2nd International Conference

Mediterranean Green Energy Forum

Marrakech- Morocco

26-28 March 2015

www.lsis.org/mgef2015/MGEF2015.htm

RMEI : Mediterranean Network for Engineering Schools and Technical Universities

Conference Digest
Abstracts
Booklet

Welcome in Marrakech

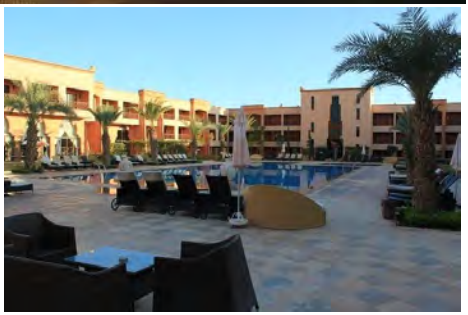
The **M**editerranean **G**reen **E**nergy **F**orum (**MGEF'15**) is a major international conference on Energy and sustainability for Mediterranean countries jointly organised by the HyRES Lab of the RMEI network and the LSIS with the support of **LSIS Marseille**, France, and hosted by the **University of Marrakech, Morocco**.

The **MGEF'15** is supported by the Mediterranean Energy Network MERIE, the RMEI Network and related to SEB and WREC two international meetings of Renewable Energy. His main objective is research of efficient solutions to the environment and energy problems, specific to the Mediterranean Countries.

The first **MGEF'13** was a combination of the annual **KES Sustainability** in Energy and Buildings conference and a regional meeting of the well-known regional World Renewable Energy Congress.

Conference Venue

The conference will be held in the 4-star Zalagh Kasbah Hotel (www.zalagh-hotelkasbah.com) in an attractive part of Marrakech.



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Prof. Driss Aboutajdine	CNRST Morocco

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Badr Ikken	Morocco	Abdellah Mechaqrane	Morocco
Khalid Najib	Morocco	Driss Ouazar	Morocco

Conference Program

25 March 2015; **Early registration**: From 14:00 to 18:00

26 March 2015

08:00 - 09:00	Registration			
9:00 - 09:30 09:30 - 10:00 10:00 10:30	**CONFERENCE OPENING & WELCOME CEREMONY** **PLENARY KEYNOTE** **By** Badr Ikken "DEVELOPMENT OF OUTDOOR RESEARCH PLATFORMS AND TESTS ON PHOTOVOLTAIC MODULES IN THE GREEN ENERGY PARK IN MOROCCO" **COFFEE BREAK**			
10:30 - 12:00	**Session SA1:** Grid integration and control *; High Voltage and Insulation Technologies	**Session SB1:** Energy and Environment: Alternative and green energy*; Energy and buildings sustainability	**Session SC1:** Simulation Tools for Building , Energy and Thermal	**Session SD1:** Transports, Mobility and Vehicles Dynamics
12:00 - 13:30 14:00 14:30 14:30 : 15:00 15:00 15:30	LUNCH **PLENARY KEYNOTE** By Prof Robert J. Howlett " Innovation in Sustainable Energy System" **PLENARY KEYNOTE** **By** Prof Anastasia Zabaniotou "Development and Business opportunities in Mediterranean countries by valorising agricultural biomass in the context of Circular Economy and Industrial Symbiosis" **COFFEE BREAK**			
15:30 - 17:30	**Session SA2: Renewable Energies sources management*; Energy and buildings**	**Session SB2:** Renewable Energies sources management	**Session SC2:** Monitoring and diagnosis for PV systems	**Session SD2:** Observers,Diagnosis and security ; Transports,Mobility and Vehicles Dynamics

