PRELIMINARY AGENDA AS OF 12 AUGUST 2022

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

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WORKSHOP AMBASSADORS

ESIG
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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– 11:00	ROOM 2.1 + 2.2 + 2.3			09:00– 10:40	ROOM 2.1	ROOM 2.2	ROOM 2.3	9:00 – 10:40	ROOM2 .1	ROOM 2.2	ROOM 2.3
	WELCOME & SESSION 1: KEYNOTE SESSION				**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
	COFFEE BREAK (20 MIN)				COFFEE BREAK (30 MIN)				COFFEE BREAK (20 MIN)		
11:20 – 13:00	ROOM 2.1	ROOM 2.2	ROOM 2.3	11:10 – 12:50	ROOM2.1	ROOM 2.2	ROOM 2.3	11:00 – 12:40	ROOM 2.1	ROOM 2.2	ROOM 2.3
	SESSION 2A: GRID FORMING I	**SESSION 2B:** THE FUTURE POWER SYSTEM	**SESSION 2C:** IEA WIND TASK 51		**SESSION 6A:** EMT ANALYSIS IN CONVERTER-DO-MINATED GRIDS + ENTSO-E STAN-DARD-INTERFACE DEMOS	**SESSION 6B:** HYDROGEN ASPECTS I	**SESSION 6C** CONNECTION OF OFFSHORE WIND POWER PLANTS		**SESSION 10A:** POWER QUALITY ASPECTS	**SESSION 10B:** TBA	**SESSION 10C:** HYBRID SYSTEMS II
	LUNCH 13:00 – 14:00				LUNCH 12:50 – 13:50				LUNCH 12:40 – 13:40		
14:00 – 15:40	ROOM 2.1	ROOM 2.2	ROOM 2.3	13:50 – 15:30	ROOM 2.1	ROOM 2.2	ROOM 2.3	13:40 – 15:20	ROOM 2.1	ROOM 2.2	ROOM 2.3
	SESSION 3A: GRID FORMING II	**SESSION 3B:** HYBRID POWER PLANTS	**SESSION 3C** ECONOMIC ASPECTS		**SESSION 7A:** GRID FORMING III	**SESSION 7B:** COUNTRY STUDIES– BANGLADESH	**SESSION 7C:** COUNTRY UPDATES		**SESSION 11A:** TBA	**SESSION 11B:** HYDROGEN ASPECTS III	**SESSION 11C:** ENERGY MARKET AND REGULATORY ISSUES
	GROUP PHOTO / COFFEE BREAK (30 MIN)				COFFEE BREAK (30 MIN)				COFFEE BREAK (20 MIN)		
16:10 – 18:10	ROOM 2.1	ROOM 2.2	ROOM 2.3	16:00 – 18:10	ROOM 2.1	ROOM 2.2	ROOM 2.3	15:40 – 16:45	ROOM 2.1 + 2.2 + 2.3		
	SESSION 4A: NEW PATHWAYS TO FUTURE GRID COM-PLIANCE FOR WIND POWER PLANTS	**SESSION 4B:** STABILITY ANALYSIS	**SESSION 4C** FORECASTING I		**SESSION 8A:** GRID CODE VALIDATION TESTS	**SESSION 8B:** HYDROGEN ASPECTS II	**SESSION 8C:** FORECASTING II		**SESSION 12:** CLOSING SESSION – PODIUM DISCUSSION		
18:15 – 21:00	POSTER RECEPTION & NETWORKING EVENT			18:45/19:30	WORKSHOP DINNER – separately bookable –						

WEDNESDAY, 12 OCTOBER 2022

08:00 – 09:00 **Registration**
09:00 – 09:20 **Welcome**

09:20 – 11:00	**SESSION 1 – KEYNOTE SESSION**
> Session Chair	**T. Ackermann (Energynautics, Germany)**
09:20 – 10:40	**Presentations (20min. each)**

- **Challenges TenneT TSO and the Importance of RD&I – tbc**
  Maarten Abbenhuis (COO TenneT, Netherlands)
- **Offshore Wind Development in Netherlands and Germany – tbc**
  Saskia Jaarsma (TenneT, Netherlands)
- **Innovation on Future Multi-vendor Meshed HVDC Grids – tbc**
  Wilhelm Winter (TenneT, Germany)
- **Target Grid 2045 – tbc**
  Margriet Rouhof (TenneT, Netherlands)
- **Transmission Reform in the US**
  D. Lew (ESIG, USA), D. Stenclik, R. Deyoe (Telos Energy, USA), B. Tsuchida, L. Lam (The Brattle Group, USA), D. Mueller, S. Adhikari (Enernex/CESI, USA), A. Bloom (Nextera, USA) (Submission-ID WIW22-63)

10:40 – 11:00 **Discussions**

11:00 – 11:20 **COFFEE BREAK**

11:20 – 13:00	**SESSION 2A: GRID FORMING I**
> Session Chair	**Julia Matevosyan (ESIG, USA)**
11:20 – 12:40	**Presentations (20 min. each)**

