IEEE

IRSEC'17

5th International Renewable and Sustainable Energy Conference

December 04-07, 2017, Tangier-Morocco

Program and useful information

MSTI www.med-space.org

masen

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

ACWA POWER

CLUSTER SOLAIRE

Mohammed V University in Rabat

Faculty of Science Rabat, Morocco

جامعة الأخوين AL AKHAWAYN UNIVERSITY

ISES International Solar Energy Society

IRESEN

IEEE ComSoc IEEE Communications Society Morocco Chapter

IEEE computer society Morocco Chapter

ENSIAS

EMI

Program overview

Monday

- Registration
- Opening Ceremony
- KN01 - **Prof. Joerg Bagdahn** (Plenary Room)
- Break
- KN02 - **Prof. Mohammad Khaja Nazeeruddin** (Plenary Room)
- KN03 - **Prof. Ahmed Ennaoui** (Plenary Room)
- S-AUI (Room 1) / S-II (1) (Room 2)
- KN04 - **Prof. Dr. Bulent Akinoglu** (Plenary Room)
- KN05 - **Prof. Mohamed Eddaoudi** (Plenary Room)
- Lunch
- KN06 - Prof. Robert Pitz-Paal
- S-I-Th (Room 1) / S-VI (Room 2)
- Intro to Material Workshop
- KN07 - Prof. Med Henini (Plenary Room)
- S-III (1) (Room 3)
- KN08-Pr. A.Benyoussef (Plenary Room)
- KN09-Dr. Alpan Bek (Plenary Room)
- Break / Posters Session I
- S-IV (1) (Room 2) / S-I (1)-PV (Room 1) / S-V (1) (Room 3) / S-AUI (Room 4)
- **Tutorial 2** An Anti-Dust Solution (Room 1)
- **Tutorial 3** Spatial Data analysis (Room 2)
- **Tutorial 1** Ab-initio (Room 4)
- Gala Dinner

Tuesday

- Li-ion Workshop - introduction, by Dr Khalil Amine
- KN10 - **Dr. Emilio E. Bunel** Li-ion Workshop (Plenary Room)
- KN11 - **Dr. Jun Liu** Li-ion Workshop (Plenary Room)
- S-I (1)- PV (Room 1) / S-III (1) (Room 3)
- KN12 - **Dr. Jud Virden** Li-ion Workshop (Plenary Room)
- Break
- KN13 - **Dr. Wenjuan Mattis** EVB: Li-ion Workshop (Plenary Room)
- KN14 - **Dr. Khalil Amine** EVB: Li-ion Workshop (Plenary Room)
- S-I (2) - PV (Room 1) / S-IV (1) (Room 4)
- KN15 - **Dr. Steven Visco** EVB: Li-ion Workshop (Plenary Room)
- (ID - 12) / (ID - 136) / S-III (1) (Room 3) / S-I-Th (Room 2)
- Lunch
- S-II (1) (Room 2)
- (ID - 151) (R2)
- (ID - 290) (R2)
- (ID - 300) (R2)
- KN16 - Prof. Thomas Hannappel Materials W. (Plenary Room)
- KN17 - Prof. Mustapha Jouiad Materials W. (Plenary Room)
- KN18 - Prof. Othmane Bouhali Materials W. (Plenary Room)
- S-V (1) (Room 1) / S-III (2) (Room 3)
- KN19-Dr. Teodor Todorov Materials W. (Plenary Room)
- KN20 - Prof. Tarik Chafik Materials W. (Plenary Room)
- Break / Posters Session II
- Patents Workshop (Room 2) / S-I (2) - PV (Room 1) / S-III (2) (Room 3)
- KN21-Pr. Abdelhafed Taleb Materials W. (Plenary Room)
- **Tutorial 3** Spatial Data analysis (Room 2)
- **Tutorial 4** TRNSYS software (Room 3)
- **Tutorial 1** Ab-initio (Room 4)

Wednesday

- Registration to CSP workshop
- Intro. by R. Pitz-Paal
- MASEN's Mission, by H. Bouzekri
- KN-Dr. Reiner Buck CSP W. (Plenary Room) / S-I (3) -PV (Room 1) / S-IV (2) (Room 3) / S-II (2) (Room 2)
- HelioMaroc, by *Jet Energy Comp.*
- Heliostat, by A. schweitzer - SBP
- Metallic Structures, by *Delta Holding*
- KN-Dr. Thomas Bauer CSP W. (Plenary Room)
- Molten Salt tanks, by *DLM Comp.*
- Break / Posters Session III
- RE constr., by A. C. Giménez - *Caldererias*
- KN-Dr. Peter Heller CSP W. (Plenary Room) / S-V (2) (Room 1) / S-IV (2) (Room 3) / S-VI (Room 2)
- Heat process for milk - by *COPAG*
- Decentralized STE, J. Shruefer - IATech
- Closing Ceremony

Thursday

- **Social Event**
- - Siemens - Factory of wind turbine blades
- Wind farm
- Tangier Med Port -- Lunch --
- Cap Spartel
- Hercules cave
- Medina

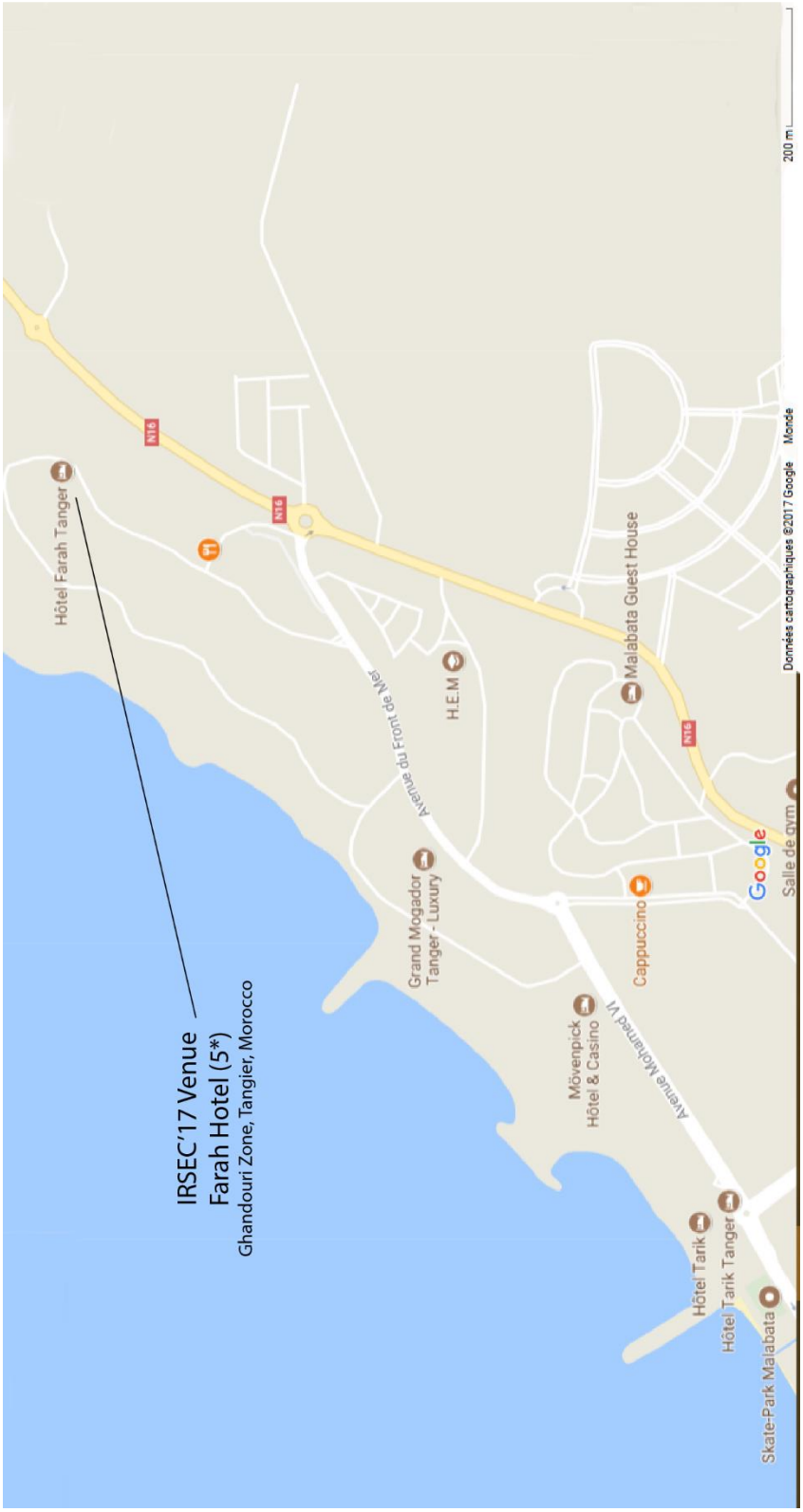
IRSEC'17 Venue – Farah Hotel (5*), Tangier, Morocco

Ground Level

Level -1

Topics

Session	topics
S1-PV	Solar Energy - PV
S1-Th	Solar Energy - Thermal
S2	Wind Energy
S3	Command and control systems for RE
	Simulation and Modelling for RE
S4	Green technology
	Energy efficiency
	Biomass
S5	Energy storage and Batteries
	Energy harvesting
	Hydrogen energy storage
	Power Distribution System
S6	Smart Grid
	IT in Renewable energy
Li-ion Workshop	EVB: Li-ion and Beyond
Materials W.	Materials Workshop
CSP W.	CSP Workshop
S-AUI	Al Akhawayn University Session


IRSEC'17 Venue
Farah Hotel (5*)
Ghandouri Zone, Tangier, Morocco
Hôtel Farah Tanger
N16
Avenue du Front de Mer
H.E.M
Malabata Guest House
Grand Mogador Tanger - Luxury
Cappuccino
Google
Salle de gym
Mövenpick Hôtel & Casino
Avenue Mohamed VI
Hôtel Tarik
Hôtel Tarik Tanger
Skate-Park Malabata
200 m
Données cartographiques ©2017 Google
Monde

Foreword

Welcome to the Fifth edition of the International Renewable and Sustainable Energy Conference (IRSEC'17) and to the wonderful Moroccan city of Tangier!

Sustainable energy should meet today's energy needs without compromising those of the future generations. Technologies that promote sustainable energy are mainly based on renewable energy sources, such as hydroelectricity, solar energy, wind energy, sea waves power, geothermal energy, bio-energy, tidal power and also upon technologies designed to improve energy efficiency.

The cost of these energy technologies have fallen dramatically in recent years, and continue to fall. Most of these technologies are either economically competitive or close to being so. Considerable progress is being made in the energy transition from fossil fuels to ecologically sustainable systems, to the point where many studies support 100% renewable energy.

IRSEC'17 is an international conference that provides an excellent opportunity for networking and for dissemination and exchange of innovative research findings related with different issues and topics relevant to renewable and sustainable energy. These are of essential importance to sustainable development and to climate change effects mitigation.