27 march 2015

08:30 - 09:00	Registration			
09:00 - 09:30 09:30 - 10:00 10:00 10:30	**PLENARY KEYNOTE** **By** Arch. Despina Serghides " The Mediterranean Case of EPISCOPEEnergy Performance Indicator Tracking Schemes for the Continuous Optimisation of Refurbishment Processes in European Housing Stocks" **PLENARY KEYNOTE** **By** Prof Giuseppe Marco Tina ' ' Monitoring and Diagnostics for photovoltaic and hybrid solar PVT Power Plants" **COFFEE BREAK**			
10:30 - 12:30	**Session SA3** High Voltage and Insulation Technologies	**Session SB3:** Buildings Energy :Performance in the Mediterranean Area BEPinMA2*; Energy and buildings sustainability	**Session SC3:** Solar Energy*; Monitoring and Diagnosis for PV Systems	**Session SD3:** High Voltage and Insulation Technologies*; Computings, Controls and Predictors for Energy, Buildings and Environment
12:00 - 13:30 14:00 - 14:30 14:30 - 15:00 15:00 - 15:30	LUNCH **PLENARY KEYNOTE** By Prof. Fernando TADDEO '" Renewable Energies for Desalination: Some Case Studies" **PLENARY KEYNOTE** **By** Prof Krishna BusaWon "The design and application of output observers for Wind Energy Conversion Systems (WECs)" **COFFEE BREAK**			
15:30 - 17:30	**Session SA4:** HOMER	**Session SB4:** Energy Efficient Refurbishment for the Mediterranean Houses*; Smart buildings as energy islands, ICTs	**Session SC4:** Solar Energy*; Smart Grids.; Energy and buildings sustainability;	**Poster Session**
	GALA DINNER			

28 march 2015

9:00 – 09:30 09:30 – 10:00 10:00 10:30	**PLENARY KEYNOTE** **By Prof. Yasser DESSOUKY** " grid integration and control" **PLENARY KEYNOTE** **By** Prof Francesca Sciaretta ' ' SUSTAINABLE REFURBISHMENT OF CULTURAL HERITAGE BUILDINGS WITH REINFORCING PFRP FRAMES" **COFFEE BREAK**		
10:30 - 12:30	**Session SA5: Wind Energy*; Sustainability and environmental sciences**	**Session SB5: Applications for Buidings, Renewable Energies and Sustainability*;**	**Session SC5: MedReCup**
12:30 – 13:00 13:00 14:30	**CLOSING CEREMONY** LUNCH		

projet labellisé par

Union pour la Méditerranée
Union for the Mediterranean
الإتحاد من اجل المتوسط

Haute Opportunité en Méditerranée pour le Recrutement de cadres d'excellence

Suite au lancement officiel du programme à Marseille le 17 mars 2015
A l'occasion du second Mediterranean Green Energy Forum

Lancement du programme HOMERe au Maroc « Faire de la Méditerranée un bassin d'emplois »

Vendredi 27 Mars 2015, 15h00-17h30
Zalagh Kasbah Hôtel, Marrakech

PROGRAMME PROVISOIRE

14:30-15:00	**Accueil**
15:00-15:30	**Ouverture : Améliorer l'employabilité des jeunes diplômés au Maroc** ▪ Monsieur Mohamed Ezzahou, conseiller au cabinet chargé de l'emploi ▪ Représentant de Monsieur le ministre de l'Enseignement Supérieur, de la Recherche Scientifique et de la Formation des Cadres ▪ Monsieur EL Bachir Khoulani, Directeur de la Coopération et du Partenariat du Ministère de l'Enseignement Supérieur du Maroc ▪ Monsieur Hicham Kasbaoui représentant de l'ANAPEC ▪ Professeur Mohamed Knidiri, président de l'université privée de Marrakech, ancien ministre de l'Education Nationale ▪ Madame Emmanuelle Gardan, Division Enseignement Supérieur et Recherche, Secrétariat de l'Union pour la Méditerranée
15:30-15:45	**HOMERe, un nouveau programme de stages pour renforcer l'employabilité des jeunes en Méditerranée** ▪ M. Léo Vincent, président du Réseau Méditerranéen des Ecoles d'Ingénieur et de Management (RMEI), coordonnateur général du programme HOMERe ▪ M. Abdellah Menou, directeur de l'Académie Internationale Mohammed V de l'Aviation Civile (AIAC), responsable du programme HOMERe au Maroc ▪ Mme Noha Fathi, responsable du programme HOMERe pour la Rive Sud