- **Grid Forming and Grid Following Comparison for an Offshore Wind Farm Connected Via A HVAC Cable**
  R. Alves, A. Egea-Alvarez (University of Strathclyde, United Kingdom), T. Knueppel (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 DFIG WTG**
  D. Howard, S. Achilles (General Electric, USA) (Submission-ID WIW22-69)
- **Field test of Grid Forming Converters at the Fraunhofer ISE**
  P. Ernst, **R. Singer** (Fraunhofer ISE, Germany) (Submission-ID WIW22-115)

12:40– 13:00 **Discussions**

11:20 – 13:00	SESSION 2B: THE FUTURE POWER SYSTEM
> Session Chair	TBA

11:20 – 12:40 Presentations (20 min. each)

- **First Joint Offshore Network Development Plans for Europe**
  A. Orths (Energinet, Denmark) (Submission-ID WIW22-87)
- **Frequency-Domain Stability Study of Converter-Based Power Systems**
  J. Sun et al. (Rensselaer Polytechnic Institute, USA) (Submission-ID WIW22-158)
- **Offshore Energy Hubs: Cost-Effectiveness in the Baltic Sea Energy System Towards 2050**
  M. Koivisto, P. Kanellas (DTU Wind and Energy Systems, Denmark), R. Bramstoft (DTU Management, Denmark), H. Koduvere (Tallinn University of Technology, Estonia), J. P. Murcia (DTU Wind and Energy Systems, Denmark) (Submission-ID WIW22-74)
- **The Impact of Hydrogen on the Electricity System: An EU Case Study For 2050**
  G. Morales-España, M. Weeda, R. Hernández-Serna (TNO, Netherlands) (Submission-ID WIW22-146)

12:40– 13:00 Discussions

11:20 – 13:00	SESSION 2C: IEA WIND TASK 51 – FORECASTING FOR THE WEATHER-DRIVEN ENERGY SYSTEM
> SESSION CHAIR	TBA

11:20 – 12:40 Presentations (20 min. each)

- **IEA Wind Task 51: Maximizing the Value of Forecasting for the Weather Driven Energy System**
  J. Zack (MESO, USA), **C. Möhrlen** (WEPROG, Denmark), G. Giebel (DTU, Denmark), C. Draxl (NREL, USA) (Submission-ID WIW22-110)
- **TBA**
  NN (NN, NN) (Submission-ID WIW22-xyz)
- **TBA**
  NN (NN, NN) (Submission-ID WIW22-xyz)
- **TBA**
  NN (NN, NN) (Submission-ID WIW22-xyz)

12:40– 13:00 Discussions

13:00 – 14:00 LUNCH BREAK

14:00 – 15:40	SESSION 3A: GRID FORMING II
> Session Chair	TBA

14:00 – 15:20 Presentations (20 min. each)

- **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 Standardized Testing Procedures for Inertia Provision of Grid Forming Inverters**
  S. S. Kulkarni, N. Schäfer, G. Arnold, V. V. Balani Mahtani, M. Nuschke (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 Duesseldorf, Germany), P. Hackl (Graz University of Technology, Austria), H. Wrede (University of Applied Sciences Duesseldorf, Germany), R. Schürhuber (Graz University of Technology, Austria), J. Cajigal (University of Applied Sciences Duesseldorf, Germany) (Submission-ID WIW22-48)
- **On the Low Risk of SSR in Type III Wind Turbines Operating in Grid-Forming Mode**
  W. Yan, S. Shah, P. Koralewicz, R. Wallen (NREL – National Renewable Energy Laboratory, USA) (Submission-ID WIW22-152)

15:20 – 15:40 Discussions

14:00 – 15:40	SESSION 3B: HYBRID POWER PLANTS
> Session Chair	TBA

14:00 – 15:20 Presentations (20 min. each)

- **Flexible PV-Wind-Energy Storage Hybrid Generation**
  V. Gevorgian (NREL, USA) (Submission-ID WIW22-127)
- **Aspects of the Relevance of Hybrid Power Plants in Control and Stability of Weak Grids**
  F. Shahnazian, K. Das, P. Sørensen (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)

15:20 – 15:40 Discussions

14:00 – 15:40	SESSION 3C: ECONOMIC ASPECTS
> Session Chair	

14:00 – 15:20 Presentations (20 min. each)

- **Industrial Flexibility Options: Requirements for the Regulatory Framework of the Future European Procurement of System Services**
  E. Zipperling, C. Möller, M. Zdrallek (University of Wuppertal, Germany), F. Schmaltz (Yncoris, Germany) (Submission-ID WIW22-122)
- **Effect of Generation Ramp Constraints on Electricity Pricing In Markets with High Penetration of Renewables**
  N. Menemenlis, M. Huneault (Hydro-Québec Research Institute, Canada) (Submission-ID WIW22-131)
- **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)
- **TBA**
  NN

