



DRAFT AGENDA AS OF 23 FEBRUARY 2022

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

WORKSHOP PARTNER



WORKSHOP AMBASSADORS



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TIMETABLE 6TH INTERNATIONAL HYBRID POWER SYSTEMS WORKSHOP

| TUESDAY, 26 APRIL 2022 | | WEDNESDAY, 27 APRIL 2022 | |
|-------------------------------------|--------------------------------------|-------------------------------------|--------------------|
| Hybrid Power Systems Workshop Day 1 | | Hybrid Power Systems Workshop Day 2 | |
| 08:00 – 09:00 | FOYER | | |
| | REGISTRATION | | |
| 09:00 – 09:10 | ROOM XY | | |
| | OPENING: WELCOME AND INTRODUCTION | | |
| 09:10 – 10:50 | ROOM | ROOM | ROOM |
| | SESSION 1: KEYNOTE SESSION | SESSION 5A: TBA | SESSION 5B: TBA |
| COFFEE BREAK (30MIN) | | COFFEE BREAK (30MIN) | |
| 11:20 – 13:00 | ROOM | ROOM | ROOM |
| | SESSION 2A: TBA | SESSION 2B: TBA | SESSION 6A: TBA |
| LUNCH (1H) | | LUNCH (1H) | |
| 14:00 – 15:40 | ROOM | ROOM | ROOM |
| | SESSION 3A: TBA | SESSION 3B: TBA | SESSION 7A: TBA |
| COFFEE BREAK (20MIN) | | COFFEE BREAK (20MIN) | |
| 16:00 – 18:00 | ROOM | ROOM | |
| | SESSION 4A: TBA | SESSION 8: CLOSING SESSION | |
| 19:00 | WORKSHOP DINNER | | |

TUESDAY, 26 APRIL 2022

08:00 – 09:00 Registration

09:00 – 09:10 Welcome

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|---------------------------|---|
| 09:10 – 10:50 | SESSION 1 – KEYNOTE SESSION |
| > Session Chair | Thomas Ackermann (Energynautics, Germany) |
| 09:10 – 10:30 | Presentations (20 min. each) |
| | <ul style="list-style-type: none">• Presentation 1 TBA (Submission ID 000)• Development of Specific Grid Codes to Allow Safe Increase of Renewable Generation in Islanded Power Systems J. Peças Lopes, C. Moreira (INESC TEC & FEUP, Portugal) (Submission-ID HYB22_12)• Control Measures for Smoothing PV Power Fluctuations in Madeira Power System M. H. Vasconcelos, J. A. Peças Lopes (INESC TEC University of Porto), A. Figueira (EEM - Empresa de Electricidade da Madeira, Portugal) (Submission-ID HYB22_57)• A Low Carbon Energy System Model Approach for Energy Planning in Madeira Island F. Sousa Pereira (TU Lisbon, Portugal) (Submission-ID HYB21_85) – tbc |
| 10:30 – 10:50 | Discussions |

10:50 – 11:20 COFFEE BREAK

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|---------------------------|---|
| 11:20 – 13:00 | SESSION 2A |
| > Session Chair | TBA |
| 11:20 – 12:40 | Presentations (20 min. each) |
| | <ul style="list-style-type: none">• The Hybrid Power Plant in Graciosa island - a Pioneer Project in Azores Islands N. Taveira (ENERCON, Portugal), D. Conde Silva (Graciólca Lda, Portugal) (Submission-ID HYB22_56)• Assessment of Renewable Hybrid Power Plants on Greek Non-interconnected Islands and their Contribution to CO2 and Fuel Demand Reduction by Evaluating the Potential Penetration Rates on Different Islands. J. Gerstner, L. Leao-Gloria (ABO Wind, Germany) (Submission-ID HYB22_21)• PV Hybrid Power Systems: The Case of Bontang, Indonesia G. Schelling (Hitachi Energy, Switzerland) (Submission-ID HYB22_39)• Islanded Microgrid Design : A Case Study J. Francou, C. Abbezzot, P. Rasoavonjy, D. Calogine (University of Reunion Island, France) (Submission-ID HYB22_36) |
| 12:40 – 13:00 | Discussions |