15:45-16:30	**Table ronde : Stages et expériences à l'international : quelle plus-value pour les entreprises et leur développement en Méditerranée ?** Modérateur : M. Mohamed Lakhlifi, directeur général de CGI Maroc Intervenants : *Responsables d'entreprises et d'établissements universitaires* ▪ M. Youssef Draiss, directeur général de Casa Transport ▪ M. Patrice Le Ster, directeur de SOMEI Maroc ▪ M. Mohamed El Moueffak, directeur général du groupe ISCAE ▪ M. Philippe Saliou, Université Bretagne Occidentale, responsable du programme OTI ▪ M. Abdelhakim Ameur EL IMRANI, Université Mohamed V de Rabat
16 :30-17 :15	**Table ronde : Stages et expériences à l'international : quelle plus-value pour la transition des diplômés de l'enseignement supérieur vers la vie active ?** Modérateur : Mme Emmanuelle Gardan, Secrétariat de l'Union pour la Méditerranée Intervenants : *Responsables d'entreprises et d'établissements universitaires* ▪ Sara El Khal, SOMEI Maroc, première bénéficiaire du programme ▪ M. Massimo Guarascio, Università di Roma La Sapienza, 1er vice-président du RMEI ▪ M. Driss Ouazzar, directeur de l'ENIM ▪ M. Abderrahmane Farhate, directeur de l'ESITH ▪ M. Abdelhaq Mouhtaj, directeur l'ISITT
17:15-17:45	**Mise en place du consortium HOMERe – Maroc : Structuration et enjeux** Modérateur: M. Mounir Ferram, directeur exécutif de l'Association Marocaine des Exportateurs (ASMEX) Participants : ▪ M. Mohamed Lakhlifi, directeur général de CGI Maroc ▪ Représentants des établissements d'enseignement supérieur marocains membres du RMEI ▪ Représentants du programme « Offshoring des Technologies de l'Information » (OTI) ▪ Représentants des organisations professionnelles et économiques marocaines
A partir de 17h30	**Possibilités de rencontres bilatérales B-to-B entre entreprises pourvoyeuses d'offres de stage et acteurs du programme HOMERe**

Contacts:

- **Abdellah Menou, a.Menou@onda.ma**
- **Aziz Naamane, aziz.naamane@lsis.org**

Inscriptions et Demandes de rendez-vous B-to-B avant le 24 mars 2015
en précisant vos coordonnées et le nom de votre organisation à homere@rmei.info

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HOMERe

Haute Opportunité en Méditerranée pour le Recrutement de Cadres d'Excellence

Un nouvel élan donné au recrutement des meilleurs diplômés en Méditerranée grâce à une nouvelle approche du stage en entreprise

