A. Hasan, T. Kvamsdal, S.-A. Alaliyat, (Norwegian University of Science and Technology – NTNU, Norway) (Submission-ID WISO24-020)
- **Potential of Prosumer Real-Time Scheduling to Improve Grid Area Load Forecasts in Distribution Grids**
  M. Asman, O. Koch, D. Cano-Tirado, M. Zdrallek (University of Wuppertal, Germany) (Submission-ID WISO24-046)

- **Accelerating Wind Power Investments through Lower Financing Costs**
  N. Helistö (VTT Technical Research Centre of Finland, Finland), S. Johanndeiter (Ruhr-Universität Bochum | EnBW, Germany), J. Kiviluoma (VTT Technical Research Centre of Finland, Finland) (Submission-ID WISO24-052)
- **Development of Emergency Control Method for Deloaded Wind Turbine Generators for Improving Short-Term Frequency Stability in Power Systems**
  S. Oh, A. Kihara, K. Kawabe (Tokyo Institute of Technology, Japan) (Submission-ID WISO24-077)
- **Integration Cost of Solar and Wind Power: A Case Study of Korea**
  H. Kim, J. Jeong, H. Goh, **S. Jeong** (Korea Power Exchange, South Korea), K. Kwag, W. Kim (Pusan National University, South Korea) (Submission-ID WISO24-085)
- **Optimal Configuration of ESS Requirements for Stable VRE Integration; A Case Study of Korea**
  J. Jeong, S. Kwon (Korea Power Exchange, South Korea), J. Cho (Korea University, South Korea), Y. Kwon, M. Park (Korea Power Exchange, South Korea) (Submission-ID WISO24-086)
- **Investigation of the Influence on the AC System Frequency Due to DC Voltage Fluctuations in MMC-HVDC by Analogue Simulator**
  R. Shibata, S. Minotsu (Electric Power Development, Japan), T. Haraguchi, K. Yoshida (J-POWER Business Service Corporation, Japan), J. Arai (Energy and Environment Technology Research Institute, Japan), R. Onishi (Mitsubishi Electric Corporation, Japan) (Submission-ID WISO24-087)
- **Battery-Enhanced Stability of DC Link Voltage: A Danish 2.1 MW Photovoltaic Plant Case Study**
  H. Andersen, K. Qian, T. Ebel, K. Paasch (University of Southern Denmark – CIE, Denmark) (Submission-ID WISO24-093)
- **Second-Life Batteries for Intermittent Renewable Energy Sources: Economic Optimization for a 2.1 MW Danish PV Plant**
  H. Andersen, **K. Qian**, T. Ebel, K. Paasch (University of Southern Denmark – CIE, Denmark) (Submission-ID WISO24-094)
- **Experimental Validation of a Virtual Synchronous Machine Grid-Forming Converter Control Concept**
  L. Kranz, H. Just (50Hertz Transmission, Germany) J. Fortmann (University of Applied Sciences – HTW Berlin, Germany) (Submission-ID WISO24-113)
- **Enhancing PV System through CSI-Based Topology and Grid-Forming Control**
  J. Chen, A. Paez, M. Schütt, H.-G. Eckel (University of Rostock, Germany) (Submission-ID WISO24-130)
- **Development of Small Signal Model of a Wind Power Plant: From Source Code to State Space**
  J. Santo, P. Prakash, D. Pereira (Vestas Technology Centre, Portugal), **A. Malkhandi** (Vestas Wind Systems, Denmark) (Submission-ID WISO24-135)
- **The Curious Case of Wind Power in the Desert**
  A. Niemi (VTT Technical Research Centre of Finland, Finland), S. Bouchakour, I. Bendaas, K. Bouchouicha, A. Razagui (Centre de Développement des Energies Renouvelables – CDER, Algeria), N. Putkonen, **J. Kiviluoma** (VTT Technical Research Centre of Finland, Finland) (Submission-ID WISO24-139)
- **Transient Stability Enhancement of Grid-Forming Type-3 Wind Turbine Generators**
  S. Hajtaleb, B. Bahrani (Monash University, Australia) (Submission-ID WISO24-141)
- **EMT-Simulation of an IEEE 9-Bus Benchmark-Model Adapted to European Transmission Grid Standards with 100% Inverter-Based Resources**