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| 11:20 – 13:00 | SESSION 2B |
| > Session Chair | TBA |
| 11:20 – 12:40 | Presentations (20 min. each) |
| <ul style="list-style-type: none"> • Design & Performance Overview of a World-first Utility-scale Hybrid Power Plant A. Wightman (Vestas Australian Wind Technology, Australia), M. Angel Cova Acosta (Vestas, Denmark) (Submission-ID HYB22_26) • A Wind Power Plant's Impact on the Grid Frequency: Analysis of Measurements in an electrically isolated island with high penetration of inverter-based wind generation H. M. Tróndheim, T. Nielsen (The Power Company SEV, Faroe Islands) (Submission-ID HYB22_10) • Hybrid Energy Solutions for Decarbonization of Islands & Remote Areas C. Lenz (Siemens Energy Global, Germany), J. Bandeira Santos (Siemens Energy, Portugal) (Submission-ID HYB22_54) • Method for Firm and Reliable Power Dispatch and Economical Operation of a Hybrid Renewable Plant C. Mehendale, A. Guenther (GE Renewable Energy, USA), S. Aramaneekoppa, S. Srinivasan, H. Sehgal (GE Research, USA) (Submission-ID HYB22_37) | |
| 12:40 – 13:00 | Discussions |

13:00 – 14:00 LUNCH BREAK

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| 14:00 – 15:40 | SESSION 3A |
| > Session Chair | TBA |
| 14:00 – 15:20 | Presentations (20 min. each) |
| <ul style="list-style-type: none"> • Experience in the Faroe Islands and Similar Projects (tbc) J. Muñoz, P. Astorga (Hitachi Energy, Spain), B. Cardoso (Hitachi Energy, Portugal) (Submission-ID HYB22_55) • Is Real Inertia Always Better? Synchronous Condensers vs Fast Frequency Response in Hybrid Power Plants a Comparative Study D. Vázquez Pombo (Vattenfall R&D, Sweden DTU, Denmark), D. Alonso Sørensen (University of the Basque Country, Bilbao, Spain Smart Grid Department, Artech, Spain), J. Martinez-Rico (University of the Basque Country, Spain Basque Research and Technology Alliance, Spain) (Submission-ID HYB22_18) • Case Study of a Hybrid Power Microgrid in Rural India K. Arunachalam, A. Nandakumar (FICHTNER Consulting Engineers India, India), K. Ramachandra, A. Sharan (DESI Power, India) (Submission-ID HYB22_48) • Designing a Hybrid Power System for a Remote Telescope in the Atacama Desert I. Viole, G. Valenzuela, M. Zeyringer, S. Sartori (University of Oslo, Norway) (Submission-ID HYB22_51) | |
| 15:20 – 15:40 | Discussions |

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| 14:00 – 15:40 | SESSION 3B |
| > Session Chair | TBA |
| 14:00 – 15:20 | Presentations (20 min. each) |
| <ul style="list-style-type: none"> • Component Sizing of Utility-scale Hybrid Power Plant K. Das, J. P. Murcia Leon, A. Cossu, P. E. Sørensen (DTU, Denmark) (Submission-ID HYB22_19) • Optimized Usage of Grid Connection Points and Battery Storages with Vertical Bifacial PV P. Bendix (Next2Sun, Germany) (Submission-ID HYB22_24) • Energy Management of Hybrid Power Plants in Balancing Market R. Zhu, K. Das, P. Sørensen, A. Hansen (DTU Wind Energy, Denmark) (Submission-ID HYB22_17) • The Power of HYBRID K. Jernigan (Karen Jernigan Consulting, USA) (Submission-ID HYB22_40) | |
| 15:20 – 15:40 | Discussions |