Promoteur	Réseau Méditerranéen des Ecoles d'Ingénieur et de Management (www.rmei.info)
Consortium	• Algerian Talents and Leaders Association (ATLAS) • Association des Chambres de Commerce et d'Industrie de la Méditerranée (ASCAME) • Association des Ingénieurs Francophones en Egypte (AIFE) • Association Marocaine des Exportateurs (ASMEX) • Association Scientifique Algérienne des géosynthétiques (ASAG) • BusinessMed • Campus France • Club des entrepreneurs et industriels de la Mitidja (CEIMI) • Comunità delle Università Mediterranee (CUM) • Conseillers du Commerce Extérieur Français (CCEF) • Consiglio Nazionale degli Ingegneri (CNI) • Ingénierie méditerranéenne pour l'export et le développement (Imed) • Office de Coopération Economique pour la Méditerranée et le Moyen orient (OCEMO) • Ordre des Ingénieurs Tunisiens (OIT) • Réseau Méditerranéen des Ecoles d'Ingénieur et de Management (RMEI) • Union Tunisienne de l'Industrie, du Commerce et de l'Artisanat (UTICA) • Unione delle Università del Mediterraneo (UNIMED) En partenariat avec iesmed
Pays impliqués	Algérie, Egypte, Espagne, France, Grèce, Italie, Liban, Malte, Maroc, Tunisie
Contexte	1) Fort taux de chômage des jeunes diplômés dans les pays participant au projet. 2) Difficultés de recrutement au niveau « cadres » soulevés par les dirigeants d'entreprises opérant sur la région Méditerranée : manque de connaissance du monde de l'entreprise de la part des jeunes diplômés, compétences transversales insuffisamment développées (esprit d'équipe, autonomie, etc.) chez les jeunes diplômés, pourtant dotés d'un excellent niveau académique.
Objectifs	**1) Renforcer l'employabilité des jeunes diplômés de haut-niveau** des pays participant au projet, et notamment leur accès à des premiers emplois de qualité, via la réalisation d'un stage international de 6 mois au siège d'une entreprise de la région Méditerranée. Ce stage, bien encadré, leur permettra de se créer un carnet d'adresses professionnel, et surtout d'acquérir de nouvelles compétences, évaluées en fin de stage par une soutenance orale dans leur pays d'origine. **2) Faciliter les démarches de recrutement et le succès des processus de recrutement des employeurs** des pays participant au projet, en leur permettant d'identifier des diplômés correspondant à leurs besoins de développement en Méditerranée et d'enrichir la formation de ces diplômés par un stage pratique de fin d'études correspondant à un projet réel de l'entreprise.
Résultats attendus dans le cadre du projet	**1) Des offres de stage de qualité** Le consortium va s'appuyer sur un réseau de représentants économiques relais chargées de faire connaître aux entreprises le programme HOMERe, en vue de recevoir des offres de stage correspondant aux critères de qualité HOMERe (vrai projet professionnel, candidat international, supervision en continu, évaluation finale des compétences, compensation des frais de participation selon un montant minimal d'indemnités établi par le consortium, etc.). **2) L'adéquation assurée entre le profil du stagiaire et la mission couverte par le stage** Le consortium va s'appuyer sur un réseau de représentants académiques relais chargés d'identifier les étudiants correspondant le mieux à l'offre de stage diffusée. L'entreprise effectuera, sur entretien, le choix final du candidat parmi les étudiants présélectionnés.
Bénéficiaires	**1) Jeunes diplômés des écoles et universités du réseau RMEI** (et au-delà, lorsque les profils recherchés sortiront du champ de disciplines couvert par les membres du RMEI) **2) Entreprises opérant dans la région Méditerranée**, c.-à-d. ayant des activités d'import/export et/ou des filiales et/ou des joint-ventures dans la région (exemple : entreprise algérienne ayant un centre de production espagnol, entreprise française ayant une filiale marocaine, entreprise libanaise ayant un bureau égyptien, etc.).

Impact escompté à moyen terme	**1) Le recrutement des stagiaires HOMERe** Si le/la stagiaire HOMERe a donné satisfaction à l'entreprise, et que cette entreprise a des besoins de recrutement dans le pays d'origine du stagiaire, l'entreprise aura tout intérêt à le/la recruter, puisqu'il ou elle connaîtra déjà la culture et les modes de fonctionnement de cette entreprise et qu'il ou elle disposera d'un réseau de contacts au sein de l'entreprise. **2) L'évolution des cursus ingénieur et management des universités méditerranéennes** Les comptes - rendus des évaluations des stages HOMERe seront analysés et partagés avec les représentants académiques du réseau HOMERe afin d'enrichir les réflexions sur l'évolution à moyen-terme des cursus.
Gouvernance	• **Secrétariat permanent**: instance de gestion quotidienne co-implantée en France et en Egypte, réunissant un personnel qualifié dans la mise en œuvre de stages internationaux. Ce Secrétariat s'appuie sur un relais de correspondants économiques et académiques dans chacun des pays participant au projet. • **Comité de pilotage** : instance de décision, réunissant tous les membres du consortium (suivi de l'état d'avancement du programme, orientations générales, etc.). • **Comité des Sages** : instance de légitimité, réunissant des personnalités expérimentées, qui croient en la démarche du programme HOMERe, et qui lui apportent leur regard, leur expertise et leur soutien.
Participants marocains	• **Consortium / Comité de pilotage :** ASMEX- Association Marocaine des Exportateurs • **Comité des sages :** ▪ M. Mounir Ferram, directeur exécutif ASMEX ▪ M. Mohamed Lakhlifi, Senior Vice President CGI • **Correspondant relais auprès de la communauté académique :** ▪ Prof. Abdellah Menou, directeur Académie Internationale Mohammed VI de L'Aviation Civile ▪ Prof. Mustapha El Adnani, Ecole Nationale des Sciences Appliquées de Marrakech ▪ Prof. Abdelhakim Ameur EL IMRANI, Université Mohamed V de Rabat, Coordinateur National du Réseau "Offshoring des Technologie de l'Information" • **Universités/Ecoles impliquées dans HOMERe:** Académie Internationale Mohammed VI de L'Aviation Civile, Al Akhawayn University, Ecole de l'Industrie Minérale, Ecole Hassania des Travaux Publics, Ecole Mohammadia d'Ingénieurs, Ecole nationale des Sciences Appliquées de Fès, Université Hassan 1er, Ecole Nationale des Sciences Appliquées de Marrakech, Ecole Nationale des Sciences Appliquées de Tétouan, Ecole Nationale Supérieure des Arts et Métiers Meknès, Faculté des Sciences et Techniques de Fès, Institut National des Postes et Télécoms, Université Abdelmalek Essaadi, Université Privée de Marrakech, Université Euro-Méditerranéenne de Fes,HEM Casablanca, Rabat, Marrakech, Fès, Tanger, Oujda, Université Ibn Zhor d'Agadir , Ecole Nationale des Sciences Appliquées d'Agadir, Université Hassan II de Casablanca, Université Sidi Mohamed Ben Abdellah de Fès, Université Ibn Tofaïl de Kénitra, Université Cadi Ayyad de Marrakech, Université Hassan 1er de Settat, Université Mohammed V de Rabat, Université Abdelmalek Essaâdi de Tanger…
Exemple pilote marocain	L'entreprise SOMEI a été la première entreprise à accueillir, en 2014, via le programme HOMERe, deux étudiantes ingénieures marocaines à son siège à Marseille pendant six mois, avant de les recruter au mois de septembre dans ses bureaux de Rabat.
CONTACT	Léo VINCENT, Président RMEI homere@rmei.info leo.vincent@rmei.info +33 6 72 15 74 99