15:20 – 15:40 Discussions

15:40 – 16:10 GROUP PHOTO / COFFEE BREAK

16:10 – 18:10	SESSION 4A: NEW PATHWAYS TO FUTURE GRID COMPLIANCE FOR WIND POWER PLANTS
> SESSION CHAIR	NN (COMPANY, COUNTRY)

16:10 – 17:50 Presentations (20 min. each)

- **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)
- **The TSO Perspective of Grid Compliance Today and Tomorrow**
  NN (Company, country)
- **Towards Full Electrical Certification of Wind Turbines on Test Benches - Experiences Gained From The Hil-Gridcop Project**
  F. Hans, G. Quistorf, G. Curioni, T. Jersch (Fraunhofer IWES, Germany), M. Ruben, A. Müller, C. Wessels (Nordex SE, Germany), C. Fenselau, I. Prima, J. Lehmann (Vestas Wind Systems A/S, Denmark) (Submission-ID WIW22-61)
- **Overview of Future Grid Compliance Challenges for Offshore Wind Power: Towards subsystem testing, modelling, and validation**
  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) (Submission-ID WIW22-21)

17:50 – 18:10 DISCUSSIONS

16:10 – 18:10	SESSION 4B: STABILITY ANALYSIS
> Session Chair	TBA

16:10 – 17:50 Presentations (20 min. each)

- **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 (FGH, Germany), M. Brenner, P. Lilje (Moeller & Poeller Engineering – M.P.E., Germany), J. Döll, Y. Ayadi, S. M. Ali (FGH, Germany), E. Bosch (Autarsys, Germany), S. Rogalla (Fraunhofer ISE, Germany) (Submission-ID WIW22-120)
- **Correlation Between Global and Local Rocofs and their Relevance for Robustness Requirements of Generation Units**
  C. Strunck, C. Wagner, M. Greve (ef.Ruhr, Germany), R. Suchantke, J. Weidner (50Hertz Transmission, Germany), R. Becker, T. Hennig, M. Kaiser, J. Massmann (Amprion, Germany), G. Deiml (TenneT TSO, Germany), H. Abele, J. Lehner (TransnetBW, Germany) (Submission-ID WIW22-47)
- **Practical Aspects of Small-signal Stability Analysis and Instability Mitigation**
  Ł. Kocewiak (Ørsted, Denmark), R. Blasco-Gimenez (Universitat Politècnica de València, Spain), C. Buchhagen (TenneT TSO, Germany), J. B. Kwon (Energinet, Denmark), M. Larsson, Y. Sun, X. Wang (Hitachi Energy, Switzerland) (Submission-ID WIW22-149)
- **EMT Modeling of Inverter-Based Resources for Grid Stability Analysis Using Vendor-Independent Interfaces**
  R. Singer, B. Stickan, A. Salman, C. Gasser, S. Rogalla, F. Kuhlenkampff, A. Mahajan (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 (NREL – National Renewable Energy Laboratory, USA) (Submission-ID WIW22-151)

17:50 – 18:10 Discussions

16:10 – 18:10	SESSION 4C: FORECASTING I
> Session Chair	TBA

16:10 – 17:50 Presentations (20 min. each)

- **High 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: A 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)
- **TBA**
  NN

17:50 – 18:10 Discussions

18:15 Poster Reception/Networking Event

THURSDAY, 13 OCTOBER 2022

09:00 – 10:40	SESSION 5A: HARMONIC ASPECTS
> Session Chair	TBA

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

- **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)
- **TBA**
  NN
- **Harmonic Distortion Prediction Method in a Meshed Transmission Grid With Distributed Harmonic Emission Sources – Eastern Danish Transmission Grid Case Study**
  V. Akhmatov, M. Sørensen, T. Jakobsen, C. Skovgaard Hansen, B. C. Gellert (Energinet, Denmark), B. Søndergaard Bukh (AAU Energy Aalborg University, Denmark) (Submission-ID WIW22-4)
- **Impedance Shaping for the Control of PV Inverters Aimed to Support Compliance of Harmonics Requirements**
  A. Morales Munoz, F. D. Freijedo, H. Subramanian, R. Huempfner (Huawei Technologies Düsseldorf, Germany) (Submission-ID WIW22-13)