IRSEC'17 has succeeded to attract a record number of papers submitted by researchers, policy-makers, engineers and other specialists from different backgrounds and from different parts of the world. These papers covered all facets and issues as diverse as renewable energy technology, energy efficiency, green energy, climate change, sustainable energy systems and Smart Grid.

IRSEC'17 has also succeeded to attract international renowned experts and scholars specialized in different key and hot topics covering different aspects and features of renewable and sustainable energy which contribute to the different keynote and invited talks.

The overwhelming success of IRSEC'17, is doubtlessly the result of the commitment, perseverance, implication and hard work of different stakeholders, particularly, the Organizing Committee Members, Technical Program Committee members, keynote and invited talks speakers, technical sponsors and all the participants. We seize this opportunity to address them all our most sincere thanks and gratitude.

Last but not least, we wish all the participants in IRSEC'17 a very successful and fruitful conference and a wonderful and enjoyable stay in the wonderful city of Tangier.

Mohamed Essaaidi
National Higher School of IT (ENSIAS), Director
Rabat, Morocco

Youssef Zaz
President of MSTI
Abdelmalek Essaadi University, Asso. Prof.
Faculty Sciences, Tetouan, Morocco

IRSEC'17 General Chairs

Presentation guidelines:

- All presentations **should be in English**.
- The time provided for oral presentations is 15 min (10 min for the presentation and 5 min for discussion).
- The speakers should give their slides to the session chair before the beginning of each session.
- For poster presentations, the posters should be displayed one hour before the beginning of the poster session and any explanation required should be provided to session chairs and visitors.

Workshops

Workshop 1- Novel Materials for Emerging Energy Solutions Workshop

http://med-space.org/irsec17/workshop1/

Workshop 2- Enabling industry and research to implement CSP technology for power and process heat supply

http://med-space.org/irsec17/workshop2/

Workshop 3- Challenges and Advancements of Electric Vehicle Batteries (EVB): Li-ion and Beyond

http://med-space.org/irsec17/workshop3/

Workshop 4- Raise Awareness about Patent Filings

http://med-space.org/irsec17/workshop4/

Apply online for a Workshop:

http://med-space.org/irsec17/register-workshop

Register online:

(No need (free) for IRSEC'17 registered participants, 2000 MAD/ 180 Euro for others)

http://www.med-space.org/registration-form-IRSEC.html

One paid registration is sufficient to attend all workshops and keynote talks. Includes lunches of December 4th and 5th, 2017.

Evening Tutorials

Tutorial 1 - Ab-initio Electronic Structure Theory and its application to solids

http://med-space.org/irsec17/tutorial1

Tutorial 2 - Electrodynamic Dust Shield: An Anti-Dust Solution?

http://med-space.org/irsec17/tutorial2

Tutorial 3 - Introduction to spatial Data analysis

http://med-space.org/irsec17/tutorial3

Tutorial 4 - TRNSYS software - capabilities & application in buildings simulation

http://med-space.org/irsec17/tutorial4

Apply online for a Tutorial:

http://med-space.org/irsec17/register-tutorial

(Free for all - Online registration is mandatory)

List of plenary keynote talks

KN Monday 9:45-10:15 Plenary Room		Investigation of Dust Adhesion on PV-Modules at a Microstructural Level **Prof. Joerg Bagdahn** President of Anhalt University of Applied Sciences, Germany.
KN Monday 10:45-11:15 Plenary Room		Stable perovskite solar cells by 2D/3D interface engineering **By Prof. Mohammad Khaja Nazeeruddin** Ecole polytechnique fédérale de Lausanne, Switzerland
KN Monday 11:15-11:45 Plenary Room		What Drop on Demand (D-O-D) Inkjet printing bring to solar energy industry? Challenges for a solar PV module to be fully manufactured with a printed process **By Prof. Ahmed Ennaoui *(IRSEC'17 TPC Chair)*** President of the Scientific Council of *Institut de Recherche en Energie Solaire et Energies Nouvelles*.
KN Monday 11:45-12:15 Plenary Room		Recent advances in solar irradiation predictions as the input of solar system simulations: From Earth's surface measurements to satellite imagery; From Angstrom correlation to ANN **Prof. Dr. Bulent Akinoglu** Middle East Technical University, Ankara, Turkey
KN Monday 12:15-12:45 Plenary Room		Metal-Organic Frameworks from Design Strategies to Applications **Prof. Mohamed Eddaoudi** Distinguished Professor of Chemical Science and Associate Director of the Advanced Membranes and Porous Materials Center at KAUST, Saudi Arabia
KN Monday 14:00-14:30 Plenary Room		Advanced Concentrating Thermal Technologies for Power and Process Heat Generation **Prof. Dr.-Ing. Robert Pitz-Paal** DLR, Institute of Solar Research, Cologne, Germany.

Materials development in emerging energy technologies Workshop

http://med-space.org/irsec17/workshop1

Chaired by

Prof. Ahmed Ennaoui, Institut de Recherche en Energie Solaire et Energies Nouvelles, Morocco
Prof. Abdelilah Benyoussef, Moroccan Foundation for Advanced Science, Innovation and Research, Morocco
Prof. Tarik Chafik, FST Tangier, Morocco
Prof. Mustapha Jouiad, Masdar Institute of Science and Technology, UAE

KN 14:30-15:00 Monday Plenary Room		**Introduction to workshop, by Prof. Ahmed Ennaoui and Prof. Abdelilah Benyoussef** Materials for photovoltaic technologies: State of the art, challenges: The coming decade of Opportunities
KN 15:00-15:30 Monday Plenary Room		Development of Advanced Semiconductor Materials and Devices for Next Generation Photovoltaics: Opportunities and Challenges **Prof. Mohamed Henini** School of Physics and Astronomy, University of Nottingham, U.K
KN 15:30-16:00 Monday Plenary Room		Materials for solar energy conversion and storage: Computational predictions of physical properties using Density Functional Theory (DFT) **Prof. Abdelilah Benyoussef** Moroccan Foundation for Advanced Science, Innovation and Research, Morocco
KN 16:00-16:30 Monday Plenary Room		Laser Sculpting and Processing of Silicon for Photovoltaics **Dr. Alpan Bek**, Center for Solar Energy Research and Applications (GÜNAM) and Middle East Technical University, Ankara, Turkey.
KN 14:00-14:30 Tuesday Plenary Room		New routes to highest conversion efficiencies for solar energy conversion and direct solar water splitting: III-V semiconductor structures on silicon **Prof. Thomas Hannappel** Ilmenau University of Technology, Institut für Physik, Ilmenau, Germany.
KN 14:30-15:00 Tuesday Plenary Room		Toward material engineering for energy conversion strategies using solar spectrum **Prof. Mustapha Jouiad**, Masdar Institute of Science and Technology, UAE
KN 15:00-15:30 Tuesday Plenary Room		Future applications for the world's oldest photovoltaic material **Dr. Teodor Todorov,** IBM T. J. Watson Research Center, USA.
KN 15:30-16:00 Tuesday Plenary Room		High Performance Computing in material science **Prof. Othmane Bouhali,** Research professor and director of research computing at Texas A&M University, Qatar
KN 16:00-16:30 Tuesday Plenary Room		Low carbon emissions technology using local clay catalysts **Prof. Tarik Chafik,** FST Tangier, Morocco
KN 17:30-18:00 Tuesday Plenary Room		Nanomaterials contribution to the development of future clean energy sources **Prof. Abdelhafed Taleb,** Institut de Recherche de Chimie Paris & Université Pierre et Marie Curie, Paris, France.

Workshop on Challenges and Advancements of Electric Vehicle Batteries (EVB):

Li-ion and Beyond

http://med-space.org/irsec17/workshop3

Chaired by

Dr. Khalil Amine, Argonne National Laboratory Argonne, IL, USA
Dr. Wenjuan Mattis, Microvast Inc, China.
Prof. Ismael Saadoune, FST, Marrakech, Morocco

08:30-08:45 Plenary Room	**Workshop introduction, by Dr. Khalil Amine**	
KN 8:45-09:15 Plenary Room		Why do we care about lithium? **Dr. Emilio E. Bunel** Sociedad Química y Minera (SQM), Chile
KN 9:15-09:45 Plenary Room		Building the Next Generation High Energy and Low Cost Batteries **Dr. Jun Liu** Pacific Northwest National Laboratory, Richland, Washington, USA
KN 09:45-10:15 Plenary Room		Battery Energy Storage Systems for Grid Applications-Results from the Field **Dr. Jud Virden** Associate Laboratory Director, Energy & Environment Directorate, Pacific Northwest National Laboratory, USA
KN 10:45-11:15 Plenary Room ok		Enabling Competent Electrical Vehicles **Dr. Wenjuan Mattis** Vice President of Microvast Inc, China.
KN 11:15-11:45 Plenary Room		Next Generation Lithium Ion batteries and Beyond **Dr. Khalil Amine** Distinguished Fellow and manager of the Advanced Lithium Battery Technology program at Argonne National Laboratory, IL, USA
KN 11:45-12:15 Plenary Room		Glass Protected Li Metal Electrodes for Next Generation Batteries **Dr. Steven Visco** CEO of PolyPlus Battery Company, Berkeley, California USA.
Oral Presentations 12:15-12:45 & 14:00-14:45 Room 1	**Evaluating and Repurposing of Used Ni-MH Hybrid Batteries (ID - 12)** *Hani Muhsen, Ahmad Al-Muhtady, Abdulaziz Kadri, Ali Ruziyeh* **Hard Carbons Prepared by Pyrolyzing Date's Pits for Sodium Ion Batteries (ID - 136)** *Ilyasse Izanzar, Manami Kiso, Mouad Dahbi, Shinichi Komaba, Ismael Saadoune* **Hybrid BTMS for Lithium-Ion Batteries (ID - 151)** *Chakib Alaoui, Mhamed Zineddine, Mohammed Boulmalf* **Nickel-Iron Oxyphosphate as Anode Material for Lithium-ion Batteries : $NiFeOPO_4$ (ID - 290)** *Hasna Aziam, Bouchaib Manoun, Khadija Morsli, Driss Dhiba, Jones Alami, Ismael Saadoune* **Electrocatalytic Performance of Reduced Graphene Oxide based Materials for Oxygen Reaction Reduction (ORR) (ID - 300)** *Siham Idrissi, Zineb Edfouf, Omar Benabdallah, Abdelfettah Lallaoui, Fouzia Cherkaoui El Moursli, Qiliang Wei, Xiaohua Yang, Shuhui Sun*	

Concentrated Solar Power (CSP) workshop

Enabling industry and research to implement CSP technology for power and process heat supply

December 6th, 2017, Farah Hotel, Tangier - Morocco

http://med-space.org/irsec17/workshop2

The workshop was initiated by the German Aerospace Center (DLR), the European competence center for concentrating solar thermal technology.