  A. Bisseling, P. Weber (IEH Karlsruhe Institute of Technology – KIT, Germany), D. Bohn, M. Suriyah, T. Leibfried (Karlsruhe Institute of Technology – KIT, Germany) (Submission-ID WISO24-144)
- **Power Control Method for Three-Terminal HVDC System between Offshore Wind Farm and Onshore Power Grids**
  T. Matsuyama, T. Nakajima (Tokyo City University, Japan) (Submission-ID WISO24-157)
- **Frequency Control Methods for Remote Island Microgrid Interconnected HVDC System Using Renewable Energy and Diesel Generators**
  Y. Uchida, T. Nakajima (Tokyo City University, Japan) (Submission-ID WISO24-159)
- **Comparative Analysis of Grid-Forming and Grid-Following Control for DFIG**
  A. Paez, J. Chen, M. Schütt, H.-G. Eckel (University of Rostock, Germany) (Submission-ID WISO24-161)
- **Stability of Grid Forming Converters under Electromechanical Restrictions**
  R. Kristiansen (Aalborg University, Denmark | Vestas Wind Systems, Denmark), F. Blaabjerg (Aalborg University, Denmark), G. K. Andersen (Vestas Wind Systems, Denmark) (Submission-ID WISO24-181)
- **Internalizing Pumped Storage Hydropower Losses into the Electricity Market**
  S. Minotsu, J. Baba (The University of Tokyo, Japan) (Submission-ID WISO24-192)

- **Vertical Bifacial Agrivoltaics: Benefits for the Energy System**
  A. Morales Vilches, J. Linz, S. Lahr (Next2Sun Technology, Germany) (Submission-ID WISO24-202)
- **Limitations of Cell Imbalances on the Operation of a Large-Scale Battery Storage System: Example LTO Batteries**
  L. Koltermann, M. Celi Cortés, S. Zurmühlen, M. Junker (RWTH Aachen University | Jülich Aachen Research Alliance – JARA-Energy, Germany), D. U. Sauer (RWTH Aachen University | Jülich Aachen Research Alliance – JARA-Energy | Helmholtz-Institute Münster, Germany) (Submission-ID WISO24-218)
- **Study on Multi-Loop Overcurrent Suppression Control Method for Grid Forming Inverter**
  S. Yamamoto, T. Nakajima (Tokyo City University, Japan), Y. Mitsugi, S. Sugimori (TMEIC Corporation, Japan) (Submission-ID WISO24-230)
- **Enhancing Wind Farm Generation Modelling with Turbulence Intensity and Time-Varying Air Density for Large-Scale Energy System Studies**
  E. Simutis, J. P. Murcia León, M. J. Koivisto (Technical University of Denmark – DTU, Denmark) (Submission-ID WISO24-235)
- **Correlation Between Metrics for Primary Frequency Reserve and Frequency Quality**
  K.-F. Boholm Kylesten, R. Eriksson (Uppsala University, Sweden) (Submission-ID WISO24-237)
- **Sequential Hybrid Power-Flow and EMT Simulations for Investigating Power Quality in Distribution Grids**
  C. Wirtz, C. Fröhlich, A. Vanselow, S. Krahl (FGH, Germany), A. Moser (IAEW RWTH Aachen, Germany) (Submission-ID WISO24-247)
- **A Study on Frequency Fluctuation with Ramp Rate Limit of Wind Power Plants in the Japanese AGC30 Model**
  Y. Yoshida, N. Nishio (Electric Power Development, Japan), H. Morita, K. Koiwa (Chiba University, Japan), **J. Suzuki** (Electric Power Development, Japan) (Submission-ID WISO24-262)
- **Automating Power Plant and Power Electronic Controller Tuning for Enhanced Grid Stability**
  J. E. Thornton (Blake Clough Consulting, United Kingdom), N. Schofield (University of Huddersfield, United Kingdom), A. D. Ferguson (Blake Clough Consulting, United Kingdom) (Submission-ID WISO24-285)
- **Design of Remote Microgrid Systems with a Maximum Share of Renewable Energies**
  H. Rühle, S. Hempel (Energynautics, Germany) (Submission-ID WISO24-296)
- **Operational Envelope of a Hybrid Permanent Magnet Generator for Wind Applications**
  E. Flores Moran, N. Mian, **N. Schofield** (University of Huddersfield, United Kingdom) (Submission-ID WISO24-325)