



FINAL AGENDA

SPONSORS



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DINNER HOST



ORGANIZER



WEDNESDAY 12 OCTOBER 2022				THURSDAY 13 OCTOBER 2022				FRIDAY 14 OCTOBER 2022			
Wind & Solar Workshop Day 1				Wind & Solar Workshop Day 2				Wind & Solar Workshop Day 3			
09:00 – 11:30	07:30 – 09:00 REGISTRATION / FOYER 2.0			ROOM 2.1	ROOM 2.2	ROOM 2.3	09:00 – 11:00	ROOM 2.1	ROOM 2.2	ROOM 2.3	
	ROOM 2.1 + 2.2 + 2.3			SESSION 5A: HARMONIC ASPECTS	SESSION 5B: SYSTEM RESTORATION ASPECTS	SESSION 5C: GRID CODE ASPECTS		SESSION 9A: MODELLING ASPECTS	SESSION 9B: SMART GRID ASPECTS	SESSION 9C: HYBRID SYSTEMS I	
WELCOME & SESSION 1: KEYNOTE SESSION											
COFFEE BREAK (20 MIN)				COFFEE BREAK (30 MIN)				COFFEE BREAK (20 MIN)			
11:50 – 13:10	ROOM 2.1	ROOM 2.2	ROOM 2.3	ROOM 2.1	ROOM 2.2	ROOM 2.3	11:20 – 13:00	ROOM 2.1	ROOM 2.2		
	SESSION 2A: GRID FORMING I	SESSION 2B: THE FUTURE POWER SYSTEM	SESSION 2C: STABILITY ASPECTS	SESSION 6A: EMT ANALYSIS IN CONVERTER-DOMINATED GRIDS + ENTSO-E STANDARD-INTERFACE DEMOS	SESSION 6B: HYDROGEN ASPECTS I	SESSION 6C: CONNECTION OF OFFSHORE WIND POWER PLANTS		SESSION 10A: POWER QUALITY ASPECTS	SESSION 10B: FORECASTING II: IEA WIND TASK 51		
LUNCH 13:15 – 14:15				LUNCH 12:50 – 13:50				LUNCH 13:00 – 14:00			
14:15 – 15:55	ROOM 2.1	ROOM 2.2	ROOM 2.3	ROOM 2.1	ROOM 2.2	ROOM 2.3	14:00 – 15:40	ROOM 2.1	ROOM 2.2		
	SESSION 3A: GRID FORMING II	SESSION 3B: HYBRID POWER PLANTS	SESSION 3C: ECONOMIC ASPECTS	SESSION 7A: FREQUENCY STUDIES	SESSION 7B: COUNTRY STUDIES– BANGLADESH	SESSION 7C: FORECASTING I		SESSION 11A: GRID INTEGRATION ASPECTS	SESSION 11B: HYDROGEN ASPECTS III		
COFFEE BREAK (20 MIN)				GROUP PHOTO / COFFEE BREAK (30 MIN)				COFFEE BREAK (20 MIN)			
16:15 – 18:15	ROOM 2.1	ROOM 2.2	ROOM 2.3	ROOM 2.1	ROOM 2.2	ROOM 2.3	16:00 – 17:00	ROOM 2.1 + 2.2 + 2.3			
	SESSION 4A: NEW PATHWAYS TO FUTURE GRID COMPLIANCE FOR WIND POWER PLANTS	SESSION 4B: STABILITY ANALYSIS	SESSION 4C: COUNTRY UPDATES	SESSION 8A: GRID FORMING III	SESSION 8B: HYDROGEN ASPECTS II	SESSION 8C: GRID CODE VALIDATION TESTS		SESSION 12: CLOSING SESSION – PODIUM DISCUSSION			
18:15	POSTER RECEPTION & NETWORKING EVENT			18:45/19:30				WORKSHOP DINNER – separately bookable –			

WEDNESDAY, 12 OCTOBER 2022

07:30 – 09:00 Registration

All times in the session tables show Central European Summer Times (CEST), the orange stripes show the starting times of the sessions below in additional time zones.

03:00 New York | 04:00 Rio de Janeiro | 08:00 London | 12:30 New Delhi | 14:00 Jakarta | 15:00 Beijing | 16:00 Tokyo | 18:00 Sydney

09:00 – 09:20 Welcome

09:20 – 11:30 SESSION 1 – KEYNOTE SESSION

03:20 New York | 04:20 Rio de Janeiro | 08:20 London | 12:50 New Delhi | 14:20 Jakarta | 15:20 Beijing | 16:20 Tokyo | 18:20 Sydney

> Session Chair T. Ackermann (Energynautics, Germany) / Mart van der Meijden (Tennet TSO, Netherlands)

09:20 – 11:20 Presentations (20 min. each)

- **System Operations of the Future**
Maarten Abbenhuis (COO TenneT TSO, Netherlands)
- **Offshore Wind Development in Netherlands and Germany**
Saskia Jaarsma (TenneT TSO, Netherlands)
- **Innovation on Future Multi Vendor Cross Border Meshed HVDC Grids – Why break through?**
Wilhelm Winter (TenneT TSO, Germany)
- **Target Grid 2045**
Margriet Rouhof (TenneT TSO, Netherlands)
- **Transmission Reform in the US**
D. Lew (ESIG, USA), D. Stenclik, R. Deyoe (Telos Energy, USA), B. Tsuchida, L. Lam, J. Grove, A. Bigelow (The Brattle Group, USA), D. Mueller, S. Adhikari (Enernex, USA), A. Bloom (Nextera, USA) (Submission-ID WIW22-63)
- **Technical and Market Considerations on The Pathway to Net Zero in the Power Sector**
Craig Hart (IEA, France)

11:20 – 11:30 Discussions

11:30 – 11:50 COFFEE BREAK

11:50 – 13:10 SESSION 2A: GRID FORMING I

05:50 New York | 06:50 Rio de Janeiro | 10:50 London | 15:20 New Delhi | 16:50 Jakarta | 17:50 Beijing | 18:50 Tokyo | 20:50 Sydney

> Session Chair Julia Matevosyan (ESIG, USA)

11:50 – 12:50 Presentations (20 min. each)

- **Grid Forming and Grid Following Comparison for an Offshore Wind Farm Connected Via A HVAC Cable**
R. Alves, A. Egea-Álvarez (University of Strathclyde, United Kingdom), T. Kneuppel (Siemens Gamesa Renewable Energy, Denmark) (Submission-ID WIW22-80)
- **Grid Forming Operation of Type 3 Wind Turbines**
V. Gevorgian, S. Shah (NREL, USA) (Submission-ID WIW22-126)
- **Design Considerations and Test Results of a Grid-Forming Dual-Fed WTG**
D. Howard, S. Achilles (GE Energy, USA) (Submission-ID WIW22-69)