Avec le soutien financier du Conseil Régional Provence-Alpes- Côte d'Azur

Région PACA

HOMERe : Un projet labellisé par l'Union pour la Méditerranée

www.homere-med.org
homere@rmei.info

NOTRE PROCHAIN RENDEZ-VOUS AU MAROC :
Marrakech, le 27 mars à partir de 14h30
Lancement officiel du consortium HOMERe au Maroc

Keynote Speakers

Prof Robert J. Howlett

Executive Chair, KES International;
Visiting Professor,
Enterprise Bournemouth University
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KeyNote Title: Innovation in Sustainable Energy Systems
Scientists around the world continue to work on new inventions to help alleviate problems of clean energy supply and carbon dioxide emissions. However, the innovation process includes not just the initial stage of conception of an idea, but also the processes needed to take an invention to the stage where it is commercialised, applied and profitably generating revenue. Commercialising an invention to the point where it is making a useful contribution to commerce and society is a long and uncertain process. The effort needed can be likened to an iceberg where the portion above the water represents development of the initial concept, but underlying this is a much greater level of work necessary to convert the project to a product. The 'nine tenths below the water' consists of such stages as engineering for manufacture, including safety, certification to national and EU standards, devising the production processes, marketing, sales, arranging after sales support, etc. In addition it is not always clear which products will gain public acceptance and sell, and which will be rejected by the market. Many a business has failed through overreliance
On invention and insufficient attention to the post invention stages of new product creation and commercialisation. This talk will review some recent and emerging developments in clean energy, while at the same time looking at what is needed to turn inventions into innovation.

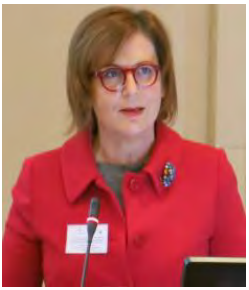
Badr Ikken

Directeur de l'IRESEN, Morocco

Email : ikken@iresen.org

Title: DEVELOPMENT OF OUTDOOR RESEARCH PLATFORMS AND TESTS ON PHOTOVOLTAIC MODULES IN THE GREEN ENERGY PARK IN MOROCCO

Abstract:
Morocco is the largest energy importer in North Africa. The solar program aims to install 2000 MW of solar power production by 2020. In this context the keynote intends to introduce the concept of the PV outdoor test platform that has been set up in the "Green Energy Park", Ben Guerir, as part of cooperation between the Moroccan IRESEN, Rabat and the German Fraunhofer CSP, Halle. This outdoor test platform is designed, combining a multitude of test-set-ups, in order to investigate and characterize PV modules in the worst weather conditions and to get a valuable data about their performances in situ. The aims of the different test-set-ups as well as the recorded parameters will be presented. Some aspects of module improvements in design, materials for hot regions like Morocco will be furthermore introduced.