08:45	Welcome participants		
09:00	Introduction		***Prof. Robert Pitz-Paal,*** DLR, Germany
09:15	MASEN´s mission to support the Moroccan renewable energy sector		***H.Bouzekri***, MASEN, Morocco
09:30	Status of progress in technological development in MS tower systems		***Dr. Reiner Buck***, DLR, Germany
09:45	HelioMaroc - A Moroccan built heliostat		Jet Energy, Morocco
10:00	Requirements for local heliostat and parabolic trough manufacturing		***A. Schweitzer*** SBP, Germany
10:15	Metallic structures for Parabolic Trough Solar plant.		***Delta Holding***, Morocco
10:30	Molten salt storage systems		***T.Bauer***, DLR, Germany
10:45	Molten Salt tanks experience on Noor1		***Ilyass Kount,*** DLM, Morocco
11:00			
11:15	**Break**		
11:30			
11:45	Renewable Energy Construction Company View		***A. C. Giménez***, Caldererias, Spain
12:00	Overview on systems for process heat applications		***Dr. Peter Heller***, DLR, Germany
12:15			
12:30	Process heat for Milk industry		COPAG, Morocco
12:45	Decentralized STE: value proposition of solar based combined heat & power (CHP) solutions		***J. Shruefer*** IATech, Germany
13:00	**Closure, End of workshop**		
13:15			

Evening Tutorials

Tutorial 1 Monday 18:30 – 20:00 & Tuesday 18:30 – 20:00 (Room 4)	**Ab-initio Electronic Structure Theory and its application to solids** ***By Dr. Elmehdi Salmani, Mohammed V University, FS, Rabat, Morocco.*** The main aim of the Simulation workshop session is to calculate some materials properties including lattices constants, band structure, and density of state, optical properties …. These properties depend on the total electronic wave function which may be calculated using Schrodinger equation or depend on the total electronic density which may be calculated using the Density Functional Theory (DFT). http://med-space.org/irsec17/tutorial1
Tutorial 2 Monday 18:30 – 19:30 (Room 1)	**Electrodynamic Dust Shield: An Anti-Dust Solution?** ***By Prof. Bing Guo, Texas A&M University at Qatar, Doha, Qatar*** - Basic concepts of electrodynamic dust shield (a.k.a. electric curtain, electrodynamic screen, etc.) technology - Review of development around the world (NASA, Boston University, Waseda University, etc.) - Recent development at Texas A&M University at Qatar http://med-space.org/irsec17/tutorial2
Tutorial 3 Monday 18:30 – 20:00 & Tuesday 18:30 – 20:00 (Room 2)	**Introduction to spatial Data analysis with R** ***By Drs Rida Azmi and Hicham Amar, Faculty of Science, Rabat, Morocco*** - Introduction to R language platform (general presentation of the language and characteristics); - Exercise 1: Loading and executing basic analysis for spatial data (shapefiles and raster) in Rstudio; - Exercise 2: Spatial analysis for choosing an optimal site for photovoltaic panels - Daraa Tafilalt region; - Exercise 3: Mapping results from exercise 2. http://med-space.org/irsec17/tutorial3
Tutorial 4 Tuesday 18:30 – 20:00 (Room 3)	**TRNSYS software - capabilities & application in buildings simulation** ***By Prof. Brahim Benhamou, Cadi Ayyad University, Marrakech, Morocco*** – Global overview of TRNSYS software. – Global overview of TRNSYS software capabilities. – Hand-on quick exercise: how to build a mono-zone building simulation. http://med-space.org/irsec17/tutorial4

S-I (1) - PV	Solar Energy - PV
	Chairs: **Ahmed Ennaoui,** Institut de Recherche en Energie Solaire et Energies Nouvelles, Morocco. **Joerg Bagdahn,** Anhalt University of Applied Sciences, Germany.
Monday 17:30-18:30 & Tuesday 09:15-10:15 (Room 1)	**Perovskite Solar Cells based on Recyclable and Biodegradable Substrates (ID - 364)** *Abd. Rashid bin Mohd Yusoff, Mohammad Khaja Nazeeruddin* **Towards Developing a Standard for Testing Bifacial PV Modules: Single-Side versus Double-Side Illumination Method I-V Measurements Under Different Irradiance and Temperature (ID - 255)** *Stefan Roest, Chokri Mousaoui, Witek Nawara, Bas B. Van Aken, Elias Garcia Goma* **Parameter Extraction Methods of Thin Film Photovoltaic Panel using Five Enhanced Models (ID - 28)** *Ilham Nassar-Eddine, Karima Et-Torabi, Redouane Rmaily, Abdel ilah Faké, Abdellatif Obbadi, Youssef Errami, Smail Sahnoun, Abdelkrim El fajri, Mostafa Agunaou* **The Role of Legislations and Incentives in the Growth of a PV Market in a Developing Country (ID - 41)** *Abdullah Bugrahan Karaveli, Ugur Soytas, Bulent G. Akinoglu* **Modeling of the Influence of Dust Soiling on Photovoltaic Panels for Desert Applications- The Example of the Solar Test Facility at Doha, Qatar (ID - 55)** *Nicolas Barth, Benjamin Figgis, Amir A. Abdallah, Shahzada Pamir Aly, Said Ahzi* **Performance Analysis of PV Grid-Connected in Fours Special Months of the Year (ID - 81)** *Mustapha Adar, Zakaria Khaouch, Amin Benouna, Mustapha Mabrouki, Ahmed Chebak* **Simulation of the Indium Gallium Nitride Multijunction Solar Cell Performances (ID - 104)** *Benmoussa Dennai, Hamid Khachab, Hassane Benslimane* **Finding the Optimum Orientation for PV Systems Matched to the Timing of the Demand Profile (ID - 117)** *Jubran Alshahrani, Peter Boait, Abdullah Alshahrani*

S-I (2) - PV	Solar Energy - PV
	Chairs: **Mohammad Khaja Nazeeruddin**, EPFL, Lausanne, Switzerland **Othmane Bouhali,** Texas A&M University, Qatar
Tuesday 11:15-12:45 & 12:45-16:30 (Room 1)	**Efficiency of Ripple Correlation Control Compared to Fuzzy Logic MPPT Algorithm in Space Climate Conditions for Nimbus 2 Satellite (ID - 148)** *Abdellah Ziouh, Ahmed Abbou, Saloua Marhraoui* **Urban Solar Cadaster: Application in North of Morocco (ID - 190)** *Khalid Echlouchi, Ouardouz Mustapha, Bernoussi Abdes Samed* **The Effect of Defects on the Overall Performance of $CuInSe_2$/CdS/ZnO Thin Film Solar Cells (ID - 194)** *Shafi Ullah, Miguel Mollar, Bernabé Marí, Hanif Ullah, Hajar Ghannam, Adil Chahboun* **Synthesis of $Cu(In_xGa_{1-x})Se_2$ Nanoparticles for Photovoltaic Applications (ID - 201)** *Suzan Kamal Abdel-Hamied Saber, Amany Mohamed El Nahrawy, Nagwa Mohamed Khattab, Ali Essa Ahmed Eid, Mohamed Mahmoud Abo-Aly, Miguel Mollar, Bernabe Marí* **Energy Efficiency of Polycrystalline PV System under Real Outdoor Conditions: Case Study in Marrakech (ID - 208)** *Nouredine Erraissi, Mohammed Akhsassi, Noura Aarich, Mustapha Raoufi, Amin Bennouna* **A Sub- Hourly Models Calculating PV Plant Performance using Measured Weather Data: Experimental Study (ID - 210)** *Mohammed Akhsassi, Amine El Fathi, Noureddine Erraissi, Abdelkader Outzourhit, Mustapha Raoufi, Amin Bennouna* **Production Study of Two Grid-Connected PV Systems in Two Moroccan Cities (ID - 223)** *Amine Haibaoui, Bouchaib Hartiti, Abderrazzak Elamim, Abderraouf Rida* **Effect of Thickness Variation on the Physicochemical Properties of $Zn_{0.99}B_{0.01}O$ Thin Films Grown by rf-magnetron Sputtering from Nanoparticles Target (ID - 275)** *K. Medjnoun, K. Djessas, S. Grillo, M. Belaqziz, H. Chehouani* **Modeling and Simulation of Stand Alone Photovoltaic System using Three Level Boost Converter (ID - 305)** *Tran Cuong Hung, Nollet Frédéric, Essounbouli Najib, Hamzaoui Abdelaziz* **New Developments in the Modeling and Simulations of the Thermal Behavior and Electrical Yield of Photovoltaics Panels - with the Consideration of Desert Environmental Conditions (ID - 307)** *Said Ahzi, Shahzada Pamir Aly, Nicolas Barth*

S-I (3) - PV	Solar Energy - PV
	Chairs: **Thomas Hannappel,** Ilmenau University of Technology, Institut für Physik, Ilmenau, Germany. **Mohamed Henini,** School of Physics and Astronomy, University of Nottingham, U.K
Wednesday 08:45-11:15 (Room 1)	**Time-of-day and Exposure Influences on PV Soiling (ID - 359)** *Benjamin Figgis, Bing Guo, Wasim Javed, Klemens Ilse, Said Ahzi, Yves Rémond* **On the Yearly Performance of a Bifacial PV Module in Central Anatolia - Turkey (ID - 372)** *Talat Ozden, Rasit Turan, Bulent G. Akinoglu* **Seasonal Variation of the Monthly Efficiencies of Thin Film PV Modules (ID - 381)** *Talat Ozden, Rasit Turan, Bulent G. Akinoglu* **Solar PV Implementation in Industrial Buildings: Economic Study (ID - 425)** *Mohammed Noorul Hussain, Sayyad Basim Qamar, Samih Zamzam, Isam Janajreh* **Quantum Confinement and Gallium Concentration Effects on Electronic Properties of $CuIn_{1-x}Ga_xSe_2$ Nanowire (ID - 433)** *Mourad Rzaizi, Amane Oueriagli, Driss Abouelaoualim* **Design of an I-V Characteristic Tracer for Photovoltaic Systems (ID - 439)** *Salima Sarikh, Mustapha Raoufi, Amin Bennouna, Ahmed Benlarabi, Badr Ikken* **PV Performance Assessment Through Calibrated Modeling and Experimental Characterization (ID - 440)** *Salima Sarikh, Mustapha Raoufi, Amin Bennouna, Ahmed Benlarabi, Badr Ikken* **Mapping of the Composition of Soils Naturally Deposited on PV Modules Anywhere in Morocco (ID – 242)** *Fadwa Safsafi, Bouchra Laarabi, Fatima-Ez-Zahrae Daoudi, Dounia Dahlioui, Moulay Abdelmejid Sebbar, Abdelfettah Barhdadi* **Thermo-mechanical Simulation of PV Panels under Different Solar Irradiance Conditions (ID - 308)** *Mehdi Sahli, Joao Pedro de Magalhaes Correia, Said Ahzi, Siham Touchal* ***Synthesis and Optical Properties of Perovskite Doped In for Solar Cell Application (ID - 447)*** *Asma Obaid S. Al Ghaithi, Adel Najar*