12:50– 13:10 Discussions

11:50 – 13:10	SESSION 2B: THE FUTURE POWER SYSTEM
05:50 New York 06:50 Rio de Janeiro 10:50 London 15:20 New Delhi 16:50 Jakarta 17:50 Beijing 18:50 Tokyo 20:50 Sydney	
> Session Chair	Bart Ummels (Ventolines, Netherlands)
11:50 – 12:50	Presentations (20 min. each)
<ul style="list-style-type: none"> • First Joint Offshore Network Development Plans for Europe A. Orths (ENTSO-E / Energinet, Denmark) (Submission-ID WIW22-87) • Offshore Energy Hubs: Cost-Effectiveness in the Baltic Sea Energy System Towards 2050 M. Koivisto, P. Kanellas, R. Bramstoft (DTU, Denmark), H. Koduvere (Tallinn University of Technology, Estonia), J. P. Murcia León (DTU, Denmark) (Submission-ID WIW22-74) • NSWPH Pathway Study: The Role of Wind Power Hubs in the North Sea for the Future European Power System E. Tröster (Energynautics, Germany) 	
12:50– 13:10	Discussions

11:50 – 13:10	SESSION 2C: STABILITY ASPECTS
05:50 New York 06:50 Rio de Janeiro 10:50 London 15:20 New Delhi 16:50 Jakarta 17:50 Beijing 18:50 Tokyo 20:50 Sydney	
> Session Chair	Rossano Musca (University of Palermo, Italy)
11:50 – 12:50	Presentations (20 min. each)
<ul style="list-style-type: none"> • Frequency-Domain Stability Study of Converter-Based Power Systems J. Sun, L. Hiquiana, B. Lee (Rensselaer Polytechnic Institute, USA), J. Schmall, S. Zuloaga (ERCOT, USA) (Submission-ID WIW22-158) • Analysis of Transient Stability of Generator Groups in the Future Power System D. Scheifele, H. Lens (University of Stuttgart, Germany) (Submission-ID WIW22-23) • Utilisation of Synchronous Condensers for Improved Damping in Power Systems with High Renewable Penetration A. Karisik, T. Bertes (DgSILENT Pacific, Australia) (Submission-ID WIW22-43) 	
12:50 – 13:10	Discussions

13:15 – 14:15 LUNCH BREAK

14:15 – 15:55	SESSION 3A: GRID FORMING II
08:15 New York 09:15 Rio de Janeiro 13:15 London 17:45 New Delhi 19:15 Jakarta 20:15 Beijing 21:15 Tokyo 23:15 Sydney	
> Session Chair	Julia Matevosyan (ESIG, USA)
14:15 – 15:35	Presentations (20 min. each)
<ul style="list-style-type: none"> • The Opportunity of Grid-Forming Converters in the Wide-Area Control of Power Systems R. Musca, E. Riva Sanseverino, G. Zizzo (University of Palermo, Italy), G. M. Giannuzzi, C. Pisani (Terna, Italy) (Submission-ID WIW22-6) • Towards Standardised Testing Procedures for Inertia Provision of Grid Forming Inverters N. Schäfer, S. S. Kulkarni, G. Arnold (Fraunhofer IEE, Germany), V. V. Balani Mahtani (formerly Fraunhofer IEE, Germany) (Submission-ID WIW22-85) • Comparison of Current-Limitation Approaches for Grid-Forming Converters Enabling Fault-Right-Through Operation in Converter-Driven Power Grids J. Struwe (University of Applied Sciences Düsseldorf, Germany), P. Hackl (Graz University of Technology, Austria), H. Wrede (University of Applied Sciences Düsseldorf, Germany), R. Schürhuber (Graz University of Technology, Austria) (Submission-ID WIW22-48) • On the Low Risk of SSR in Type III Wind Turbines Operating in Grid-Forming Control W. Yan, S. Shah, V. Gevorgian, P. Koralewicz, R. Wallen (NREL – National Renewable Energy Laboratory, USA) (Submission-ID WIW22-152) 	
15:35 – 15:55	Discussions

14:15 – 15:55	SESSION 3B: HYBRID POWER PLANTS
08:15 New York 09:15 Rio de Janeiro 13:15 London 17:45 New Delhi 19:15 Jakarta 20:15 Beijing 21:15 Tokyo 23:15 Sydney	
> Session Chair	Antje Orths (Energinet, Denmark)
14:15 – 15:35	Presentations (20 min. each)
<ul style="list-style-type: none"> • Flexible PV-Wind-Energy Storage Hybrid Generation V. Gevorgian (NREL, USA) (Submission-ID WIW22-127) • Control Architecture for Utility-scale Hybrid Power Plants K. Das (DTU Wind and Energy Systems, Denmark) (Submission-ID WIW22-38) • Power Quality in a Solar-Wind Hybrid Park – Preliminary Results from a One-Year Metering Campaign D. Lingfors, O. Lindberg (Uppsala University, Sweden) (Submission-ID WIW22-91) • HyDesign: A Tool For Design and Operation of Hybrid Renewable Plants K. Das, J. P. Murcia Leon, H. Habbou, R. Zhu, C. Assaad, J.-A. Perez-Rua, P. Sørensen, K. Dykes (Technical University of Denmark, Denmark) (Submission-ID WIW22-137) 	
15:35 – 15:55	Discussions

14:15 – 15:55	SESSION 3C: ECONOMIC ASPECTS
08:15 New York 09:15 Rio de Janeiro 13:15 London 17:45 New Delhi 19:15 Jakarta 20:15 Beijing 21:15 Tokyo 23:15 Sydney	
> Session Chair	Philip-Peter Schierhorn (Energynautics, Germany)
14:15 – 15:35	Presentations (20 min. each)
<ul style="list-style-type: none"> • Industrial Flexibility Options: Regulatory Framework of the European Procurement of System Services E. Zipperling, C. Möller, M. Zdrallek (University of Wuppertal, Germany), F. Schmaltz (Yncoris, Germany) (Submission-ID WIW22-122) • Did Wind Cause the Price Rise in European Electricity Market In 2021? – An Econometric Analysis Using Multi Regression Model of Spot Market Prices - Y. Yasuda (Kyoto University, Japan) (Submission-ID WIW22-86) • BESS Financial Assessment with a Limited Data Basis - A Mexican case study N. Escobosa Pineda (Energynautics, Germany) • Stakeholder Engaged Energy Systems Modelling: Three Canadian Case Studies M. McPherson (University of Victoria, Canada) (Submission-ID WIW22-15) 	
15:35 – 15:55	Discussions

