

Workshop on photovoltaics and grid Integration for Cyprus and Surrounding Region

Start Date 14th November 2018

Finish Date 15th November 2018

Location University of Cyprus (new campus, panepistimioupoli): 1 University Avenue, Aglantzia, Nicosia, Cyprus- Anastasios Leventis Building, room B108 (lower level amphitheater where the coffe place is located)

Hosted by: University of Cyprus (UCY)

Partners: Austrian Institute of Technology (AIT)
Technical University of Denmark (DTU)

Goal of the workshop: To bridge the gap between academia and industry from Cyprus and the MENA region and to create long lasting collaboration networks in the field of renewable energy and in particular photovoltaics (PV).

Click Here to Register

Day 1
November 14, 2018

09:00	09:15	0:15	Welcoming attendees and speakers <i>By Professor George E. Georghiou (UCY)</i>
09:15	09:30	0:15	TwinPV presentation and introduction to the workshop. TwinPV intro and goals and how it is linked to helping the industry. How universities can help industry become more competitive and more innovative. Structure and goals of the workshop <i>By Dr. Charalambos Anastassiou (UCY)</i> PRESENTATION 1
Session 1 PV, Inverters and Storage			
09:30	10:30	1:00	PV Activities by UCY Performance and Reliability of PV in real weather conditions in Cyprus, Forecasting, grid integration, fault detection and storage. What role can UCY play for the PV industry? <i>By Dr. George Makrides (UCY)</i> PRESENTATION 2
10:30	11:00	0:30	Coffee and networking break Opportunity to view posters and demonstration equipment
11:00	12:00	1:00	Advanced Inverters supporting the grid AIT will introduce the newest technologies and the testing capabilities in this field. <i>By Zoran Miletic(AIT)</i>

			PRESENTATION 3
12:00	13:00	1:00	<p>Win-Win and business cases for new PV systems with storage Storage changes everything, from the way the energy and time is consumed, to the costs of the initial system, to the lifetime of the system. All those have a profound implication on the business models</p> <p><i>By Mr. Per Noorgard (DTU)</i> PRESENTATION 4</p>
13:00	14:00	1:00	<p>Lunch and Networking break Opportunity to view posters and demonstration equipment</p>
			<p><u>Session 2: Update from MENA countries</u></p>
14:00	14:45	0:45	<p>Sustainable Energy Transitions on a Country Level: an Optimization Approach and Case Study of the UAE</p> <p>The UAE's Ministry of Energy has announced plans for 50% renewable electricity by 2050 including the nuclear build-out. The targets do not specify storage options or detailed renewable energy resource allocation. Moving further, we conduct a detailed analysis of the UAE electricity system using hourly level data for both the demand and the resource availability for even higher levels of adoption in a way that allows us to compare them economically. We use hourly-resolution data to perform combined optimization of the electricity system's resources supply from renewable energy in combination with a portfolio of short, medium, and long-term energy storage options. We conduct the analysis using first an advanced electricity simulation and optimization software that relies on time slices (Plexos) and a simpler but comprehensive linear optimization model that performs the analysis for the full representative year</p> <p><i>By Professor Sgouris Sgouridis Masdar Institute, Khalifa University, Abu Dhabi</i> PRESENTATION 5</p>
14:45	15:30	0:45	<p>A new energy paradigm through the Texas A&M Qatar Smart Grid Center</p> <p>The talk will focus on the vision of transforming to and creating a new energy paradigm that is based on the smart grid principle. Enabling technologies, challenges, status, and the future prospective will be briefly discussed.</p> <p><i>By Professor Haithan Abu-Rub Texas A&M at Qatar, Doha, Qatar</i> PRESENTATION 6</p>
15:30	16:00	0:30	Coffe Break
16:00	17:00	1:00	<p>Renewable Energy Program in Jordan In this presentation, an overall view about the energy situation in Jordan will be presented. Then, the renewable energy program in Jordan including regulatory framework and renewable energy law will be presented. Some PV projects, which were installed and connected to the grid in Jordan, will, presented. Finally, the</p>

			<p>challenged and opportunities of Renewable Energy projects in Jordan will be demonstrated. The opportunities will include also some cooperative projects with European partners in the field of renewable energy.</p> <p><i>By Professor Ahmed Al-Salaymeh University of Jordan, Amman, Jordan</i></p> <p>PRESENTATION 7</p>
17:00	17:30	0:30	<p>Closing Remarks, Question and Answer Session for the Panel <i>By Professor George Georghiou</i></p>
17:30	19:00	1:30	<p>Networking and mingling event Opportunity to view posters and demonstration equipment</p>