S-I - Thermal	Solar Energy - Thermal
	Chairs: **Robert Pitz-Paal,** DLR, Institute of Solar Research, Cologne, Germany. **Louy Qoaider**, German Jordanian University, Jordan **Peter Heller,** DLR, Germany
Monday 14:30-16:30 (Room 1) & Tuesday 12:15-12:45 (Room 2)	**Photovoltaic thermal technologies for medium temperature industrial application - A global TRNSYS performance comparison (ID - 53)** *Osama Bany Mousa, Robert A. Taylor* **A Three-Dimensional Finite Element Based Dynamic Thermal Model of PV Modules with an Improved Thermal Network (ID - 62)** *Shahzada Pamir Aly, Nicolas Barth, Said Ahzi* **Experimental Analysis of an Inclined Cascade Solar Still with Slope Surfaces and Baffles (ID - 73)** *Mariam Bouzaid, Mohamed Oubrek, Omar Ansari, Mourad Taha-Janan* **Cosine Efficiency Distribution of Rotating Heliostat Field (ID - 108)** *Messaoud Bouamra, Mustapha Merzouk* **Comparative Study of a Solar Desalination System Combined with a Parabolic Trough (ID - 123)** *Hajar Hafs, Omar Ansari, Abdellah Bah, Mustapha Malha* **Setting Parameters of an Erosion Test Bench for Solar Reflectors (ID - 204)** *Amal Matal, Mounia Karim, Oussama Bannouri, Sanae Naamane, Hassan Bouaouine* **Enhancement of Solar Collector Thermal Performance using Louvered Absorber (ID - 412)** *Louy Qoaider, Jalal M. Jalil, Mays Nasir Shaeli* **Effect of Cooling on the Heat Transfer in a Metal Hydride Reactor (ID - 429)** *B. Dadda, A. Babbou, R. Zarrit, S. Abboudi* **Effect of a Passive Solar Heating System by Black Plastic Sleeves Filled with Water on the Microclimate of an Agricultural Greenhouse (ID - 246)** *L.Gourdo, A. Bazgaou, K. Ezzaeri, H. Demrati , A. Aharoune, L. Bouirden, H. Fatnassi, A. Wifaya, R. Bouhroud, A. Bekkaoui* **Rare Earth Ions Doped Down-conversion Materials For Third Generation Photovoltaic Solar Cells (ID - 280)** *M. El Ouafi, S. Belmokhtar, A. Bouajaj, M.R. Britel, F. Enrichi,C. Armellini, A. Chiappini ,M. Meneghet, Tran Thi Ngoc, L. Zur, F. Belluomo, M. Ferrari*

S-II (1)	Wind Energy
	Chairs: **Merabet Adel**, Saint Mary's University, Canada **Alkhalidi Ammar**, German Jordanian University, Jordan
Monday 11:45-12-45 (Room 2) & Tuesday 14:00-16:30 (Room 2)	**Enhanced Dispersibility of MoS2 Nanoparticles in Poly-α-Olephines Lubricant through Surface Modification (ID - 25)** *M. Z. Saidi, H. Akram, O. Achak, C. El moujahid, T. Chafik, N. Canilho, M.J. Stébé, A. Pasc, A. El mouakibi* **Simulation of the Synthesis Route of MoS_2 at Laboratory Scale: Comparison between Simulated and Experimental Results (ID - 71)** *M. Hachhach, H. Akram, O. Achak, T. Chafik* **Vector Control of Autonomous Induction Generator with Battery Storage System (ID - 106)** *K. Idjdarene, D. Rekioua, T. Rekioua, A. Tounzi* **Vector Control versus Synchronverter Control of Synchronous Generator in Wind Energy Conversion (ID - 121)** *Imen Karray, Khadija Ben Kilani, Mohamed Elleuch* **Control System for Low-Voltage Ride-Through of Grid-Tied Wind and Photovoltaic Energy Conversion Systems (ID - 128)** *Adel Merabet, Labib Labib, Chaouki Ghenai, Tareq Salameh* **Economic Assessment of Moroccan Onshore Wind Energy Based on SCADA Data (ID - 130)** *Nacef Tazi, Anasse Bennouk, Youcef Bouzidi, Eric Chatelet* **Comparison of BEM and full Navier-Stokes CFD Methods for Prediction of Aerodynamics Performance of HAWT Rotors (ID - 158)** *Abdelhamid Bouhelal, Arezki Smaili, Ouahiba Guerri, Christian Masson* **Power Control of Wind Turbine System based on DFIG-Generator, using Sliding Mode Technique (ID - 162)** *Yasmine Ihedrane, Chakib El Bekkali, Badre Bossoufi* **Backstepping Controller for a Variable Wind Speed Energy Conversion System Based on a DFIG (ID - 180)** *Sara Mensou, Ahmed Essadki, Badr Bououlid Idrissi* **Power Control of a DFIG Driving By Wind Turbine: Comparison Study between ADRC and PI Controller (ID - 182)** *Issam Minka, Ahmed Essadki, Tamou Nasser* **Modeling and PI Control Strategy of DFIG based Wind energy conversion systems (ID - 183)** *Ibtissam Kharchouf, Ahmed Essadki, Mohammed Arbaoui, Tamou Nasser* **A New Robust Control By Active Disturbance Rejection Control Applied on Wind Turbine System Based on Doubly Fed Induction Generator DFIG (ID - 184)** *Mohammed Arbaoui, Ahmed Essadki, Ibtissam Kharchouf, Tamou Nasser* **Advanced Backstepping Control of a Wind Energy Conversion System using a Doubly-Fed Induction Generator (ID - 192)** *Mohamed Nadour, Ahmed Essadki, Mohammed Fdaili, Tamou Nasser* **Comparative Study of MPPT and Pitch Angle Control Strategies for a Wind Energy Conversion System (ID - 200)** *Mohammed Fdaili, Ahmed Essadki, Mohamed Nadour, Tamou Nasser*

S-II (2)	Wind Energy
	Chairs: **Pierre-Olivier Logerais**, Université Paris-Est Créteil, France **Mohamed Ouassaid**, EMI, Rabat, Morocco
Wednesday 08:45-11:15 (Room 2)	**Active and Reactive Power Control of DFIG used in WECS using PI Controller and Backstepping (ID - 228)** *Noureddine El Mouhi, Ahmed Essadki* **The Study of the PI Controller and the Sliding mode of DFIG used in a WECS (ID - 239)** *Hind El Aimani, Ahmed Essadki* **Robust Power Control of DFIG Based Wind Turbine without Currents Rotor Sensor (ID - 260)** *Ahmed Lazrak, Ahmed Abbou* **A New Strategy for Analysing the Impact of Turbulence Intensity on a Horizontal Axis Wind Turbine Performances using a Computational Fluid Dynamics Simulation (ID - 294)** *Zakaria Belfkira, Hamid Mounir, Abdellatif El Marjani* **A Bank of Kalman Filters for Current Sensor Faults Detection and Isolation of DFIG for Wind Turbine (ID - 317)** *Imane Idrissi, Houcine Chafouk, Rachid El Bachtiri* **Wind Thermal Economic Emission Dispatch Solution using Multi-Objective Backtracking Search Algorithm (ID - 369)** *F. Daqaq, M. Ouassaid, R. Ellaia* **Building Wind Farm Maintenance Strategy on an Agents Approach Model (ID - 371)** *Miguel Kpakpo, Mhamed Itmi, Alain Cardon, Philippe Alexandre, Carolina Penin*

	Wind Turbine Coupled with Perpetual Motion Reduce wind Energy Instability (ID - 417) *Ammar Alkhalidi* **Decoupling Method of the Permanent Magnet Synchronous Generator using Singular Perturbation Theory (ID - 452)** *Ahmed Aghmadi, Soumia El Hani, Imad Aboudrar, Hamza Mediouni* **Robust Active Disturbance Rejection Control of a Direct Driven PMSG Wind Turbine (ID - 454)** *Aboudrar imad, Soumia El Hani, Amina Echchaachouai, Ahmed Aghmadi* **Study and Design of Hybrid Wind-Photovoltaic System for Medium Scale Mechanical Vapor Compression Desalination Unit for Two Different Sites in Morocco (ID -385)** *Mohamed Ghazi, Elhachmi Essadiqi, Mustapha Faqir, Mohamed Mada, Abdellatif Ben Abdellah*

S-III (1)	- Command and control systems for RE - Simulation and Modelling for RE **Chairs:** **Bulent Akinoglu,** Middle East Technical University, Ankara, Turkey **Teodor Todorov,** IBM T. J. Watson Research Center, USA. **Abdelhafed Taleb,** Inst. de Rech. de Chimie Paris & Univ Pierre et Marie Curie, Paris, France.
Monday 15:30-16:30 & Tuesday 09:15-10:15 & 12:15-12:45 (Room 3)	**Analysis of Aero-hydrodynamic Equations inside an OWC Device for Wave Energy Conversion (ID - 97)** *Abdelhamid El Barakaz, Abdellatif El Marjani* **Voltage and Frequency Regulation for Wound Rotor Synchronous Generator in Micro Hydro Power Plants with RealTime Implementation (ID - 146)** *Duy An Pham, Najib Essounbouli, Frédéric Nollet, Abdelaziz Hamzaoui* **Boost Chopper Implementation Based on Variable MPPT Duty Cycle Control Applied to Photovoltaic Systems (ID - 167)** *Salah Necaibia, Mounia Samira Kelaiaia, Hocine Labar, Ammar Necaibia, Pierre-Olivier Logerai* **Modelling and Control of a Biological Process Using the Fuzzy Logic Takagi-Sugeno (ID - 181)** *Mohamed Abyad, Asma Karama, Abdelmounaim Khallouq* **Sliding Mode Control for a Transformerless SinglePhase Grid-Connected Photovoltaic System (ID - 281)** *Khalid Chigane, Mohammed Ouassaid* **Simulation, Testing and Implementation of a Phase Locked Loop Used to Control a PV-Micro-Inverter (ID - 295)** *Khadija El kamouny, Brahim Lakssir, Mohammed Hamedoun, Abdel-ilah Benyoussef, Rachid Elghouchma, Othmane Alami, Hassane Mahmoudi* **Modeling and Design of Synchronous Buck Converter for Solar-Powered Refrigerator (ID - 319)** *Hajar Doubabi, Mohammed Chennani, Najib Essounbouli* **Prediction of Soiling Rate of PV Modules using Artificial Neural Networks (ID - 234)** *Bouchra Laarabi, Oscar May Tzuc, Dounia Dahlioui, Ali Bassam, Manuel Israel Flota Banuelos, Fatima-Ez-Zahrae Daoudi, Fadwa Safsafi, Moulay Abdelmejid Sebbar, Abdelfettah Barhdadi* **Porosity Estimation By Artificial Neural Networks Inversion - Application to Algerian South Field (ID - 436)** *Said Eladj, Leila Aliouane, Sid-Ali Ouadfeul* **Temperature effect on GaSb/GaAs Quantum Dots Solar Cell (ID - 48)** *Nabila Harchouch, Abdelkader Aissat, Abdelmoumene Laidouci, Vilcot Jean Pierre*