10:20 – 10:40 Discussions

09:00 – 10:40	SESSION 5B: SYSTEM RESTORATION ASPECTS
> Session Chair	TBA

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

- **Employing Wind Farms in Grid Restoration Processes - A Field Testing**
  S. Nikolai, A. Abels, L. Holicki, G. Schürmann (Wobben Research and Development, Germany), U. Schauerte, T. Schmidt (Westnetz, Germany), T. Flessner (Alterric, Germany) (Submission-ID WIW22-67)
- **Aggregation System to control a Multitude of Distributed Generation during Power System Restoration - Results of demonstration projects and field tests**
  H. Becker, J. Schütt (Fraunhofer IEE, Germany) (Submission-ID WIW22-90)
- **Energisation of Onshore Wind Farms with Minimisation of Inrush Currents**
  J. Merriweather (University of Strathclyde, United Kingdom), P. Hackl, Z. Zhang, R. Schuerhuber (Graz University of Technology, Austria), A. Egea Alvarez (University of Strathclyde, United Kingdom) (Submission-ID WIW22-78)
- **Optimal Sizing of Energy Storage to Enable Offshore Wind Farm Black Start Operation**
  D. Pagnani et al. (Ørsted, Denmark) (Submission-ID WIW22-159)
- **Experience and EMT Study for Onsite Grid Forming Test Using BESS – RINGO Black Start Project**
  H. Saad, V. Rudan (RTE, France), F. Pezet, L. Gagneur (NIDEC, France), Y. Vernay (RTE, France), S. Subrin (CNR, France), J. Dargot (ENEDIS, France), S. Lima Barroso Pereira, S. Abibou (Vestas Wind Systems, Portugal), P. Nguyen (RTE, France) (Submission-ID WIW22-161)

10:20 – 10:40 Discussions

09:00 – 10:40	SESSION 5C: GRID CODE ASPECTS
> Session Chair	TBA
09:00 – 10:20	**Presentations (20 min. each)**

- **Analysis and Mitigation of Submodule Capacitor Overvoltage for MMC-Based Grid Emulator Under LVRT Test**
  Z. Li, F. Zhao, X. Wang, X. Chen, S. Munk-Nielsen (Aalborg University, Denmark), M. Geske, R. Grune (R&D Test Systems, Germany) (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 Ltd, New Zealand), V. Gevorgian (National Renewable Energy Laboratory – NREL, 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
> SESSION CHAIR	CARSTEN HEISING (AVASITION, GERMANY)
11:10 – 12:30	**Presentations (20 min. each)**

- **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, Germany), L. Osterkamp, P. Wienkamp (RWTH Aachen University, Germany), V. Staudt, D. Vahle (Ruhr University Bochum, Germany), C. Heck, H. Just (50Hertz, Germany), K. Vennemann, T. Hennig (Amprion, Germany), R. Dimitrovski, C. Petino-Wagner, W. Winter (TenneT, Germany), C. Schöll, M. Lindner (TransnetBW, Germany)
- **Multi-Vendor Hardware-In-Loop Systems for Real Time Studies Seen from an OEM Perspective**
  G. K. Andersen, G. H. Abildgaard, M. R. Knudsen, D. D. Doan (Vestas Wind Systems, Denmark), C. Heising, R. Bartelt (Avasition, Germany)
- **Overview On ENTSO-E Standard-Interface Demonstrations**
  RWTH/RUB, Fraunhofer IEE/ISE/IWES – tbc
- **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)
- **Panel discussion – Qua vadis?**

12:30 – 12:50 **Discussions**

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

11:10 – 12:30 Presentations (20 min. each)

- **Benefits of Hydrogen Islanding in Europe**
  C. Tries, M. Hofmann, T. Brown (TU Berlin, Germany) (Submission-ID WIW22-132)
- **Automatic Generation Controller (AGC) for the Distributed Hydrogen Storage Power Plant (HSPP) operated under Nodal Voltage Angle Control**
  N. Ahmed, H. Weber (University of Rostock, Germany) (Submission-ID WIW22-79)
- **Efficient 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/Institute of Networked Energy Systems, Germany) (Submission-ID WIW22-111)
- **Investigation of the Electrical Behavior of the Power Grid by Using Electrolysers, Fuel Cells and Wind Turbines**
  J. Vervoort, K. Schalk, N. Denecke, J. Mader (Fraunhofer IWES, Germany) (Submission-ID WIW22-136)

12:30 – 12:50 Discussions

11:10 – 12:50	SESSION 6C: CONNECTION OF OFFSHORE WIND POWER PLANTS
> Session Chair	TBA

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 Universitat – 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 Operating in Strong/Weak Grid Conditions**
  S. Ghosh, G. Yang (DTU, Denmark), M. Kazem B. Dowlatabadi, Ł. Kocewiak (Ørsted Wind Power, Denmark) (Submission-ID WIW22-154)
- **Application 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/Institute of Electrical Power Engineering, 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 (Elia Grid International, Belgium), K. De Kerf, F. Gorlier, W. Thirion, S. Tholen (Elia, Belgium) (Submission-ID WIW22-11)

12:30 – 12:50 Discussions

12:50 – 13:50 LUNCH BREAK

13:50 – 15:30	SESSION 7A: GRID FORMING III
> Session Chair	TBA

13:50 – 15:10 Presentations (20 min. each)

