TwInSolar

Workshop

Modelling individual components and a whole energy system, which integrates a large share of variable renewables

PV system modelling
April 8, 2024 (online)

Renewable Hybrid Power Plants
April 9, 2024 (online)

UNIVERSITÉ DE LA RÉUNION · Fraunhofer ISE · DTU Technical University of Denmark · ISLANDS COMMISSION · Nexa · Funded by the European Union

On **April 2024**, the **TwInSolar** consortium is pleased to present a workshop on innovative **Modelling individual components and a whole energy system, which integrates a large share of variable renewables.**

Registration link: https://forms.gle/DMvCoMUJDretii268

Workshop day 1: PV system modelling
Monday, April 8, 2024, from 1PM to 5PM (UTC+4h), online (connection link will be sent to registered participants)

Speaker: **Sergiu Spataru**, Associate Professor, Department of Electrical and Photonics Engineering, Photovoltaic Materials and Systems, DTU

Sergiu received a Ph.D. degree in "Characterization and diagnostic methods for PV modules and arrays", at the Department of Energy Technology at Aalborg University. During this period, he was a guest researcher for six months at the National Renewable Energy Laboratory in US, within reliability testing and modelling of solar photovoltaic modules. He continued research as a PostDoc and thereafter as Assistant Professor at Aalborg University, within performance modelling of photovoltaic systems, electroluminescence imaging, modelling and machine learning methods applied to diagnostic and condition monitoring of photovoltaic systems. In 2020, he started a new position as Associate Professor in the Department of Photonics Engineering at the Technical University of Denmark (DTU). There he is currently teaching and developing solar PV energy engineering courses and conducting research within performance modeling of standalone PV products, diagnostic imaging and drone inspection of PV systems.

About the workshop
In this first part of the workshop DTU experts will give complete course on PV system modelling with lectures and exercises. Trainees will learn how to assess the solar irradiance received on the plan of the PV modules. Then they will model and evaluate the performance of the different components of a PV system: the modules and the inverters. The exercises will be done online with collaborative Jupyter Notebooks and the library pvlib, which requires basic knowledge on programming with Python and are accessible to beginners.

Workshop day 2: Renewable Hybrid Power Plants
Tuesday, April 9, 2023, from 1PM to 5PM (UTC+4h), online (connection link will be sent to registered participants)

Speakers:
Kaushik Das, Associate Professor with the Department of Wind and Energy Systems, DTU

Kaushik received a PhD degree from DTU in 2016. His research interests include hybrid power and energy plants, power system balancing, and grid integration of renewables in power systems. He is a Member of IEA Wind, CIGRE, IEEE, and other professional bodies. He is also an operating agent for IEA Wind Task 50 on Hybrid Power Plants. He was the recipient of the prestigious AEG Elektronfonden's Elektron Award in 2022.

Megha Gupta, Postdoc, Department of Wind and Energy Systems, DTU

Megha received a PhD degree in "Coordinated operation of TSO and DSO for efficient grid management" from Department of Electrical Engineering, IIT Delhi, India in 2022. Her research interests include hybrid power plant sizing and operations with Power-to-X; power system steady state analysis, optimization and energy markets. She is currently working on the research and development of an open-access tool 'HyDesign' at DTU Wind for the design and operation of utility-scale hybrid plants with P2X.

About the workshop
Focused on the massive integration of variable renewable energies, such as solar and wind, in electricity grids, the second part of the workshop is also based on lectures and exercises. Trainees will learn how to design and model Hybrid Power Plants (HPPs), which mix multiple technologies like wind, solar and energy storages. Applications of massive penetration of variable renewables energies on electricity grids will be tested with HyDesign, an online tool for design and control of utility scale wind-solar-storage based hybrid power plant (HPP) developed by DTU researchers. The exercises will be done online with collaborative Jupyter Notebooks, which requires basic knowledge on programming with Python and are accessible to beginners.

For more information on the project TwInSolar, do not hesitate to visit our website: www.twinsolar.eu

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