S-III (2)	- Command and control systems for RE - Simulation and Modelling for RE **Chairs :** **Mari Soucase Bernabe**, Universitat Politecnica de Valencia, Spain **Mohamed Eddaoudi,** KAUST, Saudi Arabia **Adelkader Aissat**, University of Blida, Algeria
Tuesday 15:30 – 16:30 & 17:30 – 18:30 (Room 3)	**Effect of Hole-Selective Molybdenum Oxide Work Function and Silicon Wafer Resistivity on DopantFree Asymmetric Silicon Heterostructure Solar Cell (ID - 74)** *Haris Mehmood, Tauseef Tauqeer, Hisham Nasser, Shahzad Hussain, Raşit Turan* **Numerical Modeling of $Cd_{1-x}Zn_xS$/ $Cd_{1-x}Zn_xTe$ Photovoltaic Solar Cells (ID - 173)** *Yousaf H. Khattak, Faisal Baig, Bernabé Marí, Hanif Ullah, Tanveer Ahmed* **Nonlinear Control of a Photovoltaic Pumping System under Partial Shading (ID - 283)** *Mokhlis Mohcine, Mohammed Ferfra, Mohammed Chraygane* **Design, Optimization and Control of Standalone Solar PV/Fuel Cell Hybrid Power System (ID - 355)** *Chaouki Ghenai, Tareq Salameh, Adel Merabet*

	Backtracking Search Algorithm Optimization for the Brushless Direct Current (BLDC) Motor Parameter Design (ID - 362) *Imad Elomary, Ahmed Abbou, Lhassane Idoumghar* **Estimation of the Young Modulus and Binding Energies of Polyethylene/ Nanotube Nanocomposites (ID - 435)** *Karima Kessaissia, Ali Benamara Kader, Mourad Lounis* **Numerical Modeling of a Nonlinear Four-phase Switched Reluctance Machine (ID - 220)** *Laila Kadi, Adil Brouri* **Strain Influence on Molecular Adsorption on a Silicene Layer (ID - 222)** *Adil Marjaoui, Régis Stephan, Marie-Christine Hanf, Mohamed Zanouni, Mustapha Diani, Philippe Sonnet* **Comparison of a PQ Theory based Method and a Fuzzy Logic based Method in Harmonic Compensation (ID - 177)** *Otmane Manari, Malika Zazi*

S-IV (1)	- Green technology - Energy efficiency - Biomass
	Chairs: **Ademola Adebayo**, University of Johannesburg, South Africa **Tarik Chafik,** FST Tangier, Morocco
Monday 17:30-18:30 (Room 1) & Tuesday 11:15-12:45 (Room2)	**Numerical Analysis of A New Configuration of Ground–Air Heat Exchanger (ID - 103)** *Naoufel Benrachi, Arezki Smaili, Louis Lamarche, Mohamed Ouzzane* **Industrial-scale Design of a Radial Impulse Turbine for the OWC Device (ID - 386)** *Achraf Oulad Abdeslam, Abdellatif El Marjani, Fransisco Catro Ruiz* **Comparison of Two Different Peltiers Running as Thermoelectric Generator at Different Temperatures (ID - 420)** *Hasan Cimen, Abdullah Cem Agacayak, Suleyman Neseli, Gokhan Yalcin* **Multimedia Systems Power/Energy Reduction Architectural Techniques: a Survey (ID - 10)** *Mohammad A. Alsmirat, Musab Al-Hadrusi, Yaser Jararweh* **Effect of the Building Materials Constituting the Envelope of an Apartment on its Energy Performance: Application to the Climate of Marrakesh (ID - 61)** *Soukaina Ait Bouyahia, Mohammed Boukendil, Abdelhalim Abdelbaki, Zaki Zrikem* **CFD Simulations of Shell Side Flow in Multitubular Heat Exchanger with Parallel-current and Counter-Current Configuration (ID - 98)** *Youssef Jihani, Adam Adham, El Mostafa Mabsate* **Strain Effect on The Photo-Catalytic properties of SnO_2 (ID - 144)** *Zineb Kerrami, Anass Sibari, Abdelilah Benyoussef, Mohammed Benaissa, Omar Mounkachi, Abdelilah Benyoussef* **Bandgap Engineering of Black Phosphorus-based Nanostructures (ID - 145)** *Anass Sibari, Zineb Kerrami, Abdelilah Benyoussef, Mohammed Benaissa, Omar Mounkachi, Abdelkader Kara* **Prediction of High Impact Factors on Building's Thermal Loads in Semi-arid Climate (ID - 253)** *El Hadi Drissi Lamrhari, Brahim Benhamou* **Deep Learning for Inferring the Surface Solar Irradiance from Sky Imagery (ID - 219)** *Mehdi Zakroum, Mounir Ghogho, Mustapha Faqir, Mohamed Aymane Ahajjam* **Study of the Physico-Chemical Properties of the Quasimono (Mono-like) Silicon Material: Chemical Treatments for Photovoltaic Applications (ID - 298)** *G. Benseba , A. Moussi, S. Meziani, M. S. Belkaid, M. Benmansour*

S-IV (2)	- Green technology - Energy efficiency - Biomass
	Chairs: **Mustapha Jouiad**, Masdar Institute of Science and Technology, United Arab Emirates **Olaf Droegehorn**, Harz University of Applied Sciences, Wernigerode, Germany **Janajreh Isam**, Masdar Institute, Abu Dhabi, United Arab Emirates
Wednesday 08:45-11:15 & 11:45-13:00	**Energy Efficiency Applied to Irrigation Strategies for a Sustainable Agriculture in the Mediterranean Area (ID - 301)** *Angel Molina-García, Mª Socorro García-Cascales, Alejandro Pérez Pastor, José Mª de la Rosa* **An Energy-Efficient Approach for Controlling Heating and Air-Conditioning Systems (ID - 345)** *F. Lachhab, R. Ouladsine, M. Bakhouya, M. Essaaidi*

(Room 2) Wednesday 08:45-11:15 & 11:45-13:00 (Room 2)	**An Approach to Multidimensional Analysis for PV Solar Energy Integration into Groundwater Pumping Solutions (ID - 375)** *Angel Molina-García, Alvaro Rubio Mª Socorro García-Cascales, Juan Miguel Sánchez-Lozano* **Finite Element Method And FLC Regulation For 8/6 Switched Reluctance Motor For Electric Vehicles (ID - 394)** *A. Rechach, M. Chaabane, S. Ghoudelbourk, D. Dib, H. Dendani* **Overhangs' Optimization of a South-facing Residential Building in Semi-arid Climate (ID - 427)** *Haitham Sghiouri, Ahmed Mezrhab, Hassane Naji* **Synthesis of Novel Nanocellulose Aerogel Supported Pd Complex: Green and Efficient Catalyst for Heck Coupling Reaction (ID - 189)** *Ouafa Moujahid, Ihsane Kassem, Karima Benhammou, Samia El Adlaoui, Hamid Kaddami, Larbi Belachemi* **Life Cycle Assessment of Soybean Biodiesel Production in South Africa: A Preliminary Assessment (ID - 211)** *Anup Pradhan, Charles Mbohwa* **Development of Life Cycle Inventory (LCI) for Sugarcane Ethanol Production in South Africa (ID - 212)** *Anup Pradhan, Charles Mbohwa* **Estimation PC-SAFT equation of state parameters of ethanol, 1-propanol, 1-butanol, 1-nonanol (ID - 238)** *Ilham Abala, Fatima Ezzahrae M'Hamdi Alaoui, Younes Chhiti, Fernando Aguilar, Eduardo Montero, Abdelaziz Sahibed-Dine* **Computational Study of Fuel Temperaure Impact on Combustion and Pollutant Emissions of a Diesel Engine Fueled with Diesel-Biodiesel Blends (ID - 358)** *Adam Adham, El Mostafa Mabsate* **Biogas Production Potential of Cocoa Pod Co-Digested with Poultry Manure at Mesophilic Temperature (ID - 366)** *Ademola O. Adebayo, Noor Ahmed* **Monitoring the Performance of a Hybrid Micro-CSP /Biomass Boiler System for Space Heating and Hot Water Production (ID - 377)** *Said Lamghari, Hassan Hamdi, Mohamed Krarouch, Mickael Benhaim, Mehdi Khaldoun, Fatima Ait Nouh, Abdelkader Outzourhit* **Low Energy Desalination via DCMD: The Role of Superhydrophobicity and Optimal Flow Conditions (ID - 399)** *Khadije El Kadi, Isam Janajreh, Boor Laila, Raed Hashaikeh* **Glycerol Conversion:Chemical Kinetic Analysis and High Fidelity Solar Gasification (ID - 426)** *Manar Almazrouei, Isam Janajreh* **Effect of Organic Loading Rate on Biogas Yields of Rice Straw using a Plug Flow Reactor at Mesophilic Temperature (ID - 432)** *Ademola O. Adebayo, Noor Ahmed* **Thermal-electrical study with a model validation of hybrid PV/T collector using a PV module locally fabricated : case of Ghardaïa, Algeria (ID - 450)** *Boumaaraf Billel, Ait-Cheikh M.Salah, Touafek Khaled, Boumaaraf Houria*

S-V (1)	- Energy storage and Batteries - Energy harvesting - Hydrogen energy storage - Power Distribution System
	Chairs: **Emilio E. Bunel,** Sociedad Química y Minera (SQM), Chile **Khalil Amine,** Argonne National Laboratory, IL, USA **Djamila Rekioua Ziani**, University of Bejaia, Algeria
Monday 17:30-18:30 (Room 2) & Tuesday 15:00-16:30 (Room 2)	**Energy Management for Large-Scale Grid Connected PV-Batteries System (ID - 52)** *Sumayya Almazrouei, Abdul-Kadir Hamid, Abdelbasset Mehiri* **Power Flow Management for Stand Alone PV Systems with Batteries under Two Scenarios (ID - 368)** *F. Zaouche, D. Rekioua, Z. Mokrani* **A New Electromechanical Device to Convert Vehicles Mechanical Energy into Electrical Energy (ID - 23)** *Francisco Duarte, Adelino Ferreira, Paulo Fael* **Numerical Optimization of the Energetic Performance of a Near Room Temperature Magnetic Refrigerator (ID - 254)** *A. El Boukili, H. Ez-Zahraouy, M. Hamedoun, A. Benyoussef, M. Balli, O. Mounkachi* **A New Low-cost Mesoporous Silica as a Promising Support of Ni-catalysts for High-hydrogen Generation via Dry Reforming of Methane (ID - 163)** *A. Mourhly, M. Khachani, M. Kacimi, M. Halim, S. Arsalane* **Ultrathin-Layer α-Fe_2O_3 Deposited under Hematite for Solar Water Splitting (ID - 195)** *F. Bouhjar, B. Bessaïs, B. Marí* **A Hybrid TSA-Neural Network Approach for Induction Motor Faults Diagnosis (ID - 274)** *Abdennabi Khiam, Mohammed Ouassaid, Nabil Ngote*

	Model Checking Cyber-Physical Energy Systems (ID - 282) *Youssef Driouich, Mimmo Parente, Enrico Tronci* **Elaboration of structured $LiMn_2O_4$ for rechargeable batteries from hydrometallurgical liquid effluent rich in manganese (ID - 302)** *Ouzaouit Khalid, Faqir Hakim, Abderrahmane Kaddami, Intissar Benzakour, Ismail Akalay*