- **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)
- **Controller Tuning and Performance Selection for a Grid Forming Battery Energy Storage System Project**
  J. Mesbah (DIgSILENT Pacific, Australia) (Submission-ID WIW22-45)
- **Overcurrent Protection for Grid-Forming Converter under Unbalanced Faults**
  N. Wiese (University of Kassel, Germany | Fraunhofer IEE, Germany), K. Fischbach (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, J. Fortmann, H. Schulte (HTW Berlin, Germany) (Submission-ID WIW22-128)

15:10 – 15:30 Discussions

13:50 – 15:30	SESSION 7B: COUNTRY STUDIES– BANGLADESH
> SESSION CHAIR	TBA

13:50 – 15:10 Presentations (20 min. each)

- **When a PV/BESS Island System becomes Grid Connected: How to best use the BESS**
  NN (NN, Bangladesh) (Submission-ID WIW22-xxx)
- **Grid Friendly BESS Operation: A Use Case from Bangladesh**
  NN (NN, Bangladesh) (Submission-ID WIW22-xxx)
- **Long Feeders, low Voltages: Solutions for integrating PV in weak Grids**
  NN (NN, Bangladesh) (Submission-ID WIW22-xxx)
- **Distribution network reliability and operational optimization**
  NN (NN, Bangladesh) (Submission-ID WIW22-xxx)
- **Performance Study of Solar Thermal System in a Leather Processing Factory with IoT towards Decarbonization**
  S. Labib (GIZ Bangladesh, Bangladesh) (Submission-ID WIW22-82)

15:10 – 15:30 Discussions

13:50 – 15:30	SESSION 7C: COUNTRY UPDATES
> Session Chair	TBA

13:50 – 15:10 Presentations (20 min. each)

- **Optimal PV-BESS-Diesel Operation in Isolated Microgrids in Indonesian Small Islands**
  R. Fachrizal (Uppsala University, Sweden), T. D. Wibiyanto (Sungrow Indonesia, Indonesia), A. D. Kinasih (Karlstad University, Sweden) (Submission-ID WIW22-84)
- **Successful Renewable Integration into the Indian Grid for Future- Estimating Balancing & Storage Capacity Requirements**
  P. Pandey (NTPC, India) (Submission-ID WIW22-123)
- **Integrating a Higher Share of Renewable Energy in the Southern Region Transmission Network of India: Impact and Recommendations**
  H. Kasuvuganahalli Venkateshreddy, H. R. G V, S. S. P (Center for Study of Science, Technology and Policy – CSTEP, India) (Submission-ID WIW22-60)
- **Impact of Smart Grid Technologies on the Distribution Network in Uganda: A Case Study**
  A. Danabal, H. Abouelgheit (Tractebel Engineering, Germany), B. Gunn (ENGIE Impact, Germany) (Submission-ID WIW22-9)

15:10 – 15:30 Discussions

15:30 – 16:00 COFFEE BREAK

16:00 – 18:10	SESSION 8A: GRID CODE VALIDATION TESTS
> Session Chair	TBA

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

- **WTG Manufacturer's Experience with Subsystem And Component Validation for Wind Turbines**
  S. Azarian, O. Curran (Siemens Gamesa Renewable Energy, Germany), G. M. Gomes Guerreiro, F. Martin (Siemens Gamesa Renewable Energy A/S, Denmark) (Submission-ID WIW22-24)
- **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)
- **PQ4Wind -- A novel Power Hardware-in-the-Loop Test Bench for Component-Level Converter Certification**
  P. Borowski, T. Jersch, G. Quistorf (Fraunhofer IWES, Germany), S. Engelhardt (ConverterTec Deutschland, 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)

17:40 – 18:10 Discussions

16:00 – 18:10	SESSION 8B: HYDROGEN ASPECTS II
> Session Chair	TBA

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

- **OffsH2ore Island Grid for Hydrogen Production - Electrical Simulations on How to Reach Grid Stability**
  S. Eichner, A. Salman, F. Kulemkampff, R. Fuchs (Fraunhofer Institute for Solar Energy Systems 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 Munich, 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, S.-A. Ansar (German Aerospace Center – DLR/Institute of Engineering Thermodynamics, Germany) (Submission-ID WIW22-116)
- **Hydrogen Export Opportunities from Africa to Europe**
  A. Kies (Aarhus University, Denmark | Frankfurt Institute for Advanced Studies, Germany), B. Schyska (German Aerospace Center – DLR/Institute of Networked Energy Systems, Germany), J. Jurasy (Wrocław University of Science and Technology, Poland) (Submission-ID WIW22-96)
- **Possibility of Producing Green Hydrogen in Nepal**
  R. Saiju (Kathmandu University, Nepal) (Submission-ID WIW22-112)

17:40 – 18:10 Discussions

16:00 – 17:40	SESSION 8C: FORECASTING II
> Session Chair	TBA

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

- **Performance Comparison of Probabilistic and Artificial Neural Network Models for Long-Term Wind Speed Forecasting**
  D. Pina-Gongora, B. Kazemtabrizi, C. Crabtree (Durham University, United Kingdom) (Submission-ID WIW22-25)
- **Eye2Sky: A Network of All-Sky Imager (ASI) Enabling Accurate and High-Resolution Very Short-Term Forecasts of Solar Irradiance**
  T. Schmidt, J. Stührenberg, J. Lezaca, N. Blum, A. Hammer, T. Vogt (German Aerospace Center – DLR/Institute of Networked Energy Systems, 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)