15:40 – 16:00 COFFEE BREAK

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| 16:00 – 18:00 | SESSION 4A |
| > Session Chair | TBA |
| 16:00 – 17:20 | Presentations (20 min. each) |
| | <ul style="list-style-type: none">• The Impact of Improving Technology on Microgrid Design P. Lilienthal (HOMER Energy, USA) (Submission-ID HYB22_44)• A Contrast Study of Climate Influence on the Stand-Alone Microgrid System with a Hybrid Renewable Power Storage System D. Wang, M. Grimmelt (University of Applied Sciences Ruhr West, Germany) (Submission-ID HYB22_27)• Manage your Hybrid Power Energy to the Next Level M. Wollny (Studer Innotec, Switzerland) (Submission-ID HYB22_35)• Operating Hybrid Energy Systems at Lowest Cost by Implementation of Real-Time Local Market T. Walter (Easy Smart Grid, Germany) (Submission-ID HYB22_23)• Floating Offshore Wind in Madeira S. Jermy (Wave Hub Development Services Limited (Trading as Celtic Sea Power), United Kingdom) (Submission-ID HYB22_53) |
| 17:40 – 18:00 | Discussions |

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| 16:00 – 18:00 | SESSION 4B |
| > Session Chair | TBA |
| 16:00 – 17:48 | Presentations (18 min. each) |
| | <ul style="list-style-type: none">• Hybrid Electric Power System Generation: Current Perspectives and Future Trends R. Reis, A. V. Macêdo, F. Almeida Neto, Fernando, fernando.galmeida@ufrpe.br, (Federal Rural University of Pernambuco (UFRPE), Brazil), B. Souza, W. Neves, J. Leitão (Federal University of Campina Grande (UFCG), Brazil), F. Lopes, H. Braz (Federal University of Paraíba (UFPB), Brazil), P. Camara (São Francisco Hydroelectric Company (Chesf), Brazil) (Submission-ID HYB22_22)• Characterizing and Analyzing Ramp Events of Combined Wind and Solar Electricity Generation R. Thota, D. von Terzi, M. Mehta (TU Delft, Netherlands) (Submission-ID HYB22_9)• Influence of Business Models on PV-Battery Dispatch Decisions and Market Value: A Pilot Study of Operating Plants J. Seel (Lawrence Berkeley National Laboratory, USA) (Submission-ID HYB22_41)• Keep it Short: Exploring the Impacts of Configuration Choices on the Recent Economics of Solar-plus-battery and Wind-plus-battery Hybrid Energy Plants C. Crespo Montañes (Lawrence Berkeley National Laboratory, USA), W. Gorman (Lawrence Berkeley National Laboratory University of California, Berkeley), A. Mills, J. H. Kim (Lawrence Berkeley National Laboratory, USA) (Submission-ID HYB22_4)• Vulnerable Islanding Operation of Brazilian Northeast System Under Hydric Crisis A. V. de Almeida Macedo, R. Leite de Andrade Reis (Federal Rural University of Pernambuco - UFRPE, Brazil), J. J. de Almeida Lins Leitao (Federal University of Campina Grande - UFCG, Brazil), P. F. Ribeiro (Federal University of Itajubá - UNIFEI, Brazil), P. C. de Souza Camara (CHESF, Brazil), W. Araujo Neves, B. Alencar de Souza (Federal University of Campina Grande - UFCG, Brazil) (Submission-ID HYB22_20)• Reactive Metals as Energy Carriers: An Aluminum-based Hybrid Energy Storage Case H. Ersoy, M. Baumann (KIT, Germany), L. Barelli (University of Perugia (UNIPG), Italy), M. Weil, S. Passerini (Helmholtz Institute of Ulm for Electrochemical Energy Storage – HIU Karlsruhe Institute of Technology – KIT, Germany) (Submission-ID HYB22_52) |
| 17:48 – 18:00 | Discussions |

19:00 Dinner

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| 09:00 – 10:40 | SESSION 5A |
| > Session Chair | TBA |
| 09:00 – 10:20 | Presentations (20 min. each) |
| | <ul style="list-style-type: none">• Test Infrastructure for the Investigation and Standardization of the Fault-Ride Through Behavior of Electrolysers J. Barthel, L. Beck, K. Schalk, N. Denecke, G. Quistorf (Fraunhofer-IWES, Germany) (Submission-ID HYB22_31)• An Integrated Multi-Platform Simulation Framework for Power Systems Analysis S. Marrero-Vera, J. Évora-Gómez (Universidad de Las Palmas de Gran Canaria, Spain), A. Kalms, P. Pernaut-Leza (Centro Nacional de Energías Renovables, Spain), J. J. Hernandez-Cabrera (Universidad de Las Palmas de Gran Canaria, Spain) (Submission-ID HYB22_15)• Improvement of the Existing Power Network of Industrial Enterprises through Microgrids A. Mahmudova (Azerbaijan Scientific Research and Design Prospecting Power Engineering Institute, Azerbaijan) (Submission-ID HYB22_43)• Identification of Subnetworks in Existing Distribution Grids with a High Potential to Support a Temporary Local Emergency Power Back-Up Supply in Case of Large-Scale Blackout I. Hebbeln, M. Rose, M. Hübner (Schleswig-Holstein Netz AG, Germany) (Submission-ID HYB22_6) |
| 10:20 – 10:40 | Discussions |