15:55 – 16:15 COFFEE BREAK

16:15 – 18:15	SESSION 4A: NEW PATHWAYS TO FUTURE GRID COMPLIANCE FOR WIND POWER PLANTS
10:15 New York 11:15 Rio de Janeiro 15:15 London 19:45 New Delhi 21:15 Jakarta 22:15 Beijing 23:15 Tokyo 01:15 Sydney	
> Session Chair	Vasiliki Klonari (WindEurope, Belgium)
16:15 – 17:55	Presentations (20 min. each)
<ul style="list-style-type: none"> New Pathways to Future Grid Compliance for Wind Power Plants G. M. Gomes Guerreiro (Siemens Gamesa Renewable Energy, Denmark DTU Wind and Energy Systems, Denmark), F. Martin (Siemens Gamesa Renewable Energy, Denmark), G. Yang (DTU Wind and Energy Systems, Denmark), B. Andresen (Aarhus University, Denmark) (Submission-ID WIW22-21) IEC 61400-21-4 - Test & Measurement of Electrical Capabilities of Wind Turbine Components & Subsystems on Test Bench Level B. Andresen (Aarhus University, Denmark), F. Santjer (UL DEWI international, Germany), G. Quistorf (Fraunhofer IWES, Germany), L. S. Rasmussen (LORC - Lindø Offshore Renewables Center, Denmark), T. Dreyer (Siemens Gamesa Renewable Energy, Germany) (Submission-ID WIW22-76) Future Large Offshore Wind Power Plant Design And Validation – Towards Real Time-Based Testing and Verification Platform G. Yang (DTU, Denmark) Grid Connection European Stakeholder Committee Expert Group on Interaction Studies and Simulation Model: Technical Requirements for Simulation Models M. Ndreko (TenneT TSO GmbH, Germany ENTSO-E) Towards Full Electrical Certification of Wind Turbines on Test Benches - Experiences Gained From The Hii-Gridcop Project F. Hans, G. Curioni, T. Jersch, G. Quistorf (Fraunhofer IWES, Germany), M. Ruben, A. Müller, C. Wessels (Nordex Energy SE, Germany), C. Fenselau, I. Prima, J. Lehmann (Vestas Wind Systems, Denmark) (Submission-ID WIW22-61) 	
17:55 – 18:15	Discussions

16:15 – 17:55	SESSION 4B: STABILITY ANALYSIS
10:15 New York 11:15 Rio de Janeiro 15:15 London 19:45 New Delhi 21:15 Jakarta 22:15 Beijing 23:15 Tokyo 01:15 Sydney	
> Session Chair	Sigrid Bolik (Siemens, United Kingdom)
16:15 – 17:35	Presentations (20 min. each)
<ul style="list-style-type: none"> Temporary Overvoltages and their Impact on Grid Security - Final Results from the Joint Research Project OVRTuere S. Kaiser, S. Eichner (Fraunhofer ISE, Germany), C. Wirtz, M. Murglat (FGH, Germany), M. Brenner, P. Lilje, C. García (M.P.E., Germany), J. Döll, Y. Ayadi (FGH, Germany), E. Bosch (Autarsys, Germany) (Submission-ID WIW22-120) Practical Aspects of Small-signal Stability Analysis and Instability Mitigation Ł. Kocewiak (Ørsted, Denmark), R. Blasco-Gimenez (Polytechnical University of València, Spain), C. Buchhagen (TenneT TSO, Germany), J. B. Kwon (Energinet, Denmark), M. Larsson (Hitachi Energy, Switzerland), Y. Sun (Shell Global Solutions International, Netherlands), X. Wang (Aalborg University, Denmark) (Submission-ID WIW22-149) EMT Modelling of Inverter-Based Resources for Grid Stability Analysis Using Vendor-Independent Interfaces A. Mahajan, B. Stickan, A. Salman, C. Gasser, F. Kuhlenkampff, R. Singer, S. Rogalla (Fraunhofer ISE, Germany), T. Schaupp, C. Schoell, M. Lindner, T. Rollkowski (Transnet BW, Germany) (Submission-ID WIW22-138) A Reversed Impedance-Based Stability Criterion for IBR Grids S. Shah, W. Yan, P. Koralewicz, E. Mendiola, V. Gevorgian (NREL – National Renewable Energy Laboratory, USA) (Submission-ID WIW22-151) 	
17:35 – 17:55	Discussions

16:15 – 17:55	SESSION 4C: COUNTRY UPDATES
10:15 New York 11:15 Rio de Janeiro 15:15 London 19:45 New Delhi 21:15 Jakarta 22:15 Beijing 23:15 Tokyo 01:15 Sydney	
> Session Chair	David Lingfors (Uppsala University, Sweden)
16:15 – 17:35	Presentations (20 min. each)
<ul style="list-style-type: none"> • NREL Study on 100 % Renewables in the U.S. P. Denholm (NREL, USA) • Integrating a Higher Share of Renewable Energy in the Southern Region Transmission Network of India: Impact and Recommendations Harikrishna K V, S. Singh P, H. R. G V (CSTEP – Center for Study of Science, Technology and Policy, India) (Submission-ID WIW22-60) • California’s Low Carbon Grid – An Update J. Caldwell (USA) (Submission-ID WIW22-164) • Impact of Smart Grid Technologies on the Distribution Network in Uganda: A Case Study H. Abouelgheit (Tractebel Engineering, Germany), L. Pizzimbone (ENGIE Impact, Germany), A. Danabal (TUM – Technical University of Munich, Germany) (Submission-ID WIW22-9) 	
17:35 – 17:55	Discussions

18:15 Poster Reception/Networking Event

THURSDAY, 13 OCTOBER 2022

09:00 – 10:40	SESSION 5A: HARMONIC ASPECTS
03:00 New York 04:00 Rio de Janeiro 08:00 London 12:30 New Delhi 14:00 Jakarta 15:00 Beijing 16:00 Tokyo 18:00 Sydney	
> Session Chair	Sigrid Bolik (Siemens, United Kingdom)
09:00 – 10:20	Presentations (20 min. each)
<ul style="list-style-type: none">• Analysis of Harmonic Voltage Distortion Simulation Study Results Compared to Actual Levels Measured at the 383 MW Nearshore Windpark Fryslân D. Vree (Energy Solutions, Netherlands), B. Ummels (Windpark Fryslân TU Delft, Netherlands), B. Stobbe (Ventolines, Netherlands) (Submission-ID WIW22-42)• Harmonic Distortion Prediction Method for a Meshed Transmission Grid with Distributed Harmonic Emission Sources – Eastern Danish Transmission Grid Case Study V. Akhmatov, M. Sørensen, T. Jakobsen, C. L. Skovgaard, B. C. Gellert (Energinet, Denmark), B. Sønndergaard Bukh (Energinet Aalborg University, Denmark) (Submission-ID WIW22-4)• Harmonic Distortion Assessment at the Point of Connection for Compliance Verification R. R. Stanley (Vestas, India), H. Soltani (Vestas, Denmark), M. Gupta (Vestas, India), H. Abildgaard, T. Lund (Vestas, Denmark) (Submission-ID WIW22-163)• Impedance Shaping for the Control of PV Inverters Aimed to Support Compliance of Harmonics Requirements A. Morales, F. D. Freijedo, H. Subramanian, R. Huempfnér (Huawei Technologies Düsseldorf, Germany) (Submission-ID WIW22-13)	
10:20 – 10:40	Discussions