Day 2

November 15, 2018 MENA Event and hands on training

09:00	09:15	0:15	<p>Overview of upcoming Day 2 <i>By Dr. Charalambos Anastassiou (UCY)</i></p>
9:15	10:45	1:30	<p><u>Session 3. Soiling</u></p> <p>Mitigating photovoltaic soiling: strategies and techniques to minimize the soiling losses affecting PV systems</p> <p>The accumulation of dust, dirt, and particles on the surface of PV modules is known as soiling and affects PV systems installed worldwide. Soiling can cause significant economic losses because it reduces the energy yield of PV systems, raises the O&M costs, and increase the uncertainty on the performance of modules. For this reason, it is important mitigate soiling, planning the most accurate cleaning schedule and considering depositing an anti-soiling coating on the surface of the modules.</p> <p><i>By Micheli Leonardo, National Renewable Energy Laboratory (NREL)</i></p> <p>PRESENTATION 8</p>
10:45	11:15	0:30	<p>Coffe break</p>
11:30	13:00	1:30	<p><u>Session 4: Quality Assurance of PV plants and capacity building of PV</u></p>
11:15	12:15	1:00	<p>QA of PV plants Tools used in properly increasing the PV capacity for a grid system.</p> <p><i>By Christoph Mayr (AIT)</i></p> <p>PRESENTATION 9</p>
12:15	12:40	0:25	<p>Research-based advisory services and capacity building for achieving renewable based electricity systems</p> <p>Changing the electricity system from the present day system to be based on renewable energy is a complex process and there are still many issues that have to be researched and developed to ensure that such a future system is robust, reliable and affordable. It is essential that research results can be applied in real systems and those real world problems that are identified be fed back into</p>

			<p>research to develop new solutions. Universities can play a key role and DTU has been involved in a number of projects for capacity building and technology development that through a cross discipline approach have demonstrated the potential role of universities to contribute to the transition to renewable sources based electricity system.</p> <p><i>By Henrik Bindner (DTU)</i> PRESENTATION 10</p>
12:40	13:00	0:20	<p>Solar Power Test Centre at Riso (DTU)</p> <p>The new test centre will explore the potential of the next generation of technical equipment harvesting energy from the sun. The test centre is the only one of its kind in Europe. In the coming years, tests of the newest solar cell technologies combined with various tracker structures and energy storage technologies will be conducted at the centre. One of the technologies being tested is bi-facial solar panels that absorb energy on both sides of the panel.</p> <p><i>By Mr. Per Noorgard (DTU)</i> PRESENTATION 11</p>
13:00	14:00	1:00	<p>Networking Lunch</p>
14:00	15:30	1:30	<p><u>Session 5: Collaboration Plan/Closing of Activities</u></p> <p>Presentation of upcoming opportunities and discussion on future collaboration between the partners and Cyprus industry. Brainstorming on potential joint projects. <i>By George E Georghiou (UCY)</i></p>
15:30	16:00	0:30	<p>Coffe Break</p>
16:00	17:00	1:00	<p>OPTIONAL (RESTRICTED TO 10 PARTICIPANTS) Battery Storage Hands on at UCY</p> <p>The battery storage infrastructure of the PV Tech. Laboratory – UCY was designed to investigate the various storage services. By choosing the AC-coupling topology, the system can be retrofitted and expanded at any time without replacing existing PV inverters. The 2.5 KW single-phase battery inverter for parallel grid operation together with the 10 kWh Lithium-based battery unit ensure a high round trip efficiency and at the same time increasing the value of on-site renewable generation.</p> <p><i>By Michalis Florides (UCY)</i></p>

[**Click Here to Register**](#)

Resources:

AIT smart grid converter (ASGC)

Biographies of Speakers



Dr George Makrides is the Quality Manager of the PV technology Laboratory of the University of Cyprus. He has received his PhD by the University of Cyprus in 2012 and the MPhil degree in Engineering at Cambridge University in 2004, where he also received the Cambridge Commonwealth Trust scholarship. Prior to this he had received the BEng Honours degree in Electrical and Electronic Engineering at Queen Mary University of London with a high overall mark (First class Honours). During his undergraduate degree, he had received various awards for academic excellence. He has published over 50 papers in international journals and conference proceedings and has participated successfully in various local and European research funded projects. His work on the outdoor performance of PV technologies throughout the years has been the initiation for the establishment of the PV outdoor infrastructure and testing centre in Cyprus for many manufacturers such as Honeywell, Q Cells, Tel-Solar, TSMC and others.



