

Workshop Agenda

Innovative Forecasting Photovoltaic Energy Yield Solution for Sustainable Large Scale Deployment, Advanced Monitoring, Active Grid Management and Future Energy Market Participation

Date/Time	26 th February 2020 / 09:45 – 13:00
Location	Room 010 Social Facility Centre Building 08 University of Cyprus 1 University Avenue, Aglantzia, Nicosia (University Campus Map attached)
Hosted by:	University of Cyprus
Moderator:	Dr. George Makrides (University of Cyprus – FOSS PV Technology Laboratory) Mr Mike Green (M.G.Lightning Electrical Engineering Ltd)
Website	http://www.foss.ucy.ac.cy/projects/inforpv

Background: Higher shares of solar photovoltaic (PV) systems can be integrated at the distribution grid by accurately forecasting and managing their energy yield with the application of novel data-driven solutions that leverage smart energy analytic features.

This workshop will provide cutting edge insights and extensive technical information in the area of accurate solar PV power production forecasting and distributed energy resource (DER) grid management smart solutions that provide advanced monitoring, ensure grid reliability at high renewable shares and future energy market participation.

Participants will get in-field knowledge of innovative solutions and next-generation tools that are necessary to safeguard grid reliability at high PV system shares and to allow future energy market participation. The workshop is intended for PV system owners/operators (residential and utility-scale systems), utility operators, aggregators, project developers, energy market service providers, investors, consultants and researchers in the renewable, grid integration and smart grid energy sector.

More information about the workshop is provided in the following sections.

Workshop Agenda

09:45	10:00	0:15	Registration of participants
10:00	10:15	0:15	Welcome - Welcome by Dr. George Makrides <i>INFORPV Project Coordinator (University of Cyprus)</i>
10:15	10:30	0:15	Machine learning for solar photovoltaic energy yield forecasting <i>Presentation by Mr Spyros Theocharides (University of Cyprus)</i> Subtopics: Machine learning algorithms for day- and hour-ahead solar production forecasting and benchmarking on actual system data-sets.
10:30	10:45	0:15	Energy market in Cyprus <i>Presentation by Dr Demetris Evagorou (Cyprus Energy Regulatory Authority)</i> Subtopics: Cyprus Energy market description, rules for participation and the role of forecasting.
10:45	11:00	0:15	Monitoring <i>Presentation by Mr Mike Green (M.G.Lightning Electrical Engineering Ltd)</i> Subtopics: Statistical performance monitoring – a new Paradigm.
11:00	11:15	0:15	Innovative solar photovoltaic energy yield forecasting solution for active grid management and market participation <i>Presentation by Dr George Makrides (University of Cyprus)</i> Subtopics: Advanced solar PV energy yield solution for day- and hour –ahead energy yield forecasting, active grid management and future endeavours.
11:15	11:30	0:15	Solar photovoltaic energy yield forecasting tool <i>Operational demonstration of solution (weblink to smart grid toolsets).</i>
11:30	11:45	0:15	Closing Remarks and Discussion
11:45	12:15	0:30	Coffee Break
12:15	13:00	0:45	Guided Tour – Advanced DER-GRID smart infrastructure <i>Operational demonstration of advanced future grid asset test-bed comprising of PV systems, battery storage, smart meters, home energy management systems, smart plugs and electric vehicle charging.</i>

For more details and information contact:

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Detailed Workshop Information

Background:

A main challenge in the scope of ensuring large scale deployment and sustainability of solar photovoltaic (PV) systems is to improve the accuracy of production forecasting for both large and small scale capacity systems in high concentrations on the distribution grid. Along this context, the key battlegrounds of technical solutions are associated with the capabilities of automated intelligent systems to optimally manage the operation of distributed energy resources (DERs), based on accurate prognostic functionalities that increase the flexibility of the power system and enable the provision of controlled ancillary services to the grid.

Entering therefore an era whereby the energy focus is to further accelerate the integration of PV technologies, by aligning with new developments that facilitate fully-dispatchable solar and cost-effective internet of things (IoT) concepts, creates the industrial requirement for smart centralized management and control software-based solutions. It is with this background that the INFORPV project has been initiated to enable large scale deployment of PV systems through accurate production forecasting and active grid management (supply side forecasting and control), in countries with a high solar resource and a potentially significant solar PV system share.

Goal: The goal of the workshop is to present the novel scientific results and industrial innovation outputs of the “INFORPV” project in the area of next-generation smart grid tools and specifically solar PV energy yield forecasting. The innovative software solution (unified web-based PV power production and grid management platform) is integrated with interoperable data-flow modules (software modules to seamlessly interface with numerical weather predictions and PV system monitoring systems), tools for grid topology mapping and statutory analysis (grid location mapping and optimized power flow analysis on the forecasts) and advanced interfaces for automated active grid management (alerting and signalling to mitigate power quality issues). Furthermore, new industrial knowledge will be also disseminated into future energy landscapes of integrating and operating high shares of solar PV systems, the value of forecasting renewable generation and the structure of future energy markets to support stakeholders involved in the smart energy sector.

Scientific/Industrial topics covered:

- Advanced solar PV production forecasting systems (day- and hour-ahead forecasting horizons)
- Energy system integration issues related to large scale deployment of distributed solar PV systems mainly at the distribution system
- Novel energy analytics to ensure grid reliability and market participation



- Interoperability of grid edge devices towards modernized energy landscapes
- Integration demonstration of smart solutions with the utility/micro grid operators' active control of the grid
- New digitalized grid landscape frameworks

Target audience: The Project "INFORPV" closing workshop provides valuable in-field knowledge and detailed insight about the latest technologies and developments regarding state of the art tools to achieve high solar PV production day- and hour-ahead forecasting accuracies and grid control methods to enable higher integration renewable shares on typical feeders and ensure grid reliability. In this regard, the workshop is of interest to PV system owners/operators (residential and utility-scale systems), utility operators, aggregators, project developers, energy market service providers, investors, consultants and researchers in the renewable, grid integration and smart grid energy sector.

INFORPV Project Consortium



Electricity Authority of Cyprus



M.G. Lightning Electrical Ltd



Decision Makers Ltd



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