09:00 – 10:40	SESSION 5B: SYSTEM RESTORATION ASPECTS
03:00 New York 04:00 Rio de Janeiro 08:00 London 12:30 New Delhi 14:00 Jakarta 15:00 Beijing 16:00 Tokyo 18:00 Sydney	
> Session Chair	Mart van der Meijden (Tennet TSO, Netherlands)
09:00 – 10:20	Presentations (20 min. each)
<ul style="list-style-type: none">• Employing Wind Power Plants in Grid Restoration Processes - A Field Testing L. Holicki, A. Abels, S. Nikolai, G. Schürmann (Wobben Research and Development, Germany), U. Schauerte, T. Schmidt (Westnetz, Germany), T. Flessner (Alterric, Germany) (Submission-ID WIW22-67)• Areal Power Plant: Aggregation System to Control a Multitude of Distributed Generators during Power System Restoration - Demonstration Results J. Bergsträßer (née Schütt), H. Becker, T. Schellien, S. Liebehentze (Fraunhofer IEE, Germany), U. Spanel (DUtrain, Germany) (Submission-ID WIW22-90)• Optimal Sizing of Battery Energy Storage to Enable Offshore Wind Farm Black Start Operation N. Halwany (DTU – Technical University of Denmark, Denmark), D. Pagnani, M. Ledro (Ørsted, Denmark), O. Edo Idehe (Ørsted, United Kingdom), M. Marinelli (DTU – Technical University of Denmark, Denmark), Ł. Kocewiak (Ørsted, Denmark) (Submission-ID WIW22-159)• Experience and EMT Study for Onsite Grid Forming Test Using BESS – RINGO Black Start Project H. Saad (ACDC Transient, France), V. Rudan (RTE, France), F. Pezet, A. Verdicchio (NIDEC, France), S. Subrin (CNR, France), Y. Vernay, P. Nguyen (RTE, France), G. Postiglione (NIDEC, France), S. Lima Barroso Pereira, S. Abibou (Vestas Wind Systems, Portugal), M. Aguado (RTE, France) (Submission-ID WIW22-161)	
10:20 – 10:40	Discussions

09:00 – 10:40	SESSION 5C: GRID CODE ASPECTS
03:00 New York 04:00 Rio de Janeiro 08:00 London 12:30 New Delhi 14:00 Jakarta 15:00 Beijing 16:00 Tokyo 18:00 Sydney	
> Session Chair	José Rueda Torres (TU Delft, Netherlands)
09:00 – 10:20	Presentations (20 min. each)
<ul style="list-style-type: none"> • Analysis and Mitigation of Submodule Capacitor Overvoltage for MMC-Based Grid Emulator Under LVRT Test Z. Li, F. Zhao, X. Chen, S. Munk-Nielsen (Aalborg University, Denmark), M. Geske, R. Grune (R&D Test Systems, Germany) X. Wang (Aalborg University, Denmark) (Submission-ID WIW22-65) • A Novel Modular Combinable Hardware-in-The-Loop Platform For Stability Investigations of Converter-Driven Power Grids P. Hackl, C. Lehmal, Z. Zhang, R. Schuerhuber (Institute of Electrical Power Systems TU Graz, Austria) (Submission-ID WIW22-53) • Integration of BESS for Grid Code Complaint Operation of Transmission Networks in case of Contingencies using PSS/E and Matlab D. Gautam, A. Thomas, S. Gera (Hindustan Petroleum Corporation, India) (Submission-ID WIW22-118) • Type 5 Wind Turbine Technology: How Synchronised, Synchronous Generation Avoids Uncertainties about Inverter Interoperability under IEEE 2800:2022 G. Henderson (SyncWind Power, New Zealand), V. Gevorgian (NREL – National Renewable Energy Laboratory, USA) (Submission-ID WIW22-134) 	
10:20 – 10:40	Discussions

10:40 – 11:10 COFFEE BREAK

11:10 – 12:50	SESSION 6A: LARGE-SCALE EMT ANALYSIS IN CONVERTER-DOMINATED GRIDS AND ENTSO-E STANDARD-INTERFACE DEMONSTRATIONS
05:10 New York 06:10 Rio de Janeiro 10:10 London 14:40 New Delhi 16:10 Jakarta 17:10 Beijing 18:10 Tokyo 20:10 Sydney	
> Session Chair	Carsten Heising (Avasition, Germany)
11:10 – 12:20	Presentations
<ul style="list-style-type: none"> • Standardized Control Interface to Enable Large-Scale EMT Simulations for Interaction Studies H. Just, C. Heck (50Hertz, Germany), K. Vennemann, T. Hennig (Amprion, Germany), R. Dimitrovski, C. Petino-Wagner, W. Winter (TenneT TSO, Germany), C. Schöll, M. Lindner (TransnetBW, Germany) • Overview on ENTSO-E-interface use cases (5 minutes each) <ul style="list-style-type: none"> ○ Contributions to the Validation of the ENTSO-E Standardized Control Interface for HVDC SIL/HIL Conformity Tests within the Framework of the DemAnDS Project C. Heising, R. Bartelt (Avasition GmbH, Germany), L. Osterkamp, V. Yellisetti, P. Wienkamp (RWTH Aachen, Germany), V. Staudt, D. Vahle (Ruhr-University Bochum, Germany), R. Dimitrovski, C. Petino-Wagner, W. Winter (TenneT TSO, Germany) ○ ENTSO-E-interface use case BESS S. Rogalla (Fraunhofer ISE, Germany) ○ ENTSO-E-interface use case testbench T. Jersch (Fraunhofer IWES, Germany) • EMT-HIL Systems to Analyze the Stability in Inverter-Dominated Transmission and Distribution Systems T. Degner, S. Eberlein, L. D. Pabon-Ospina, D. Strauss-Mincu, N. Wiese (Fraunhofer IEE, Germany), C. Heising, R. Bartelt (Avasition, Germany) (Submission-ID WIW22-139) 	
12:20 – 12:50	Panel discussion – Qua vadis?