Mr. Zoran Miletic is Senior Research Engineer with Austrian Institute of Technology GmbH, Electrical Energy Systems. He has graduated from electrical engineering with the major in controls and electronics at the Faculty of Electrical Engineering, University of Belgrade, Serbia and specialized in Power Electronics at the CoPOC, University of Colorado at Boulder, USA. During his career as power electronics design engineer, he was a lead of product development of power converters and conversation systems for mobile, programmable and renewable (solar) power applications. His research interest lay in the application of power electronics and controls for the power converters and power conversion systems in grid-connected, off-grid and micro-grid applications



Mr. Per Nørgård is a senior engineer at the Center for Electrical Power and Energy at the Technological University of Denmark (DTU). Mr. Per Nørgård is currently a senior engineer at DTU with experience in analyzing, designing and testing power components and power systems with renewable energy and distributed resources. He is the DTU project coordinator of the EU DERlab NoE, the EU DERRI project, the national FlexPower project and the national INCAP project. He is actively involved in the development of the SYSLAB experimental intelligent energy system test and research facility. His expertise extends to power system design and control, technical capacity building and wind energy feasibility studies.



Dr. Sgouris Sgouridis is an associate professor of Engineering Systems and Management at Masdar Institute, Khalifa University. He is investigating the conditions for facilitating a complete transition to renewable energy or Sustainable Energy Transition (SET). He works with energy, transportation, and economic models in order address questions related to making the energy transition a reality. Dr. Sgouridis co-developed a concept of energy currency, Ergo, and was instrumental in establishing the Sustainable Bioenergy Research Consortium. He served as head of the Institute Center for Smart and Sustainable Systems (2013-2014). For the Zayed Future Energy Prize (ZFEP) he has been actively contributing as a member and previous chair of the review committee for years 2010-2017. He is also

involved as a member of the jury for the MIT Climate Colab competitions from 2014-present. Prior to his role at MI, Dr. Sgouridis supported governmental and private organizations including the U.S. Department of Transportation, the Port Authority of Thessaloniki, and the Hellenic Army. At MIT, he obtained a PhD in Engineering Systems, and a dual MSc in Technology and Policy and Transportation. He holds a BS (Hons.) in Civil & Environmental Engineering from Aristotle University of Thessaloniki.



Dr. Haithan Abu-Rub is a full professor at the Texas A&M University at Qatar holding two PhDs from Gdansk University of Technology (1995) and from Gdansk University (2004). Dr. Abu Rub has long teaching and research experiences at many universities in many countries including Poland, Palestine, USA, UK, Germany and Qatar. Dr. Abu-Rub is currently the chair of Electrical and Computer Engineering program and the Managing director of the Smart Grid Center – Extension in Qatar. His main research interests are energy conversion systems, smart grid, renewable energy systems, electric drives, and power electronic converters.



Dr. Ahmed Al-Salaymeh is a Professor at the Mechanical Engineering Department, School of Engineering, University of Jordan. He is the director and founder of the Renewable Energy Master Program at the University of Jordan and the director and founder of Environmental Technology and Climate Change Master Program at the University of Jordan. Professor Al-Salaymeh is the ex-director of Water, Energy and Environment Center at the University of Jordan. He is a consultant to industry and an expert in the design and selection of Photovoltaic systems and is an instructor of the PV course for the masters program at the University of Jordan.



Dr. Leonardo Micheli is a researcher within the PV Performance and Reliability Group at the National Renewable Energy Laboratory (NREL). During the past three years, Leonardo has been working on the U.S. Department of Energy-funded "Addressing Soiling: From Interface Chemistry to Practicality" project. Leonardo is in charge of the maintenance of a soiling map for the United States and is part of the team that developed a method to extract soiling losses from PV performance data. At NREL, he has investigated different methods to predict soiling losses using PV performance data or environmental parameters, presenting also a work on the seasonality of soiling. He is involved in the effort to develop a standard on the abrasion due to soiling and cleaning. In December, he will start a Marie Curie fellowship at the university of Jaen to develop a smart algorithm for the prediction of future soiling losses based on current and historical meteorological data. If successful, this method will allow to optimize the cleaning schedule of PV systems, limiting the O&M costs and increasing the energy yield of the system. Leonardo received a PhD in Renewable Energy from the University of Exeter (UK) in 2015, with a thesis on the concentrator photovoltaics.