S-V (2)	- Energy storage and Batteries - Energy harvesting - Hydrogen energy storage - Power Distribution System
	Chairs: **Jun Liu,** Pacific Northwest National Laboratory, Richland, Washington, USA **Adelino Ferreira**, University of Coimbra, Portugal **Khalid Afanga**, MASEN, Morocco
Wednesday 11:45-13:00 (Room 1)	**Management Strategy of a Hybrid Renewable Energy System (ID - 312)** *Z. Sabiri, N. Machkour, Elm. Kheddioui, Ab. Ailane, S. Chafik M. Tabaa* **Techno-Economic Analysis of an Off Grid Hybrid Renewable Energy System for Hydrogen Production (ID - 380)** *H. Tebibel, A. Khellaf* **Combination Effects of HTFs and Moroccan Rocks on the Thermal Performances of a Packed-bed Thermal Energy Storage System (ID - 404)** *Khadija El Alami, Mohamed Asbik, Nadia Zari, Samir Rachidi* **Argan Shell Bio-waste Derived Carbon for Sodium-Ion batteries: Correlation Between Structure and Na Storage (ID - 410)** *Mouad Dahbi, Manami Kiso, Kei Kubota, Tarik Chafik, Kazuo Hida, Takashi Matsuyama, Shinichi Komaba* **$Ti_2(HPO_3)_3$, a New Active Material for Lithium Ion Batteries (ID - 422)** *Abdelfettah Lallaoui, Zineb Edfouf, Omar Benabdallah, Siham Idrissi, Fouzia Cherkaoui El Moursli, Ismael Saadoune, Mohammed Abd-Lefdil* **Experimental study of the hydrogen storage properties of LaNi3.6Mn0.3Al0.4Co0.7 alloy (ID - 442)** *Chaker Briki, Mohamed Houcine Dhaou, Patricia de Rango, Sihem Belkhiria, Abdelmajid Jemni and Sassi Ben Nasrallah*

S-VI	- Smart Grid - IT in Renewable energy
	Chairs: **Ko Wonusk**, King Saud University, Saudi Arabia **Mohamed Bakhouya**, UIR, Rabat, Morocco
Monday 14:30-16:30 (Room 2) & Wednesday 11:45-13:00 (Room 3)	**Modernization and Optimization of Traditional Substations for Integration in Smart Grid (ID - 37)** *Mohamed Nouh Dazahra, Faissal Elmariami, Abdelaziz Belfqih, Jamal Boukherouaa, Nazha Cherkaoui, Anass Lekbich* **The Effect of Shading with Different PV Array Configurations on the Grid-Connected PV System (ID - 77)** *Abdelbasset Mehiri, Abdul-Kadir Hamid, Sumayya Almazrouei* **An Extensive Experience of Demand Side Management Program: Case Study (ID - 161)** *Hyeong-Jin Choi, Sisam Park, Yongki Kim, Wonsuk Ko, Essam A. Al-Ammar* **Demand and Energy Management in Smart Grid: Techniques and Implementation (ID - 174)** *Khadija Tazi, Farid Abdi, Mohamed Fouad Abbou* **Contribution to the Management of MICROGRIDs by the Application of Short Term Photovoltaic Power Forecasting (ID - 185)** *Abdelhakim El hendouzi, Abdennaser Bourouhou* **Comparative Study of Direct and Indirect Filed Oriented Control - Application to Hybrid Electric Vehicles (ID - 261)** *Asma Boulmane, Youssef Zidani, Driss Belkhayat* **Prediction of Photovoltaic Production for Smart Grid Energy Management using Hidden Markov Model: a Study Case (ID - 291)** *Hasnaa Bazine, Mustapha Mabrouki* **Frequency Estimation and Tracking in Electrical Power Systems (ID - 329)** *Farid Ykhlef, Hadjer Ykhlef, Fayçal Ykhlef* **Named Data Networking for Smart Grid Information Sharing (ID - 382)** *Hasnae Bilil, Charif Mahmoudi, Mohamed Maaroufi* **Optimization of Home Energy Management System in Smart Grid for Effective Demand Side Management (ID - 389)**

	Anzar Mahmood, Iqra Rafiq, Anila Kousar, Shafaq Ejaz, Manuel S. Alvarez-Alvarado, Zafar A. Khan **Modeling and Dimensioning of Grid-Connected Photovoltaic Systems (ID - 437)** *S. Boulmrharj, R. Rabeh, V. Felix, R. Ouladsine, M. Bakhouya, K. Zine-dine, M. Khaidar, M. Siniti, R. Abid* **Agent Based for Comfort Control in Smart Building (ID - 186)** *Ghezlane Halhoul Merabet, Mohammed Essaaidi, Driss Benhaddou, Mohamed El Brak*

AUI Session	
	Chairs: **Steven Visco,** PolyPlus Battery Company, Berkeley, California, USA **Asmae Khaldoun**, AUI, Ifrane, Morocco
Monday 11:45-12:45 (Room 1) & 17:30-18:30 (Room 4)	**Properties of Tio_2 and Dye in Enhacement of DyeSensitized Solar Cells' Efficiency (ID - 388)** *Sofia Abid, Ayoub El Baraka, Houda Ennaceri, Asmae Khaldoun* **Damage Analysis of CSP Parabolic Trough Heat Collector Element for Efficiency Improvement (ID - 391)** *Ikhlas Ghiat, Houda Ennaceri, Asmae Khaldoun* **Insulation Material for a Model House in Zaouiat Sidi Abdessalam (ID - 396)** *Fatima Zohra El Wardi, Abdelhamid Khabbazi, Chaimaa Bencheikh, Houda Ennaceri, Asmae Khaldoun* **Redesign of an Existing Structure in Ifrane Region for Work Space for aCooperative (ID - 397)** *Salma Boujmiraz, Houda Ennaceri, Asmae Khaldoun, Ayoub El Baraka, Fatima Zohra El Wardi, Abdelhamid Khabbazi* **Biogas System for Zaouiat Sidi Abdessalam-Ifrane (ID - 392)** *Khawla Khrifi, Houda Ennaceri, Asmae Khaldoun* **Potential of Biodiesel Production from Fish Waste in Morocco (ID - 453)** *O. Lamaakel, S. El Hajjaji*

Posters Session I	
	Chairs: **Bulent Akinoglu,** Middle East Technical University, Ankara, Turkey **Abdelfettah Barhdadi**, ENS, Rabat, Morocco **Guo Bing**, Texas A&M University at Qatar, Qatar **Nachida Kasbadji Merzouk**, CDER, Algeria
Monday 16:30 – 17:30	**Comparative Study of the Electronic Performance of DC / DC Photovoltaic Converters (BOOST and SEPIC) (ID - 21)** *E. Ait El Maat, Az. Mouhsen, H. Maker, A. Mouhsen* **Dye sensitized solar cells based on titanium dioxide nanoparticles synthesized by flame spray pyrolysis (ID - 65)** *Abdelkhalk Aboulouard, Ahmed Jouaiti, Benachir Elhadadi* **Study of Temperature and Concentration Effects for CZTS Layers using Spray Pyrolysis (ID - 85)** *Djedjiga Haouanoh,Razika ZaïrTalaIghil, MahdiaToubane, Façal Bensouici, Anura Priyajith Samantilleke* **Designing and Implementing XML Schema inside OWL Ontology (ID -119)** *Khaled Touafek, Abdelkrim Khelifa, Hafsia Haloui, Hanane Ben Cheikh el hocine, Mohamed Tahar Baissi, Lyes Boutina, Ali Malek, Salim Haddad, Ismail Tabet* **Modeling of the Photovoltaic Energy Storage by Supercapacitor (ID - 169)** *Mariem Noumi, Jalel Elkhediri* **Modelling of the Magnetic Couplers in High Frequencies Dedicated to the Photovoltaic Panels (ID - 209)** *Brahim Lagssiyer, Smail Zouggar, Mohamed El Hafyani* **Performance of Different PV Systems Operating under Climate Conditions of Rabat in Morocco (ID - 250)** *Fatima-ez-zahrae Daoudi, Bouchra Laarabi, Fadwa Safsafi, Jamal El hamouchi, Moulay Abdelmjid Sebbar, Abdelfettah Barhdadi* **Assessment of Daily Global Solar Radiation Using Radial Basis Function Techniques (ID - 259)** *S. Benkaciali, K. Gairaa, M. Guermoui, M. Haddadi, A. Khellaf* **Experimental Study on a Reverse Osmosis Device Coupled with Solar Energy for Water Desalination (ID - 270)** *D. Zioui, H. Aburideh, Z. Tigrine, S. Hout, M. Abbas, N. kasbadji Merzouk* **An Accurate Neural Network Observer for Operating Climatic Conditions Estimation of Photovoltaic Systems (ID - 277)** *Yassine Chouay, Mohammed Ouassaid* **Inter-comparison of Solar Radiation from Different Data Sources: Case of Some Algerian Sites (ID - 287)** *Kamel Abdeladim, Smail Semaoui, Abdelhak Razagui, Salim Bouchakour, Amar Hadj Arab, Saïd Ould Amrouche, Saliha Boulahchiche*