11:10 – 12:50 SESSION 6B: HYDROGEN ASPECTS I

05:10 New York | 06:10 Rio de Janeiro | 10:10 London | 14:40 New Delhi | 16:10 Jakarta | 17:10 Beijing | 18:10 Tokyo | 20:10 Sydney

> **SESSION CHAIR Eckehard Tröster (Energynautics, Germany)A****11:10 – 12:40 Presentations (18 min. each)**

- **Benefits from Islanding Hydrogen Production in Renewable Energy Systems**
C. Tries, f. Hofmann, T. Brown (TU Berlin, Germany) ([Submission-ID WIW22-132](#))
- **Validation Framework for Integration of Hydrogen-Based Technologies in Electric Distribution Grid.**
M. Ahmed, H. Langnickel, M. Ohm, S. Geißendoerfer, M. Zobel, K. v. Maydell (German Aerospace Center – DLR, Germany) ([Submission-ID WIW22-111](#))
- **General Concept for an H2 Terminal in Brunswick**
B. Engel (TU Brunswick - elenia, Germany)
- **Stability Analysis of Multi-Energy Hubs in the North Sea**
J. Rueda Torres (TU Delft, Netherlands)
- **Hydrogen Lab Bremerhaven**
J. Vervoort (Fraunhofer IWES, Germany) ([Submission-ID WIW22-136](#))

12:40 – 12:50 Discussions**11:10 – 12:50 SESSION 6C: CONNECTION OF OFFSHORE WIND POWER PLANTS**

05:10 New York | 06:10 Rio de Janeiro | 10:10 London | 14:40 New Delhi | 16:10 Jakarta | 17:10 Beijing | 18:10 Tokyo | 20:10 Sydney

> **Session Chair Karsten Burges (RE-xpertise, Germany)****11:10 – 12:30 Presentations (20 min. each)**

- **HVAC Transmission Design Challenges for Grid Integration of Offshore Wind Power Plants**
J. Dakic, M. Cheah, E. Prieto Araujo, O. Gomis Bellmunt (Polytechnical University of Catalonia– CITCEA-UPC, Spain), M. Dernbach, J. Naidu Sakamuri (Vattenfall AB, Sweden) ([Submission-ID WIW22-140](#))
- **Non-linear Stability Boundary Assessment of Offshore Wind Power Plants Under Large Grid Disturbances**
S. Ghosh (DTU – Technical University of Denmark), M. Kazem Bakhshizadeh (Ørsted Wind Power, Denmark), **G. Yang** (DTU – Technical University of Denmark), Ł. Kocewiak (Ørsted Wind Power, Denmark), B. Pal (Imperial College London, United Kingdom) ([Submission-ID WIW22-154](#))
- **Dynamic Behavior of Phase Shifting Transformer (PST) for Blackstart and Stable Operation of Offshore Wind Farm with Diode-Rectifier Unit HVDC Link**
L. Cai (University of Rostock, Germany), X. Meng (SEWPG European Innovation Center Aps, Denmark) ([Submission-ID WIW22-99](#))
- **An Intelligent and Automatic Control of Renewable Production for Flexible Access of Large Offshore Wind Parks**
F. Villella (EGI – Elia Grid International, Belgium), K. De Kerf, F. Gorlier, W. Thirion, S. Tholen (Elia Transmission, Belgium) ([Submission-ID WIW22-11](#))

12:30 – 12:50 Discussions**12:50 – 13:50 LUNCH BREAK**

13:50 – 15:30	SESSION 7A: FREQUENCY STUDIES
07:50 New York 08:50 Rio de Janeiro 12:50 London 17:20 New Delhi 18:50 Jakarta 19:50 Beijing 20:50 Tokyo 22:50 Sydney	
> Session Chair	Kaushik Das (DTU, Denmark)
13:50 – 15:10	Presentations (20 min. each)
<ul style="list-style-type: none"> • High Temporal Resolution Load and Renewables Time Series Generation for Prospective Frequency Studies F. Bienvenu, J. Callec (RTE R&D, France) (Submission-ID WIW22-31) • Assessment of the Electrical Grid Frequency Stability in Prospective Studies J. Callec, F. Bienvenu (RTE R&D, France) (Submission-ID WIW22-32) • Damping of Low-Frequency Oscillations Using PV + BESS Installation: Practical Design Case I. Martinez Sanz, P. Raboni (NHOA Energy, Italy), G. Manieri, A. Berizzi (Politecnico di Milano, Italy) (Submission-ID WIW22-34) • Influence of Power Oscillation Damping Assets Reactive Power Capacity on Damping Low-Frequency Power System Oscillations G. Mugambi, L. Cai (University of Rostock, Germany) (Submission-ID WIW22-36) 	
15:10 – 15:30	Discussions

13:50 – 15:30	SESSION 7B: COUNTRY STUDIES– BANGLADESH
07:50 New York 08:50 Rio de Janeiro 12:50 London 17:20 New Delhi 18:50 Jakarta 19:50 Beijing 20:50 Tokyo 22:50 Sydney	
> Session Chair	Eckehard Tröster (Energynautics, Germany)
13:50 – 15:20	Presentations (18 min. each)
<ul style="list-style-type: none"> • When a PV/BESS Island System Becomes Grid Connected: How to Best Use the BESS M. Rohman (WZPDCL, Bangladesh), E. Tröster (Energynautics, Germany) • Grid Friendly BESS Operation: A Use Case from Bangladesh M. T. Hoque (DPDC, Bangladesh), T. K. Mondal (DPDC, Bangladesh), E. Tröster (Energynautics, Germany) • Rooftop PV Monitoring System M. Rohman (WZPDCL, Bangladesh), J. Nešić Lovše (GOPA intec, Germany) • Distribution Network Reliability and Operational Optimization Q. A. Rahman (DPDC, Bangladesh), Z. Karim (DPDC, Bangladesh), J. Modi (GOPA intec, Germany) • Long-term Demand Forecasting and Economic Impact Assessment of Rooftop Solar Energy on CO2 Emissions M. T. Hoque (DPDC, Bangladesh), R. B. H. Shashi (DPDC, Bangladesh), I. Darchiashvili (GOPA intec, Germany), P. Freunsch (GOPA intec, Germany) 	
15:20 – 15:30	Discussions

13:50 – 15:30	SESSION 7C: FORECASTING I
07:50 New York 08:50 Rio de Janeiro 12:50 London 17:20 New Delhi 18:50 Jakarta 19:50 Beijing 20:50 Tokyo 22:50 Sydney	
> Session Chair	Oscar Lindberg (Uppsala University, Sweden)
13:50 – 15:20	Presentations (20 min. each)
<ul style="list-style-type: none"> • Performance Comparison of Probabilistic and Artificial Neural Network Models for Long-Sequence Generation of Wind Speed Forecasts D. C. Pina-Gongora, B. Kazemtabrizi, C. Crabtree (Durham University, United Kingdom) (Submission-ID WIW22-25) • A Network of All Sky Imagers (ASI) Enabling Accurate and High-Resolution Very Short-Term Forecasts of Solar Irradiance T. Schmidt, J. Stührenberg (German Aerospace Center – DLR, Germany), N. Blum (German Aerospace Center – DLR, Spain), J. Lezaca, A. Hammer, T. Vogt (German Aerospace Center – DLR, Germany) (Submission-ID WIW22-106) • A Short-term Wind Power Output Forecasting Model based on the Enhanced Gradient Boosting Machine (GBM) Algorithms for High Wind Power Penetrations S. Park, J. Hur (Ewha Womans University, South Korea) (Submission-ID WIW22-119) • A Methodology to Improve the Predictability of Wind Energy Generation with Preliminary Confirmatory Evidence from Great Britain K. Forbes (Energy and Environmental Data Science, Ireland) (Submission-ID WIW22-52) 	
15:20 – 15:30	Discussions