17:20 – 17:40 Discussions

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

FRIDAY, 14 OCTOBER 2022

09:00 – 10:40	SESSION 9A: MODELLING ASPECTS
> Session Chair	TBA

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

- **Obtaining Flat Initialization of Complex Renewable Power Plant Models**
  B. M. M. Soares, D. R. Parrini, I. Cristiano da Costa, J. P. A. E. Santo, P. E. A. Cardoso, S. L. B. Pereira (Vestas Wind Systems, Denmark) (Submission-ID WIW22-160)
- **Accuracy of the 2nd Order Adams-Bashforth and Trapezoidal Methods in RMS Dynamic Simulations of Power Systems with High Wind and Solar Penetration**
  M. Borodulin (KIIP Consulting, USA) (Submission-ID WIW22-39)
- **The Optimal Control with Implicit Phase Coordination of a Collective of Wind Turbines**
  J. Young (OptimoJoe, USA), D. Wilson (Sandia National Laboratories, USA), W. Weaver, R. Robinett III (Michigan Tech, USA) (Submission-ID WIW22-71)
- **Review And Comparison of Single- and Dual-Active Bridge Converters for DC-Connected Wind Turbines**
  V. Timmers, A. Egea-Alvarez (University of Strathclyde, United Kingdom), A. Gkountaras (Siemens Gamesa, Germany) (Submission-ID WIW22-56)

10:20 – 10:40 Discussions

09:00 – 10:40	SESSION 9B: SMART GRID ASPECTS
> Session Chair	TBA

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

- **Automated Data Integration of Residential And Commercial PV Systems Into DSO SCADA Utilizing IEC 61850 Compliant Comprehensive Data Model**
  S. Chen, C. Kondzialka, H. Lorenz, R. Taubmann, G. Heilscher (Ulm University of Applied Scieneces, Germany) (Submission-ID WIW22-83)
- **Regional Real-Time PV Spinning Reserve Estimator**
  V. Gevorgian, G. Saraswat (NREL, USA) (Submission-ID WIW22-135)
- **TBA**
  NN
- **Resistance is futile - Implementing Automated Renewable Trading in Competitive Energy Markets**
  H. Mackenzie (HARD software, Australia) (Submission-ID WIW22-8)

10:20 – 10:40 Discussions

09:00 – 10:40	SESSION 9C: HYBRID SYSTEMS I
> Session Chair	TBA

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

- **Optimized Energy Management of a Solar and Wind Equipped Student Residence with Innovative Hybrid Energy Storage and Power To Heat Solutions**
  L. N. Palaniswamy, N. Munzke, C. Kupper, M. Hiller (Karlsruhe Institute of Technology – KIT, Germany) (Submission-ID WIW22-100)
- **Solar-Hydrogen Energy Systems: Improving Energy Autonomy in Buildings And Communities**
  F. Johari, J. Munkhammar, J. Widén (Division of Civil Engineering and Built Environment, Sweden) (Submission-ID WIW22-93)
- **Overplanting Wind Power Parks with Solar Power 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)

10:20 – 10:40 Discussions

10:40 – 11:00 COFFEE BREAK

11:00 – 12:40	SESSION 10A: POWER QUALITY ASPECTS
> Session Chair	TBA

11:00 – 12:20 Presentations (20 min. each)

- **Design Algorithm of Harmonic Filters in a Meshed Transmission Grid With Distributed Harmonic Emission – Eastern Danish Transmission Grid Case Study**
  V. Akhmatov, M. Sørensen, T. Jakobsen, C. Skovgaard Hansen, B. C. Gellert (Energinet, Denmark) (Submission-ID WIW22-5)
- **Passivity-Based Analysis and Design for Selective Harmonic Voltage And Current Control With Resonance Controller**
  Z. Zhou, X. Wang, F. Zhao (Aalborg University, Denmark), Y. Sun (Shell Global Solutions International B.V., Netherlands), Ł. Kocewiak (Ørsted Wind Power, Denmark), J. Svensson (Hitachi ABB Power Grids, Sweden) (Submission-ID WIW22-133)
- **Harmonic Distortion Assessment at the Point of Connection for Compliance Verification**
  R. R. Stanley, H. Soltani, M. Gupta, T. Lund (Vestas Wind Systems, Denmark) (Submission-ID WIW22-163)
- **Challenges for Integration of Renewable Energy in Public Grid**
  A. Kuri (Siemens AG, Germany | Friedrich-Alexander-Universität Erlangen-Nürnberg – FAU, Germany), E. Brackenhammer (Siemens AG, Germany) (Submission-ID WIW22-12)