Monday 16:30 – 17:30	**Inspection of Photovoltaic Installations by Thermo-Visual UAV Imagery Application - Case : Morocco (ID - 323)** *Yahya Zefri, Achraf Elkettani, Imane Sebari, Sara Ait Lamallam* **Improvement and Realization of a Solar Tracker for increasing Efficiency of Photovoltaic Energy (ID - 413)** *Mohammed El Alami, Hanane Hadlach, Abdesslam Hajri, Mohamed Habibi, Seddik Bri* **Effect of Fe Doping on Structural, Optical and Electrical Properties of Zno Thin Films (ID - 418)** *El Mustpha El Jald, Ibrahima Soumahoro, Guy Schmerber, Aziz Dinia, Zouheir Sekkat, Mohammed Regragui, Azzam Belayachi, Mohammed Abd-Lefdil* **The Impact of Renewable Energies on the Spanish Electric System - The Benefits of Renewable Energies (ID - 423)** *Jose Antonio Galdón-Ruiz, Inmaculada Guaita-Pradas, Ana Blasco-Ruiz* **Optical and Thermal Analysis of a Parabolic trough Solar Collector through Coupling MCRT and FVM Techniques (ID - 36)** *Belkacem Agagna, Arezki Smaili, Quentin Falcoz* **Comparison between Two Solar Tower Receivers of Different Geometry (ID - 42)** *M. Hazmoune, B. Aour, M.M.Hadjiat, A.Bouhallassa, S. Lecheheb, M. Laissaoui* **PV-Diesel-Grid Hybrid Systems for Industrial Applications (ID - 50)** *Ahssen Mahmoudi, Djohra Saheb-Koussa, Mohamed Najib Bouaziz* **Numerical Computation of the Natural Convection, in Cubic Enclosures Tilted in Relation to the Horizontal Plane (ID - 95)** *Azzouz Khaddoudja, Djezzar Mahfoud* **Numerical Analysis of Hybrid Collector PV/T (ID - 120)** *A. Khelifa, K. Touafek, l. Boutina, M .T. Baissi* **Application of some Solar Passive Concepts to Create More Energy Efficient Studio Apartment (ID - 124)** *S.M.A. Bekkouche, N. Benamrane, M.K. Cherier, M. Hamdani, T. Benouaz, S. Belgherras, S. Bendara, H. Kadraoui* **Radial Basis Function Neural Networks Model to Estimate the Diffuse and Direct Normal Radiation from Global Solar Radiation (ID - 125)** *Rabehi Abdelaziz, Guermoui Mawloud* **Robust PID Control of a DC Motor to Drive a Heliostat (ID - 159)** *F. Bedaouche, A. Gama, A. Hassam, M. Boubezoula* **Modeling the Solar Station with the Parabolic Trough Collector Receiver (ID - 279)** *Mohamed Hajjaj, Abella Bouaaddi, Mohammed Halimi, Choukri Messaoudi* **Evaluation the Performance of Parabolic Trough Power Plants on Direct Steam Generation and Integrated Solar Combined Cycle System in Algeria (ID - 297)** *Mohammed Boumedjirek, Abderrezak Merabet, Feidt Michel, Imad Eddine Meriche* **Analysis and Design of an Energy System based on PV/T Water Collector for Building Application (ID - 303)** *Chaimae El Fouas, Mohamed Hajji, Loubna Bouselham, Bekkay Hajji, Abdelmalek El Mehdi, Hicham Bouali* **Thermal Study of a Brackich Water Desalination Process using Solar Energy (ID - 304)** *Mohamed Abbas, Hanane Aburideh, Zahia Tigrine, N. K. Merzouk, Ahcene Hamadene* **Optimization of Darrieus-Type Straight-Bladed Vertical Axis Wind Turbines (ID - 24)** *Zineb Zitouni, Hamid Mounir, Abdellatif El Marjani* **Control of Wind Energy Conversion System Based on PMSG (ID - 78)** *N. Mezzai, D. Rekioua, T. Rekioua* **Control of PMSG by the DTC based Wind Energy Generation System Connected to the Grid (ID - 233)** *Ihssen Hamzaoui, Farid Bouchafaa, Saida Boukhalfa* **Fuzzy Logic based MPPT Control for a PV/Wind Hybrid Energy System (ID - 311)** *Otmane Zebraoui, Mostafa Bouzi* **LVRT Control for Wind farm Based on Permanent Magnet Synchronous Generator Connected into the Grid (ID - 346)** *A. Mahrouch, M. Ouassaid, K. Elyaalaoui* **Analysis of a novel design of conical solar furnace supllied by optical fibers (ID - 449)** *Chafika Zidani, Boumediene Benyoucef* **Synthesis of MoS_2 nanoparticles and improvement of their dispersibility and stability in PAO base oils (ID - 75)** *Mohamed Zoubair Saidi, Hanane Akram, Ouafae Achak, Chaouki El moujahid, Tarik Chafik, Nadia Canilho, Marie José Stébé, Andreea Pasc, Abderrahim El mouakibi* **Impact of c-Si Substrate and Front Surface Passivation on Interdigitated Back Contact Xilicon Heterojunction Solar Cell with 2D Simulation Study (ID - 438)** *Berrouba-Tani Nadera, Ghaffour Kheireddine* **New Concept For Anti-Islanding Protection in Distributed Network with Large Penetration of Decentralized Renewable Energy (ID - 198)** *Abdelkader Bouafia, Djamel Labed*

	Dynamic Simulations of Thermal Performance of a Building using Various Construction Scenarios in Morocco (ID - 114) *S. Hamdaoui, M. Mahdaoui, R. El Alaiji, A. Allouhi, A. Ait Msaad, A. El Bouardi*

Posters Session II	
	Chairs **Isam Janajreh**, Masdar, Institute of Science, United Arab Emirates **Campos Guzman Veronica**, Technical University of Cartagena, Spain **Alpan Bek**, GÜNAM and Middle East Technical University, Ankara, Turkey **Rachid Bechtiri**, EST, Fez, Morocco
Tuesday 16:30 – 17:30	**Data Quality Analysis for a Smart Solar Resource Assessment (ID - 156)** *Moulay Hafid Bouhamidi, Amine Amar* **Simulation of Cascaded H- Bridge Multilevel Inverter with Several Multicarrier Waveforms and Implemented with PD, POD and APOD Techniques (ID - 45)** *Youssef Babkrani, Ahmed Naddami, Sanaa Hayani, Mohamed Hilal, Ahmed Fahli* **A Half Bridge Inverter with IGBT Module: Modeling and Experimentation (ID - 165)** *D. Saheb Koussa, A. Boufertella, H. Kebeiche* **Fuzzy logic Control of Grid Connected PV Systems (ID - 214)** *Taoufik Laagoubi, Mostafa Bouzi, Mohamed Benchagra* **Forecast of Electrical Energy Consumption in Residential Sector of Morocco (ID - 33)** *Charifa Haouraji, Mohammed Boujnah, Abdelmajid Farchi, Ilham Mounir* **Maximization of Photovoltaic Panels under Healthy and Defects Conditions using Labview (ID - 80)** *K. Tadjine, S. Aissou, N. Mebarki, D. Rekioua, P.O. Logerais* **Optimization of structure $InAs_xSb_{1-x}$/GaAs quantum dot solar cell (ID - 118)** *A. Aissat, M. Boubakeur, F. Benyettou, J.P.Vilcot* **Renewable Energy and the Cluster Concept - An Analytical Framework (ID - 322)** *Ghayati Bouthaina, Boungab Souad* **Impact of Stress from the Aluminium Rear Contact on the Silicon Solar Cells Efficiency (ID - 347)** *Abderrazzak El Boukili* **Modeling and Performance Evaluation of Photovoltaic Systems (ID - 351)** *A. El mouatamid, R. Ouladsine, M. Bakhouya, V. Felix, N. Elkamoun, K. ZineDine, M. Khaidar, R. Abid* **Energy Production: A Comparison of Forecasting Methods using the Polynomial Curve Fitting and Linear Regression (ID - 363)** *Ismail El Kafazi, Rachid Bannari, Abdelah Abouabdelah, My Othman Aboutafail, Josep M. Guerrero* **Photovoltaic Site Suitability Analysis using Analytical Hierarchy Process and Sensitivity Analysis methods with GIS and Remote Sensing in Southern Morocco -Case of Draa-Tafilatet region (ID - 400)** *Rida Azmi, Hicham Amar, Ilias Kacimi* **Study and Optimization of Photovoltaic Powered Water Pumping Systems (ID - 22)** *Abdelhak Bouchakour, Abdelhalim Borni, Layachi Zaghba, Fezzani Amor, Boukebbous Seif, Mostéfa Brahami* **Determination of Optimal Roof Insulation Thickness in Residential Building in Marrakech (ID - 29)** *M. Boujnah, K. Jraida, A. Farchi, I. Mounir* **Numerical Study of a Ventilated Room: Effect of Heating Floor and Cooling Ceiling (ID - 60)** *Youness Khattari, Mahjoub Benghoulam, Ahmed Arid, Tarik Elrhafiki* **Improving the Usability of Home Automation using Conventional Remote Controls (ID - 89)** *Carlos Alberto Martinez Licona, Olaf Droegehorn Harz* **Control of the Grid-side Converter in Wind Conversion Systems with Flyweel Energy Storage and Constant Switching Frequency (ID - 176)** *R. Abdelli, D. Rekioua, T. Rekioua, A. Bouzida, A.M. Tounzi* **Structural, Magnetic and Magnetocaloric Properties of $0.95La_{0.45}Nd_{0.25}Sr_{0.3}MnO_3/0.5CuO$ Composite (ID - 191)** *L. Fkhar, O. Mounkachi, M. Hamedoun, A. Elkenz, A. Benyoussef, M. AitAli* **Experimental Study of Roof's Passive Cooling Techniques for Energy Efficient Buildings in Marrakech climate (ID - 262)** *S. Kachkouch, B. Benhamou, K. Limam* **P&O Control of a Photovoltaic Pumping System to Efficiency Improvement using PSIM (ID - 278)** *Hachemi Ammar, Noureddine Benbaha, Seif Eddine Boukebbous* **RF Energy Harvesting for 5G : An Overview (ID - 293)** *Sanae El Hassani, Hind El Hassani, Noureddine Boutammachte* **Small-Scale Photovoltaic Micro Grid-Connected System Energy Yield Monitoring (ID - 296)** *M. Boulaid, R. Oaddi, K. Bouabid, A. Ihlal* **Energy Management and Power Quality Improvement in Grid-Connected Photovoltaic Systems (ID - 315)** *Abdeslem Sahli, Fateh Krim, Abdesslam Belaout*