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00	SESSION 8A: GRID FORMING III
10:00 New York 11:00 Rio de Janeiro 15:00 London 19:30 New Delhi 21:00 Jakarta 22:00 Beijing 23:00 Tokyo 01:00 Sydney	
> Session Chair	Julia Matevosyan (ESIG, USA)
16:00 – 17:40	Presentations (20 min. each)
<ul style="list-style-type: none"> • Grid-Forming Synchronverter-based Control Method with Current Limiting Method for Grid-Side Converters of Converter-based Generation Plants W. Schulze, P. Weber, M. Suriyah, T. Leibfried (Karlsruhe Institute of Technology – KIT/IEH, Germany) (Submission-ID WIW22-101) • Performance Optimisation of a Grid Forming Battery Energy Storage System J. Mesbah, J. Leung, S. Hancock (DgSILENT Pacific, Australia) (Submission-ID WIW22-45) • Performance Improvement of DFIG-based WECS with Non-Linear Load Penetration Using Additional DSTATCOM H. Kumar, G. Singh Chawda, S. Meena, S. Shekhar, A. P S (Indian Institute of Technology Jodhpur, India), P. Kumar (Rajasthan Technical University Kota, India) (Submission-ID WIW22-162) • New Current Limiting Control for Grid-Forming Converter under Unbalanced Faults N. Wiese (University of Kassel, Germany Fraunhofer IEE, Germany), Y. Zhang (University of Kassel, Germany), M. Braun (University of Kassel, Germany Fraunhofer IEE, Germany) (Submission-ID WIW22-155) • Evaluating Flicker Damping Capabilities of Wind Turbine Inverters with Grid Following and Grid Forming Controls Applying the Proposed Cases in IEC 61400-21-4 L. Rezai, F. Pöschke, M. Andrejewski, H. Schulte. J. Fortmann (HTW Berlin, Germany) (Submission-ID WIW22-128) 	
17:40 – 18:00	Discussions

16:00 – 18:00	SESSION 8B: HYDROGEN ASPECTS II
10:00 New York 11:00 Rio de Janeiro 15:00 London 19:30 New Delhi 21:00 Jakarta 22:00 Beijing 23:00 Tokyo 01:00 Sydney	
> Session Chair	Thomas Ackermann (Energynautics, Germany)
16:00 – 17:20	Presentations (20 min. each)
<ul style="list-style-type: none"> • Offsh2ore Island Grid for Hydrogen Production - Electrical Simulations on How to Reach Grid Stability S. Eichner, F. Kulemkampff, A. Salman (Fraunhofer ISE, Germany) (Submission-ID WIW22-28) • Challenges in Analyzing Green Hydrogen Scenario Pathways for the Transition Years - A Meta-Study for Germany T. Schmidt-Achert, D. Ruprecht, S. Pichlmaier (FFE, Germany) (Submission-ID WIW22-59) • Power-to-Methane via H₂O/CO₂ Co-Electrolysis Integration: A Conceptual Performance Assessment on Methanation Off-Gas Recirculation using Exergy Methods D. Miric Fuentes, F. Sedeqi, M. Heddrich, A. Ansar (German Aerospace Center – DLR, Germany) (Submission-ID WIW22-116) • Possibility of Exporting Green Hydrogen in Nepal N. Shakya (Kathmandu University, Nepal), R. Shrestha, R. Saiju, N. Oelze (University of Applied Sciences Flensburg, Germany), B. S Thapa (Kathmandu University, Nepal) (Submission-ID WIW22-112) 	
17:20 – 18:00	Discussions

16:00 – 18:00 **SESSION 8C: GRID CODE VALIDATION TESTS**

10:00 New York | 11:00 Rio de Janeiro | 15:00 London | 19:30 New Delhi | 21:00 Jakarta | 22:00 Beijing | 23:00 Tokyo | 01:00 Sydney

> Session Chair **Björn Andresen (Aarhus University, Denmark)**

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

- **WTG Manufacturer's Experience with Subsystem and Component Validation for Wind Turbines**
O. Curran (Siemens Gamesa Renewable Energy, Germany), **G. M. Gomes Guerreiro** (Siemens Gamesa Renewable Energy, Denmark | DTU, Denmark), **S. Azarian**, (Siemens Gamesa Renewable Energy, Germany), **F. Martin** (Siemens Gamesa Renewable Energy, Denmark), **T. Dreyer** (Siemens Gamesa Renewable Energy, Germany) ([Submission-ID WIW22-24](#))
- **PQ4Wind – A Novel Test Bench for Component-Level Wind Turbine Converter Testing**
P. Borowski, **G. Quistorf**, **T. Jersch** (Fraunhofer IWES, Germany) ([Submission-ID WIW22-58](#))
- **Over Voltage Ride Through – Requirements, Testing and Dynamic Grid Support of Power Park Modules**
M. Ali, **B. Schowe-von der Brelie**, **Y. Ayadi**, **J. Doell** (FGH, Germany) ([Submission-ID WIW22-102](#))
- **Multi-Dip-Extention of a standard FRT Tester, Reasons and Experience**
R. Klosse (EESYST Energie Elektrische Systemtechnik GmbH, Germany), **F. Loh** (GE Renewable Energy, Germany) ([Submission-ID WIW22-129](#))
- **Separating Renewables Growth from SF6 Use – a 'mission possible'.**
K. Burges (RE-xpertise, Germany), **B. Gschrey**, **K. Warncke** (Öko-Recherche, Germany) ([Submission-ID WIW22-114](#))

17:20 – 18:00 **Discussions**

18:45/19:30 WORKSHOP DINNER (separately bookable)