12:20 – 12:40 Discussions

11:00 – 12:40	SESSION 10B: TBA
> Session Chair	TBA

11:00 – 12:20 Presentations (20 min. each)

- **Transient Stability of Generator Groups: Factors of Influence and Countermeasures**
  D. Scheifele, H. Lens (University of Stuttgart/IFK, Germany) (Submission-ID WIW22-23)
- **Optimization of Power Oscillation Damping Controller Parameters in OPAL Real-Time Simulator Environment Using RT-LAB Python API**
  G. Mugambi, L. Cai (University of Rostock, Germany) (Submission-ID WIW22-37)
- **Utilisation of Synchronous Condensers for Improved Damping in Power Systems with High Renewable Penetration**
  A. Karisik, T. Bertes (DIgSILENT Pacific, Australia) (Submission-ID WIW22-43)
- **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)
- **Spatial Distributions of Rooftop Orientation within Low Voltage Networks for PV Hosting Capacity Simulations**
  U. H. Ramadhani, J. Munkhammar, J. Widén (Uppsala University, Sweden)) (Submission-ID WIW22-72)

12:20 – 12:40 Discussions

11:00 – 12:40	SESSION 10C: HYBRID SYSTEMS II
> Session Chair	TBA

11:00 – 12:20 Presentations (20 min. each)

- **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, Germany) (Submission-ID WIW22-35)
- **Energy Management of Hybrid Energy Storage System in DC Microgrid Dedicated to Residential Applications.**
  S. Ali (University of Lorraine/LMOPS/CentraleSupélec, France), J. S. Martínez (Industrial University of Santander, Columbia), Z. Zheng, M. Aillerie (University of Lorraine/LMOPS/CentraleSupélec, France), D. Hissel, M.-C. Pera (University of Bourgogne Franche-Ccomté/FCLAB/CNRS, France) (Submission-ID WIW22-142)
- **Battery Energy Storage Systems for Building-Applied Photovoltaic Systems: Environmental Impact Assessment for an Appartment Building in Stockholm, Sweden**
  R. Fachrizal, K. Flygare, S. Frykholm, M. Tingstedt (Uppsala University, Sweden), A. D. S. Kinasih (Karlstad University, Sweden), P. Lundquist (Enequi AB, Sweden), J. Widén (Uppsala University, Sweden) (Submission-ID WIW22-70)
- **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)
- **Towards Self-Sufficient Neighbourhoods: A Vehicle-to-Grid Scheme in a Swedish Neighbourhood with High PV Penetration**
  R. Fachrizal, M. Shepero, O. Lindberg (Uppsala University, Sweden), K. Qian (University of Southern Denmark, Denmark), P. Huang (Dalarna University, Sweden), R. Adam (University of Southern Denmark/DME), D., Denmark), J. Munkhammar, J. Widén (Uppsala University, Sweden) (Submission-ID WIW22-68)

12:20 – 12:40 Discussions

12:40 – 13:40 LUNCH BREAK

13:40 – 15:20	SESSION 11A: TBA
> Session Chair	TBA

13:40 – 15:00 Presentations (20 min. each)

- **Short-Circuit Currents from Wind Turbines with Full-Scale Inverters**
  K. Protsenko, H. Abildgaard (Vestas Wind Systems, Denmark), A. Carvalho Silva (Vestas Wind Systems, Portugal) (Submission-ID WIW22-26)
- **Tuning of Power Plant Voltage and Reactive Power Controllers Considering Equivalent Short Circuit Ratio**
  P. Pauli, O.-P. Janhunen, L. Linnamaa (Fingrid Oyj, Finland), N. Akel (Vestas Wind Systems A/S, Sweden), K. Nayebi, T. Lund (Vestas Wind Systems, Denmark) (Submission-ID WIW22-14)
- **Systematic Comparison of Concepts for Voltage Control with Inverted-Based Prosumer Devices**
  C. Wegkamp, B. Skurk, B. Engel (Technische Universität Braunschweig/elenia, Germany) (Submission-ID WIW22-130)
- **Renewables generation driving SF6 use - an unavoidable evil we have to accept?**
  K. Burges (RE-xpertise, Germany), B. Gschrey, K. Warncke (Öko-Recherche Büro für Umweltforschung und -beratung, Germany) (Submission-ID WIW22-114)

15:00 – 15:20 Discussions

13:40 – 15:20	SESSION 11B: HYDROGEN ASPECTS III
> Session Chair	TBA

13:40 – 15:00 Presentations (20 min. each)

- **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, M. Tomberg (German Aerospace Center – DLR, Germany, F. Resink (University of Groningen, Netherlands), M. Heddrich, S. A. Ansar (German Aerospace Center – DLR, Germany) (Submission-ID WIW22-75)
- **Assessment of the Additional Electricity Demand for Different Technological Pathways to Decarbonise the Aviation and Maritime Sector in Germany**
  M. Khanra (Fraunhofer ISI, Germany), S. Prabhu (Fraunhofer Umsicht, Germany) (Submission-ID WIW22-98))
- **Hybrid Modelling Approach for Automotive Fuel Cells – Using Physical System Knowledge for Machine Learning and Hybrid Model Generation.**
  N. Nirmala, M. Hübel (Modelon Deutschland, Germany) (Submission-ID WIW22-147)