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| 09:00 – 10:40 | SESSION 5B |
| > Session Chair | TBA |
| 09:00 – 10:20 | Presentations (20 min. each) |
| | <ul style="list-style-type: none">• Ancillary Services in Hybrid Power Systems T. Keskitalo (Ampner Oy Vaasa Aalto University Helsinki, Finland) (Submission-ID HYB22_32)• Power Quality in a Wind-PV Power Park – Preliminary Results from a One-year Metering Campaign D. Lingfors, O. Lindberg (Uppsala University, Sweden) (Submission-ID HYB22_45)• 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, Nina, C. Kupper, M. Hiller (Karlsruhe Institute of Technology –KIT, Germany) (Submission-ID HYB22_46)• Optimizing Synergies in Power Production when Retrofitting Existing Wind Power Parks with PV Power Parks O. Lindberg, R. Fachrizal, J. Munkhammar (Uppsala University, Sweden) (Submission-ID HYB22_11) |
| 10:20 – 10:40 | Discussions |

10:40 – 11:10 COFFEE BREAK

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| 11:10 – 12:50 | SESSION 6A |
| > Session Chair | TBA |
| 11:10 – 12:40 | Presentations (18 min. each) |
| | <ul style="list-style-type: none"> • Hybrid Power Plant Load Balancing. A. Novykh, J. A. Méndez Pérez, B. González-Díaz (Universidad de la Laguna, Spain), I. Sviridenko (Sevastopol State University, Russia) (Submission-ID HYB22_14) • Optimal Sizing of Hybrid PV-Wind System Off-Grid/Grid-Connected in Brazil: Case Study P. de Oliveira Carvalho Malaquias, B. Alencar de Souza (Universidade Federal de Campina Grande - UFCG, Brazil) (Submission-ID HYB22_28) • Grid connected Hybrid Microgrids F. Baretzky (DHYBRID Power Systems, Germany) (Submission-ID HYB22_49) • Variable Renewable Generation and Flexible Demand F. Sioshansi (Menlo Energy Economics, USA) (Submission-ID HYB22_5) • Overview of the Recently Released Second Version of IEA Wind's Recommended Practices for Renewable Power Forecast Solution Selection J. Zack (MESO, USA), C. Möhrlein (WEPROG, Denmark), G. Giebel (DTU, Denmark) (Submission-ID HYB22_29) |
| 12:40 – 12:50 | Discussions |

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| 11:10 – 12:50 | SESSION 6B |
| > Session Chair | TBA |
| 11:10 – 12:40 | Presentations (18 min. each) |
| | <ul style="list-style-type: none"> • Hybridization with Floating Solar Plants in Reservoirs of Hydroelectric Power Plants C. A. de Miranda Aviz (Aviz Consultoria, Brazil) (Submission-ID HYB22_47) • Positive Sequence and EMT Domain Modeling of Grid Forming Hybrid Plants for Transmission Studies B. Graham, D. Ramasubramanian (Electric Power Research Institute, USA) (Submission-ID HYB22_3) • Hybrid Solar PV, Wind and Biomass Gasification Microgrid for Research and Training Use. Case study: CUBAENERGÍA, in Cuba A. Rodríguez Rosales, A. Curbelo Alonso (CUBAENERGIA, Cuba), L. Arribas (CIEMAT, España), J. de D. Bornay (BORNAY AEROGENERADORES, Spain), J. Domínguez (CIEMAT, Spain), R. Sosa Cáceres (CUBAENERGIA, Cuba), O. Escalona (CUBASOLAR, Cuba) (Submission-ID HYB22_30) • Analysis and Performance of a Grid Connected PV System for Compensating Harmonics Arising from Non-Linear Industrial Loads L. Teodosio da Costa, W. Luiz Araújo Neves (Federal University of Campina Grande, Brazil), F. Bezerra Costa (Michigan Technological University, USA), J. Fábio Brilhante de Freitas Filho (Federal University of Campina Grande, Brazil) (Submission-ID HYB22_34) • Airborne Wind Energy Systems - The key to harvesting high altitude wind energy N. Taphorn, F. Weiss (ARE, Germany) (Submission-ID HYB22_25) |
| 12:40 – 12:50 | Discussions |