09:00 – 11:00	SESSION 9A: MODELLING ASPECTS
03:00 New York 04:00 Rio de Janeiro 08:00 London 12:30 New Delhi 14:00 Jakarta 15:00 Beijing 16:00 Tokyo 18:00 Sydney	
> Session Chair	Jens Fortmann (HTW Berlin, Germany)
09:00 – 10:40	Presentations (20 min. each)
<ul style="list-style-type: none"> • Obtaining Flat Initialization of Complex Renewable Power Plant Models B. M. M. Soares, I. C. da Costa, J. P. A. E. Santo, P. E. A. Cardoso, S. L. B. Pereira (Vestas Wind Systems, Denmark) (Submission-ID WIW22-160) • Development of a Generic SSSC Model in PF. Convergence between IT and OT Practices F. Florez (TransnetBW, Germany), S. Mesa (Smart Wires Inc., USA) (Submission-ID WIW22-10) • The Optimal Control with Implicit Phase Coordination of a Collective of Wind Turbines J. Young (OptimoJoe, USA), D. G. Wilson (Sandia National Laboratories, USA), W. Weaver, R. D. Robinett III (Michigan Technological University, USA) (Submission-ID WIW22-71) • Review and Comparison of Single and Dual Active Bridge Converters for MVDC-Connected Wind Turbines V. Timmers, A. Egea-Álvarez (University of Strathclyde, United Kingdom), A. Gkountaras (Siemens Gamesa Renewable Energy, Germany), I. Xu (University of Strathclyde, United Kingdom) (Submission-ID WIW22-56) • Photovoltaic Integration in Urban Areas H. Ziar (TU Delft, Netherlands) 	
10:40 – 11:00	Discussions

09:00 – 11:00	SESSION 9B: SMART GRID ASPECTS
03:00 New York 04:00 Rio de Janeiro 08:00 London 12:30 New Delhi 14:00 Jakarta 15:00 Beijing 16:00 Tokyo 18:00 Sydney	
> Session Chair	Leonard Hülsmann (Energynautics, Germany)
09:00 – 10:20	Presentations (20 min. each)
<ul style="list-style-type: none"> • Automated Data Integration of Residential And Commercial PV Systems Into DSO SCADA Utilizing IEC 61850 Compliant Comprehensive Data Model S. Chen, H. Lorenz, C. Kondzialka, B. Idlbi, K. Belkilani, G. Heilscher (Ulm University of Applied Sciences, Germany), J. Beták, J. Rusnák, B. Schnierer (Solargis, Slovakia), M. Resch, G. Supper (Business Agency Burgenland Research and Innovation, Austria) (Submission-ID WIW22-83) • Regional Real-Time PV Spinning Reserve Estimator V. Gevorgian, G. Saraswat (NREL, USA) (Submission-ID WIW22-135) • Quicker Connection of Wind: A Case of Dynamic Line Rating to Connect Wind and Defer Grid Investment A. H. Skånlund (Heimdall Power, Norway) (Submission-ID WIW22-165) • Resistance is Futile – Implementing Automated Renewable Trading in Competitive Energy Markets H. Mackenzie (HARD software, Australia) (Submission-ID WIW22-8) 	
10:20 – 11:00	Discussions

09:00 – 11:00	SESSION 9C: HYBRID SYSTEMS I
03:00 New York 04:00 Rio de Janeiro 08:00 London 12:30 New Delhi 14:00 Jakarta 15:00 Beijing 16:00 Tokyo 18:00 Sydney	
> Session Chair	Nis Martensen (Energynautics, Germany)
09:00 – 10:40	Presentations (20 min. each)
<ul style="list-style-type: none"> • An Optimal Charging Scheduler-Based Charging Strategy of a Real Life Hybrid Energy Storage for a Solar and Wind Equipped Student Residence L. N. Palaniswamy, N. Munzke, C. Kupper, M. Hiller (Karlsruhe Institute of Technology – KIT, Germany) (Submission-ID WIW22-100) • Oversizing Co-located Wind and Solar Parks to Increase the Capacity Factor O. Lindberg, D. Lingfors (Uppsala University, Sweden) (Submission-ID WIW22-51) • dynOpt-En – Cloud-Based Predictive Energy Manager for Supply- and Demand-Responsive Energy Source Connection T. Bernard, S. Wallner, J. Thomas (Fraunhofer IOSB, Germany), U. Leibfried (Consolar Solare Energiesysteme, Germany), S. Stürtz (Comgy, Germany) (Submission-ID WIW22-46) • Island Grid Operation of a Modified Mobile Generator – Test and Optimization in a Living Lab with High PV Penetration T. Lechner, S. Seifried (Augsburg University of Applied Sciences, Germany), J. Timmermann, C. Bernecker-Castro (Technical University of Munich – TUM, Germany), K. Schaarschmidt (LEW Verteilnetz, Germany), S. Herrmann (AVS Aggregatebau, Germany), M. Finkel (Augsburg University of Applied Sciences, Germany), R. Witzmann (Technical University of Munich – TUM, Germany) (Submission-ID WIW22-35) • Residential Building with Rooftop Solar PV System, Battery Storage and Electric Vehicle Charging: Environmental Impact and Energy Matching Assessments for a Multi-Family House in a Swedish City R. Fachrizal, O. Lindberg (Uppsala University, Sweden), A. D. S. Kinasih, A. Muntean (Karlstad University, Sweden), J. Widén, J. Munkhammar (Uppsala University, Sweden) (Submission-ID WIW22-70) 	
10:40 – 11:00	Discussions

11:00 – 11:20 COFFEE BREAK

11:20 – 13:00	SESSION 10A: POWER QUALITY ASPECTS
05:20 New York 06:20 Rio de Janeiro 10:20 London 14:50 New Delhi 16:20 Jakarta 17:20 Beijing 18:20 Tokyo 20:20 Sydney	
> Session Chair	Łukasz Kocewiak (Ørsted, Denmark)
11:20 – 12:40	Presentations (20 min. each)
<ul style="list-style-type: none"> • Design Algorithm of Harmonic Filters in a Meshed Transmission Grid With Distributed Harmonic Emission Sources – Eastern Danish Transmission Grid Case Study V. Akhmatov, M. Sørensen, T. Jakobsen, C. L. Skovgaard, B. C. Gellert (Energinet, Denmark), B. Søndergaard Bukh (Energinet Aalborg University, Denmark) (Submission-ID WIW22-5) • Passivity-Based Analysis and Design for Selective Harmonic Resonant Control Z. Zhou, X. Wang, F. Zhao (Aalborg University, Denmark), Y. Sun (Shell Global Solutions International, Netherlands), Ł. Kocewiak (Ørsted Wind Power, Denmark), J. R. Svensson (Hitachi ABB Power Grids, Sweden) (Submission-ID WIW22-133) • Challenges for Grid Forming Inverter in Distribution Systems T. Degner, W. Heckmann (Fraunhofer IEE, Germany), B. Engel, B. O. Winter (TU Brunswick – elenia, Germany), S. Ohrem (Westenergie, Germany) • Challenges for Integration of Renewable Energy in Public Grid A. Kuri (Siemens, Germany Friedrich-Alexander-University Erlangen-Nuremberg – FAU, Germany), E. Brackenhauer (Siemens, Germany) (Submission-ID WIW22-12) 	
12:40 – 13:00	Discussions