15:00 – 15:20 Discussions

13:40 – 15:20	SESSION 11C: ENERGY MARKET AND REGULATORY ISSUES
> Session Chair	TBA

13:40 – 15:00 Presentations (20 min. each)

- **Benefits of Energy Imports into a Carbon-Neutral Europe**
  F. Neumann (Technical University of Berlin, Germany), J. Hampp (Justus Liebig University Giessen, Germany), T. Brown (Technical University of Berlin, Germany) (Submission-ID WIW22-141)
- **Stochastic Multi-Periodic Analysis for Interconnection Capacity Calculation Between Bidding Zones**
  Â. Casaleiro, R. Cartaxo, R. Pastor, N. Souza E Silva, W. Yang (R&D Nester, Portugal), H. Bin, C. Hui (CEPRI, China), N. Pinho Da Silva (R&D Nester, Portugal) (Submission-ID WIW22-62)
- **TBA**
  NN
- **Stakeholder Engaged Energy Systems Modelling: Three Canadian Case Studies**
  M. Mcpherson (University of Victoria, Canada) (Submission-ID WIW22-15)

15:00 – 15:20 Discussions

15:20 – 15:40 COFFEE BREAK

15:40 – 16:45	SESSION 12 – CLOSING SESSION – PANEL DISCUSSION
> Session Chair	TBA
15:40 – 16:30	
Title TBA **Panelists:** - TBA	
16:30– 16:45	**Closure**

POSTER PRESENTATIONS

- **New Value Chains for Small and Mid-Sized Energy Companies in Germany**
  A. Ensinger (Aalen University, Germany), K. Bozem (bozem | consulting associates | munich, Germany), A. Nagl (Aalen University, Germany), D. K. Harrison, B. Wood (Glasgow Caledonian University, Germany) (Submission-ID WIW22-2)
- **Model Predictive Control of Charging and Heat Pumps, Based On CO2 Signals from the Grid**
  G. Cebrat, N. N. (effiziente.st Energie- und Umweltconsulting e.U., Austria) (Submission-ID WIW22-3)
- **Balancing Group Operation for Wind Farms and a Pumped-Storage Hydro Generator for Maximizing Expected Revenue Considering Wind Power Output Uncertainty**
  M. Inagaki, A. Kaneko, Y. Fujimoto, Y. Hayashi (Waseda University, Japan), S. Minotsu (Electric Power Development Co., 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. Oba, D. Nohara, Y. Kanno (Central Research Institute of Electric Power Industry, Japan) (Submission-ID WIW22-41)
- **Evaluation of the Impact of Wind Energy on Electricity Prices in Spain.**
  R. Velo (University of Santiago de Compostela, Spain) (Submission-ID WIW22-44)
- **Markov Mixture Distribution Modelling for Downscaling and Global, Diffuse and Beam Component Separation**
  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)
- **Generation of Wind Speed data using Generative Adversarial Networks (GAN)**
  O. M. El Sayed, A. Kies, F. Hofmann, H. Stoecker (Goethe University Frankfurt/Frankfurt Institute for Advanced Studies, Germany) (Submission-ID WIW22-97)
- **Reduction of RES Curtailment by Optimized Residential Electricity Rates**
  M. Hinterstocker (FfE, Germany) (Submission-ID WIW22-104)
- **Enhancing Aerodynamic Performance of Savonius Vertical Axis Turbine Used with Triboelectric Generator**

B. Dadhich (University of Southern California, USA), F. Bamnoliya (Technical University of Munich – TUM, Germany) (Submission-ID WIW22-107)

- **Forecasting for the Weather Driven Energy System – A new Task under IEA Wind**
  G. Giebel (DTU Wind and Energy Systems, Denmark), C. Draxl (NREL, USA), H. Frank (Deutscher Wetterdienst, Germany), J. Zack (UL Renewables, USA), C. Möhrlen (WEPROG, Denmark), G. Kariniotakis (Mines-ParisTech, France), J. Browell (Glasgow University, United Kingdom), R. Bessa (INESC-TEC, Portugal), D. Lenaghan (National Grid ESO, United Kingdom) (Submission-ID WIW22-125)
- **Piezoelectric Power Generation**
  O. S. Chisom (Kwame Nkrumah University of Science and Technology, Ghana) (Submission-ID WIW22-157)
- **Performance Improvement of DFIG-based WECS with Non-Linear Load Penetration Using Additional DSTATCOM**
  H. Kumar (Indian Institute of Technology Jodhpur, India) (Submission-ID WIW22-162) → Oral presentation, session will be allocated at a later stage