Prof Anastasia Zabaniotou

Department of Chemical Engineering School
of Engineering Aristotle
University of Thessaloniki
Vice président of RMEI
(Réseau Méditerranéen des Ecoles d'Ingénieurs)
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KeyNote Title:Development and Business opportunities in Mediterranean countries by valorising agricultural biomass in the context of Circular Economy and Industrial Symbiosis

Abstract:
The EU is committed to implement the principles of the waste hierarchy, which implies the prevention of waste, its reuse and recycling where it is not prevented, and its energy recovery as suboptimal option. Agriculture generates co-products, by-products and waste streams that are currently not properly taken care of both in environmental and economic term. There are many types of non-food sources that can now be used to produce fuels, chemicals, and power. The technological development on energy production from biomass focuses for higher efficiently of processing complex feed stocks. Beyond reduction and recycling of agricultural waste, co-products and byproducts, there may be opportunities for new processes enabling innovative uses of these materials also outside the agricultural sector. Industrial symbiosis, whereby different actors derive mutual benefit from sharing utilities and waste materials, requires large scale systemic innovation with the aim of turning waste from one industry into useful feedstock for another one. For Mediterranean Countries, facilities utilizing indigenous renewable sources and designed to supply local communities and decentralized energy users are in the forefront of energy and environmental policies. The approach of biomass energy utilization very close or at the place of origin minimizing transportation and logistics cost provides a means of boosting sustainable development in rural areas.

Prof Francesca Sciaretta

IUAV University of Venice, Department of Design and Planning in Complex Environments, Dorsoduro 2206, Convento delle Terese, 30123 Venice, Italy

KeyNote Title: SUSTAINABLE REFURBISHMENT OF CULTURAL HERITAGE BUILDINGS WITH REINFORCING FRAMES

by Carlo Casalegno, Salvatore Russo, Francesca Sciarretta

Abstract: The structural reinforcement of masonry structures belonging to cultural heritage deserves sustainable and effective techniques to be more and more developed. The peculiar features of pultruded FRP profiles (PFRP) for construction, such as the low material density, durability and ease of erection makes them particularly suitable for the reinforcement of traditional masonry structures, with particular reference to historical constructions in seismic sites.

The capability of PFRP construction profiles for structural reinforcement of historic buildings is not yet sufficiently explored, although it would allow for non-invasive and reversible interventions for improving the structural performance with a very small mass addition. The paper presents preliminary investigations - in progress at the IUAV University of Venice - concerning a hypothesis of reinforcement of a traditional masonry building through the installation of a pultruded FRP frame adjacent to the masonry structure and connected to it with mechanical fasteners. The scope of the ongoing research is to explore the possibilities of application of such a reinforcement technique to different types of assets (concerning structural type, materials, aggregation and importance), and to quantify its advantages via opportune parameters.

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KeyNote Title: Monitoring and Diagnostics for photovoltaic and hybrid solar PVT Power Plants

Abstract: There are many reasons to monitor a system as relatively expensive and long-term as a solar installation, such as: to follow up on the energy yield, to assess the solar system performance and to timely identify design flaws or malfunctions. These needs for monitoring fall into three main groups: user feedback, performance verification, system evaluation/diagnostic. As a matter of fact, a good monitoring system allows the energy professional to easily determine that a system is running properly, and gives access to information that will help to troubleshoot a malfunctioning system. Consumers generally want to know the overall system production, along with cost savings or environmental benefit derived from that production. And nowadays, everyone wants that information in real time. Professionals need data pushed to them in the form of alerts to system malfunctions (via email or text message), along with remote access to real-time data that allow them to drill down to the performance of individual system components and sensors. An internet-accessible “dashboard” should permit the consumer to observe near real-time production and review the operating history. The monitoring system must flag clues to problems with the system. It becomes clear that to maximize effectiveness, advanced monitoring and more intelligent control should be brought together in one smart, connected device. An integrated