Mr. Christoph Mayr is the head of the Photovoltaic group at the Austrian Institute of Technology (AIT). He holds a M.Sc. in Information and Communications Technology. From 2005-2013 he was researcher and project manager at AIT Energy Department AIT. Since 2014, he is leader of the business unit Photovoltaic Systems at AIT. His field of expertise covers the integration of distributed generation, and especially photovoltaics into power networks, with a particular focus on power test procedures and related systems. From 2011-2013 he was responsible for implementation of the AIT SmartEST Laboratory for PV grid integration. Since 2010, he has been operating agent of PVPS Task 14 and will continue this task until 2018. He is expert member of the European

Technology Platform Photovoltaic and coordinator of the EERA JP PV Sub-programme 5 PV Systems.



Mr. Helfried Brunner is the Head of Smart Grids group at the Austrian Institute of Technology (AIT). He holds a M.Sc. in Electrical Engineering and Information Technology, specializing on Power Engineering at the University of Technology Graz and Innovation and Technology Management at the University for Applied Sciences Technikum Vienna. From 2004 to 2008 researcher and project manager at the Austrian Institute of Technology - AIT, Energy Department (former known as arsenal research) in the topic distributed generation integration in distribution networks. Since 2009, deputy head of business unit Electric Energy Systems. Responsible for the research field Smart Grids and related projects in this topic

(e.g. national projects DG DemoNet-Concept, BAVIS, DG DemoNet-Validation, ISOLVES PSSA and EU Project MetaPV). Representative of AIT within the European Energy Research Alliance (EERA) Joint Programme Smart Grids and member of CIRED Session 4 Advisory Group. Since 2010 member of board of the National Technology Platform Smart Grids Austria.



Mr. Henrik W. Bindner is a senior scientist and the Head of Research Group at Center for Electrical Power and Energy at the Technological University of Denmark (DTU). His research is in the area of renewable energy integration, flexible consumption, active distribution grids, dynamic and supervisory control of large portfolios of flexible consumption units and the associated ICT infrastructure. He has been one of the main drivers in the development of the research facility SYSLAB at DTU that is designed to support research in distributed/decentralized control and ICT infrastructures. He is currently the PI of the large Danish project iPower (Innovationsfonden) focusing on flexible consumption from user involvement to

market integration. He has been participating in the EERA Smart GRid Joint Programme since its beginning and he is currently a sub-programme leader as well as WP leader of the derived EU project ELECTRA. He is a member of scientific committees in the field including EWEC (2006-9), International Conference on PV-Hybrid Systems and Mini-Grids (2010, 2012, 2014), Nordic Wind Power Conference (2006, 2007, 2009), and Board member of the Wind Energy Institute of Canada (2007-2012).



Dr George Georghiou is a Professor and the Director of FOSS Research Centre for Sustainable Energy, University of Cyprus. Prior to this, he was a Lecturer and the undergraduate course leader in Electrical Engineering at the University of Southampton, and a Research Fellow at the Electricity Utilization Group, University of Cambridge. Having graduated from the University of Cambridge with a BA, MEng, MA all with distinction and a PhD, Dr Georghiou continued his work at the University of Cambridge in the capacity of a Research Fellow (1999-2002). Dr Georghiou is currently a member of the CENELEC and IEC committees on PV and is acting as an expert evaluator for Horizon 2020 energy proposals as well as being a member of CIGRE and the European Solar Energy Industrial Initiative. He also represents Cyprus on the SET plan steering committee and sits on the board of the Cyprus Energy Agency. He has recently been appointed by the President of Cyprus to the National Energy Policy Council to advise the government on energy issues. Dr Georghiou has published over 300 papers in international journals and conference proceedings and his team has obtained research funding in excess of 15 million Euros from bodies such as the European Union, Industry (such as Honeywell, Q Cells etc.), the National Funding Agency etc. Amongst his scholarly achievements, are five outstanding paper awards for the most significant technical scientific contributions and an innovation prize.

ΠΑΝΕΠΙΣΤΗΜΙΟΥΠΟΛΗ (ΑΘΑΛΑΣΣΑ)