11:20 – 13:00	SESSION 10B: IEA WIND TASK 51 – FORECASTING FOR THE WEATHER-DRIVEN ENERGY SYSTEM
05:20 New York 06:20 Rio de Janeiro 10:20 London 14:50 New Delhi 16:20 Jakarta 17:20 Beijing 18:20 Tokyo 20:20 Sydney	
> Session Chair John Zack (Meso, Usa) Corinna Möhrten (Weprog, Denmark)	
11:20 – 12:45	Presentations
<ul style="list-style-type: none"> • Task 51 Overview J. Zack (MESO, USA) (15min) • Paper: Maximizing the Value of Forecasting for the Weather Driven Energy System J. Zack (MESO, USA), C. Möhrten (WEPROG, Denmark), G. Giebel (DTU, Denmark), C. Draxl (NREL, USA) (Submission-ID WIW22-110) • Paper: Forecasting for the Weather Driven Energy System – A new Task under IEA Wind G. Giebel (DTU, Denmark), C. Draxl (NREL, USA), H. Frank (Deutscher Wetterdienst, Germany), J. Zack (MESO, USA), C. Möhrten (WEPROG, Denmark), G. Kariniotakis (PSL University, France), J. Browell (University of Glasgow, United Kingdom), R. Bessa (INESC TEC, Portugal), D. Lenaghan (National Grid ESO, United Kingdom) (Submission-ID WIW22-125) • Keynote on Forecasting Games and Experiments from the Cognitive Scientists Perspective N. Fleischhut (MPI for Human Development) (20min) • Introduction to forecasting game C. Möhrten (WEPROG, Denmark) (10min) • Interactive probabilistic forecasting game playing (30min) 	
12:45– 13:00	Presentation of results and discussion (15min)

13:00 – 14:00 LUNCH BREAK

14:00 – 15:40	SESSION 11A: GRID INTEGRATION ASPECTS
08:00 New York 09:00 Rio de Janeiro 13:00 London 17:30 New Delhi 19:00 Jakarta 20:00 Beijing 21:00 Tokyo 23:00 Sydney	
> Session Chair Frank Martin (SiemensGamesa, Denmark)	
14:00 – 15:20	Presentations (20 min. each)
<ul style="list-style-type: none"> • Short-Circuit Currents from Wind Turbines with Full-Scale Inverters K. Protsenko (Vestas Wind Systems, Denmark), H. Abildgaard (Vestas Wind Systems Beter Energy, Denmark), A. Silva, F. Alvarez-Mendoza (Vestas Portugal, Portugal) (Submission-ID WIW22-26) • Tuning of Power Plant Voltage and Reactive Power Controllers Considering Equivalent Short Circuit Ratio P. Partinen (Fingrid Oyj, Finland), P. H. Nielsen (Vestas Wind Systems, Denmark), O.-P. Janhunen, L. Linnamaa (Fingrid Oyj, Finland), N. Akel (Vestas Wind Systems, Sweden), K. Nayebi, T. Lund (Vestas Wind Systems, Denmark), A. Harjula (Fingrid Oyj, Finland) (Submission-ID WIW22-14) • Analysis and Systematic Comparison of Concepts for Voltage Control with Inverted-Based Prosumer Devices C. Wegkamp, B. Skurk, B. Engel (Technische Universität Braunschweig/elena, Germany) (Submission-ID WIW22-130) • Pathways for Equipment Certification to accelerate compliance measures in Europe B. Schowe-von der Brelie (FGH e.V., Germany), P. Tavasoli (FGH Zertifizierungsgesellschaft mbH, Germany), S. M. Ali (FGH GmbH, Germany) (Submission-ID WIW22-89) 	
15:20 – 15:40	Discussions

14:00 – 15:40	SESSION 11B: HYDROGEN ASPECTS III
08:00 New York 09:00 Rio de Janeiro 13:00 London 17:30 New Delhi 19:00 Jakarta 20:00 Beijing 21:00 Tokyo 23:00 Sydney	
> Session Chair	Eckehard Tröster (Energynautics, Germany)
14:00 – 15:00	Presentations (20 min. each)
<ul style="list-style-type: none"> • Unlocking the Potential of Renewables with Green Hydrogen M. Morjaria (Terabase Energy, USA) (Submission-ID WIW22-148) • Transient Operating Strategies for Solar Heat Supported Solid Oxide Electrolysis Systems for Hydrogen Production R. Lorenz (German Aerospace Center – DLR, Germany), F. Resink (University of Groningen, Netherlands), M. Tomberg, M. P. Heddrich, S. Asif Ansar (German Aerospace Center – DLR, Germany) (Submission-ID WIW22-75) • Sharing the Network Infrastructure Between Renewable Sources with Different Technologies as a Way to Increase the Connection Possibilities of the Power System P. Kacejko, M. Wancerz (Lublin University of Technology, Poland) (Submission-ID WIW22-95) 	
15:00 – 15:40	Discussions

15:40 – 16:00 COFFEE BREAK

16:00 – 17:00	SESSION 12 – CLOSING SESSION – PANEL DISCUSSION
10:00 New York 11:00 Rio de Janeiro 15:00 London 19:30 New Delhi 21:00 Jakarta 22:00 Beijing 23:00 Tokyo 01:00 Sydney	
> Session Chair	TBA
16:00 – 16:45	
<p>Current Situation in Europe: Challenge or Opportunity for the Energy Transformation?</p> <p>Panelists:</p> <ul style="list-style-type: none"> - Debra Lew (ESIG, USA) - Christoph Tries (TU Berlin Germany) - Phil McKay (Canadian Renewable Energy Association, Canada) 	
16:45– 17:00	Closure

POSTER PRESENTATIONS

- **Balancing Group Operation for Wind Power Plants and a Pumped-Storage Hydro Generator to Maximize Expected Revenue in Consideration of Wind Power Output Uncertainty**
M. Inagaki, A. Kaneko, Y. Fujimoto, Y. Hayashi (Waseda University, Japan), S. Minotsu (Electric Power Development, Japan) (Submission-ID WIW22-40)
- **Evaluation Method of Congestion Frequency Considering Changes in Power Flow Conditions due to Wind Turbine Installation**
Y. Tanno, A. Kaneko, Y. Hayashi (Waseda University, Japan), N. Ito, K. Kakeda (Tohoku Electric Power Network, Japan), M. Ohba, D. Nohara, Y. Kanno (Central Research Institute of Electric Power Industry, Japan) (Submission-ID WIW22-41)
- **Downscaling Global, Beam and Diffuse Horizontal Irradiance Based on Hour Resolution Global Horizontal Irradiance Using Markov Mixture Distribution Modeling**
J. Munkhammar, J. Widén (Uppsala University, Sweden) (Submission-ID WIW22-50)
- **Density Integration Approach for Probabilistic Prediction of Wind Power Generation Based on Ensemble Weather Forecast**
Y. Fujimoto, T. Kato (Waseda University, Japan), D. Nohara, Y. Kanno, M. Ohba (Central Research Institute of Electric Power Industry, Japan), Y. Hayashi (Waseda University, Japan) (Submission-ID WIW22-64)