control/monitoring system is the most powerful tool available to efficiently manage PV and solar thermal operations. Once the domain of expensive industrial supervisory control and data acquisition (SCADA) systems, these capabilities are now available in lower-cost, easy-to-use controllers. It has to be stressed the importance of real-time, live interaction with the PV and ST systems, with a complete and remotely accessible view of device status and history. From the monitoring point of view, a PVT plant can be viewed as two separate systems: a PV system and an ST thermal system. On this regard, basically, performance measurements of PVT collectors need to be in agreement with IEC 61215 for the electrical part and with EN 12975-2 for the thermal part. Yet, the close energetic interactions need to be taken into account, especially concerning the procedures and conditions of measurements. After a general overview of the proposed topic, focusing on PV and PVT systems, results about both a large PV plant and an experimental PVT system are provided.

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KeyNote Title: The design and application of output observers for Wind Energy Conversion Systems (WECs)

Abstract: There are a growing number of failures of wind turbines so much so that much many governmental funding bodies are wondering whether it is worth investing in such a technology. Some typical faults are blades failure due to high winds, lightening and hail, wear and tear (material fatigue issue) over time and generator failure. The maintenance cost is high especially when the turbines are located offshore. In this context there is a need devise simple and efficient incipient faults detection mechanism so as to prevent a failure form occurring. In this talk, we are going to propose a new method of fault detection based on the available measurements. For this we, introduce the concept of output observers; that essentially provide a set of redundant measurements on which the fault diagnosis can be performed. We will show that these observers can only be design using an input-output representation

of the system rather than using a state-space approach. The case of linear systems will be studied first and then an extension of the design to the nonlinear case will be made. A case study consisting of a typical WEC will be considered.

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KeyNote Title:
Renewable Energies for Desalination: Some Case Studies

Abstract: Desalination plants have a great potential to solve the lack of drinkable water in remote areas. However, they consume a lot of energy (representing around half of the total costs), currently depending on the availability on cheap fossil fuels. Thus, one of the main criticisms of current desalination plants is the significant generation of greenhouse gases. This keynote will review several existing plants that provide most of the energy from renewable sources: From the integration of solar energy with thermal desalination processes to the use of wind energy for powering pressure-based process. The keynote will discuss the difficulties to be overcome (in particular the problem of balancing energy consumption with production), and the advantages and disadvantages of each technology.

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KeyNote Title: The Mediterranean Case of EPISCOPE Energy Performance Indicator Tracking Schemes for the Continuous Optimisation of Refurbishment Processes in European Housing Stocks.

Abstract: The European project EPISCOPE has been launched in April 2013. The overall strategic objective of the EPISCOPE project is to make the energy refurbishment processes in the European housing sector transparent and effective. This will help to ensure that the climate protection targets will actually be attained and that corrective or enhancement actions can be taken in due time, if necessary. As a further step the scope is extended towards the elaboration of building stock models to assess refurbishment processes and project the future energy consumption. Pilot actions are conducted in 16 countries to track the implementation of energy saving measures and their effect on the consumption in practice. A long-term objective is to install bottom up monitoring procedures in each European country in different fields: in energy certificate databases, representative surveys, regional or national census, heating or energy bills, strategic asset development, energy management. In this presentation the energy efficient refurbishment processes of the Mediterranean housing stock will be explored. More specifically, the case study of the optimization of the dwellings refurbishment processes in Cyprus and the current available results of the project will be presented.

Professor Yasser Gaber Dessouky

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KeyNote: Optimum Utilisation of Hybrid Advanced Wave and Wind Energy for Innovative Sustainable Power Generation and Sea Water Desalination for Clean Environment

Abstract: Access to clean technology remains the linchpin for the global transition to a resource-efficient, green economy. In many cases, replacing old technologies with modern, sustainable alternatives can save money, improve human health, generate ‘green' jobs and benefit the environment all at the same time. Accelerating a green-technology transition in the MENA region will pose scientific, technical, political, and cultural challenges. Central to overcoming those challenges will be a two-part social process: first, developing a widely shared understanding of the imperatives and opportunities of the transition, and second, developing a strategic consensus that leads to coherent, positive action. This process must occur within and

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