12:50 – 13:50 LUNCH BREAK

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| 13:50 – 15:30 | SESSION 7A |
| > Session Chair | TBA |
| 13:50 – 15:10 | Presentations (20 min. each) |
| <ul style="list-style-type: none"> • Impact Evaluation of Frequency Control Techniques for Wind Turbines in Frequency Response in Electrical Power System D. Diniz, W. Mota, W. Neves (Universidade Federal de Campina Grande (UFCG), Brazil) (Submission-ID HYB22_38) • Smart Mobile Vaccination Pickup for Sustainable Improvement of Medical Care and Smart Pandemic Control in Africa J. Koschikowski, J. Went, N. Pfanner, F. Stortz (Fraunhofer ISE, Germany), L. Schäfer, F. Neumann (Fraunhofer IST, Germany), B. Lotz, M. Beckett (Fraunhofer Institute for Interfacial Engineering and Biotechnology, Germany), M. Hamann (Stellenbosch University, South Africa), J. Wüllner, Md N. I. Maruf (Fraunhofer ISE, Germany) (Submission-ID HYB22_8) • Analysis of the Sizing Factor Inverter in Brazilian Regions of Tropical Semiarid Climate J. Fábio Brilhante de Freitas Filho, W. Luiz Araújo Neves (Federal University of Campina Grande, Brazil), F. Bezerra Costa (Michigan Technological University, USA), L. Teodósio da Costa (Federal University of Campina Grande, Brazil) (Submission-ID HYB22_33) • Development and Analysis of an Off-grid Solar Food Processing System in Kenya A. Morgenstern, N. Pfanner, N. Reiners, F. Stortz, J. Wüllner, Md N. I. Maruf (Fraunhofer ISE, Germany) (Submission-ID HYB22_7) | |
| 15:10 – 15:30 | Discussions |

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| 13:50 – 15:30 | SESSION 7B |
| > Session Chair | TBA |
| 13:50 – 15:10 | Presentations (20 min. each) |
| <ul style="list-style-type: none"> • New Frequency Control Philosophy for future Hybrid Power Plants G. A. Raducu, O. Sahin, B. Alahmad, D. Pombo Vazquez, Daniel, S. Kanev (Vattenfall Vindkraft, Denmark) (Submission-ID HYB22_13) • Variable Renewable Energy Participation in U.S. Ancillary Services Markets: Economic Evaluation and Key Issues J. H. Kim, F. KahrI, A. Mills, R. Wisner, C. Crespo Montañes, W. Gorman (Lawrence Berkeley National Laboratory, USA) (Submission-ID HYB22_42) • Hybrid Power Systems : Grid Stability Through Spinning Reserve GB S. Chauhan (Solar Turbines, USA) (Submission-ID HYB22_2) • Ancillary Services by Hybrid Wind Power Plants with Electrolyzers C. Kaufmann, S. Frahm, A. Luxa, Y. Cateriano Yáñez, G. Pangalos, G. Quistorf (Fraunhofer Institute for Wind Energy Systems IWES, Germany) (Submission-ID HYB22_16) | |
| 15:10 – 15:30 | Discussions |

15:30 – 15:50 COFFEE BREAK

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| 15:50 – 16:50 | SESSION 8 – CLOSING SESSION |
| > Session Chair | TBA |
| 15:50 – 16:20 | Panel discussion |
| <p>Topics addressed:</p> <ul style="list-style-type: none"> - TBA <p>Panelists:</p> <ul style="list-style-type: none"> - TBA | |
| 16:20 – 16:50 | Discussions |