Tuesday 16:30 – 17:30	**Quadcopter Modelling, Control Design and PIL Verification based on DSP F28377s (ID - 365)** *Yassine El Houm, Ahmed Abbou, Ali Mousmi* **The Effect of Phase Change Material (PCM) on Thermal Behavior of a Building Located at Casablanca During Heating Period (ID - 379)** *Amina Mourid, Mustapha El Alami* **Acetylation of Glycerol over mixed Zirconium Phosphate- Sulphate Catalysts (ID - 57)** *F. Mesrar, M. Kacimi, M. Ziyad, M.L. Testa, V. La Parola, L.F. Liotta* **In-situ Three-steps Method for Biodiesel Synthesis from acidified Waste Cooking Oil (ID - 72)** *F. Ouanji, M. Kacimi, M. Ziyad, L.F. Liotta, F. Puleo* **Study and Dimensioning of a Compressed Air Storage System Dedicated to the Isolated Site (ID - 19)** *I. Rais, H. Mahmoudi* **Quasi Z Source Inverter Output Voltage Regulation of Standalone System Powered by Photovoltaic Generators and Batteries (ID - 132)** *Boukebbous Seif eddine, Kerdoun Djallel, Benbaha Noureddine, Hachemi ammar, Bouchakour Abdelhak* **Shunt Active Filter for Harmonics Elimination using Classic PI and Fuzzy Logic Controllers Powered by PV (ID - 395)** *H. Dendani, A. Omeiri, S. Ghoudelbourk, A. Rechach, D. Dib* **Energy Management in Unmanned Aerial Vehicles (ID - 227)** *Salwa Elouarouar, Hicham Medromi, Fouad Moutaouakkil* **Optimal and Efficient Vertical Take Off and Landing (ID - 245)** *Souad Berradi, Fouad Moutaouakkil, Soumia Bakkali, Hicham Medromi* **Variable Speed Wind Generator Associated with Hybrid Energy Storage System-Application for Micro-grids (ID - 252)** *Salah Tamalouzt, Farid Hamoudi, Toufik Rekioua, Djamila Rekioua* **Using the five-level NPC Inverter to Improve the FOC Control of the Asynchronous Machine (ID - 288)** *Mouna Es-Saadi, Mohammed Khafallah, Mustapha Jammali, Abdelkarim Ait Brik, Abdelaziz Khoukh, Hamid Chaikhy* **Co3O4/Reduced Graphene Oxide Composite as Electrocatalyst for Oxygen Reaction Reduction (ID - 299)** *Omar Benabdallah, Zineb Edfouf, Siham Idrissi, Abdelfettah Lallaoui, Fouzia Cherkaoui El Moursli, Qiliang Wei, Xiaohua Yang, Shuhui Sun* **Control of Solid Oxide Fuel Cells Damage using Infrared Thermography (ID - 354)** *Asseya El-amiri, Abderrahim Saifi, Abdellatif Obbadi ,Youssef Errami, Smail Sahnoun, Ahmed Elhassnaoui* **DTC Control of DFIG-Generators for Wind Turbines: FPGA Implementation Based (ID - 112)** *Kamal Ouezgan, Badre Bossoufi, Mohammed Najib Bargach* **Active Filter 3-phase 4-wire Controlled by 3D- SVM for Unbalanced Load (ID - 187)** *Ismail Bouyakoub, Abedelkader Djahbar, Rachid Taleb, Omar Maarouf* **Centralized Intelligent Home Energy Management System (ID - 175)** *Abdul Rehman, Faisal Baig, Yousaf H. Khattak, Bernabé Marí, Anzar Mahmood* **Recent Advances and Remaining Challenges in Proton Exchange Membrane Fuel Cell (PEMFC) (ID - 269)** *Mohammed Jourdani, Hamid Mounir, Abdellatif El Marjani* **Data driven Model for Short Term PV Power Forecasting using Least Square Support Vector Regression (ID - 333)** *Ayoub Fentis, Lhoussine Bahatti, Mohamed Tabaa, Brahim Chouri, Mohammed Mestari* **Comparison between Two Multilevel Inverter Topologies used for Gpv Connection System to Electrical Network (ID - 393)** *S. Ghoudelbourk, A. Rechach, H. Dandani, A. Omeiri, S. Khemaissia* **Modeling of a Smart Grid Monitoring System using Power Line Communication (ID - 414)** *Hanane Hadlach, Mustapha Zahri, Mohammed El Alami, Mohamed Habibi* **Image quality assessment: Application for solar panel images registration (ID - 451)** *Hicham Tribak, Youssef Zaz* **Detection of the Shadow in Solar Panels Frames (ID - 448)** *Sara Lafkih, Youssef Zaz* **Photovoltaic/wind Hybrid system Control and Power Management using a Neural Network MPPT (ID - 444)** *Houria Boumaaraf, Billel Boumaaraf, Abdelaziz Talha* **Chromate Reduction on the Novel Hetero-system La_2NiO_4/TiO_2 under Solar Light (ID - 441)** *Hicham Lahmar, Messaoud Benamira* **$Co_{0.5}Nd_{0.5}Fe_2O_4$ as a new material for power industry (ID - 152)** *R. Lamouri, O. Mounkachi, M. Hamedoun, H. Ez-zahraouy, A. Benyoussef* **Green Logistics Practices (ID - 243)** *Zoubida Benmamoun, Hanaa Hachimi, Aouatif Amine* **Simulation study testing sulfuric acid pretreatment and hydrolysis of bagasse and beet pulp, to produce bioethanol in the Moroccan sugar industry (ID - 408)** *Kamzon Mohamed Anouar, Abderafi Souad*

	Study of the Wind Effect on the Quality and Lubrication System of Wind Turbines (ID - 68) *Mounir Hanafi, Hanane Akram, Driss El Messoudi, Tarik Chafik*

Posters Session III	
	Chairs: **Abdelilah Benyoussef,** Mor. Foundation for Advanced Science, Innov. and Research, Morocco **Ahmed Ihlal**, FS, Ibn Zohr University, Morocco **Badre Bossoufi**, EST, Oujda, Morocco **Hanae El Kalkha,** ENSA Tangier, Morocco
Wednesday 11:15 – 11:45	**Experimental Analysis of a Micro Photovoltaic Pumping Station with Battery Banc Effect (ID - 13)** *Ahmed Mohammedi, Djamila Rekioua, Toufik Rekioua* **Correlations for Estimating Optimal Tilt Angles of a Photovoltaic System in Algeria (ID - 142)** *Abdelhamid Mraoui, Linda Hassaine, Messaoud Khelif* **Maximum Power Point Tracker using Fuzzy Logic Controller with Reduced Rules (ID - 226)** *Adel haddouche, Mohammed Kara, Ali Haddouche* **Modeling VHDL-AMS of a 4-parameter photovoltaic cell (ID - 271)** *Baouche Fatia Zohra, Nekkaz Mohamed, Mennal Mohamed* **Study of Electrical and Thermal Performance of a Hybrid Photovoltaic Thermal Collector (PVT) based on CdTe (ID - 7)** *Hafsia Haloui, Khaled Touafek, Hanene Ben cheikh el hocine, Abdelkrim Khelifa, Mourad Zaabat* **Fluid Flow and Heat Transfer Investigation in a Solar Collector with Simple and Inclined Perforated Baffles (ID - 102)** *Henaoui Mustapha, Aliane Khaled, Sari-hassoun Zakaria* **Comparative Study between a Plane Collector and a Cylindrical-Parabolic Collector in a Solar Adsorption Refrigerator System (ID - 324)** *Hanane Abakouy, Hanae El Kalkha, Adel Bouajaj* **Wind Potential Assessment of Hassi R'mel in Algeria; Wind farm design (ID - 9)** *Miloud Benmedjahed, Rachid Maouedj* **Nonlinear Control of Wind Turbine Generator based on a centrifugal pump (ID - 15)** *F. Benchabane, A. Guettaf, D. Taibi, A Titaouine, O. Bennis* **Power Quality Improvement based on Wind Turbine-Series Active Filter Hybrid Power System (ID - 20)** *Brahim Berbaoui, Djamel Saba, Rachid Maouedj* **An Adaptive Fuzzy-PI method for MPPT Control of PMSG Wind Energy Conversion System (ID - 236)** *Aicha Asri, Youcef Mihoub, Said Hassaine, Pierre-Olivier Logerais* **Contribution to Improving the DFIG Control using a Multi-level Inverter (ID - 292)** *Imane El Karaoui, Mohammed Maaroufi, Mustapha Jammali, Hamid Chaikhy* **A robust UPFC damping control scheme using PI and ANN based adaptive controllers in Transmission Line (ID - 256)** *Bouanane Abdelkrim, M.Amara, M.Yahiaoui* **The Comparison between Direct and Indirect Control of Wind Turbine Doubly Fed (ID - 357)** *Abdelouahab Zaoui, Rachid Meziane, Fatiha Lakdja* **Estimation of the Young Modulus and Binding Energies of Polyethylene/ Nanotubes Nanocomposites (ID - 390)** *K. Kessaissia, A. Ali Benamara, M. Lounis* **A New Design for a Smart Greenhouse for the South of Algeria (ID - 134)** *Touhami Achouak, Benahmed Khelifa, Douli Amel, Bounaama Fateh* **Controlled Synthesis and Magnetic Properties of Spinel Ferrite $CoFe_2O_4$ Nanoparticles (ID - 139)** *Z. Mahhouti, H. El Moussaoui, M. Hamedoun, M. El Marssi, A. Lahmar, A. El Kenz, A. Benyoussef* **Green technologies for smart and sustainable water distribution network: A review (ID - 235)** *Douli Amel, Benahmed khelifa, Touhami Achouak, Draoui Belkacem* **Etude de l'Influence de la Surpression dans un Local et de la Variation de la Masse Volumique de l'Air sur la Consommation en Energie dans le Bâtiment (ID - 39)** *Khelfaoui Abderrahmane, Tamali Mohammed, Adjlout Houari, Khelfaoui Mohammed chawki* **Contribution to the Load Management Study for a Standalone Photovoltaic System (ID - 133)** *Aziz Haffaf, Fatiha Lakdja, Djaffar Ould Abdsallem, Rachid Meziane*

Wednesday 11:15 – 11:45	**Contribution to the Success of the Energy Audit in the Industrial Environment, Case Stady : Audit of Interior Lighting for an Industrial Site in Morocco (ID - 276)** *Abdelkarim Ait Brik, Abdelaziz Khoukh, Mustapha Jammali, Hamid Chaikhy* **Biodiversity and Dynamic of Microalgae and Cyanobacteria from Freshwater Streams of Djurdjura National Park Forest of Darna (North Algeria) (ID - 268)** *Kamal Aïboud, Djillali Ghobrini, Djillali Ghobrini, Saliha Yakoub Bougdal* **On the Multi-fractal Behavior of the Ultraviolet signal: A Case Study from the Algerian Sahara (ID - 445)** *Sid-Ali Ouadfeul, Leila Aliouane* **Total Organic Carbon Prediction in Shale Gas Reservoirs form Well Logs Data using the Multilayer Perceptron Neural Network with Levenberg Marquardt Training Algorithm. Application to Barnett Shale (ID - 446)** *Leila Aliouane, Sid-Ali Ouadfeul* **Solar Decathlon Africa 2019: enhancing the shift towards low-carbon energy system in Morocco (ID - 398)** *Samir Idrissi Kaitouni, Badr Ikken* **Contribution to the study of SVC systems in the performance of power grid (ID - 105)** *Dib Djalel, Salekna M. Mokhtar* **An experimental intelligent simulator of a single household: Wind Energy Application (ID - 164)** *Djohra Saheb Koussa, Koussa Mustapha, Amina Balehouane, Mustapha Boudraf* **Optimisation and Energy Management of Hybrid PV/PEMFC System Connected to the Grid (ID - 170)** *K. Rahrah, D. Rekioua, Z. Mokrani, N. Mebarki* **Design and Modelling of Multi-Agent Systems for Power Engineering Applications Systems and the Control of Distributed Energy Systems for Photovoltaic Application (ID - 401)** *Mouhoub Birane, Cherif Larbes, Ali Cheknane* **Numerical investigation of Nano-Enhanced PCM Melting inside Spherical Enclosure (ID - 34)** *Bechiri Mohammed Kacem Mansouri* **Heat, Temperatures, and thermal conductivities in the Parts of the northern Algerian Sahara, case study Ghardaia, Algeria (ID - 143)** *Mihoub Redouane, Chabour Nabil, Bekkouche S.M.A, Chenini Nadir, Ghalemi Samira* **A Low-Cost Synthesis of Tio2 Compact Layers by Liquid Phase Deposition Lpd for Hybrid Perovskite Solar Cells (ID - 90)** *S. Derbali, K. Nouneh, M. Y. Zaki, M. Ebn Touhami* **Optimization of Czts Deposition Conditions: Effect of Deposition Time and Sulfurization Time (ID - 93)** *M.Y. Zaki, K. Nouneh, S. Derbali, M. Ebn Touhami* **Asynchronous Distributed Max-Flow Algorithm (ID - 455)** *Rim Marah, Abdelaaziz El Hibaoui* **Maximum Power Point Tracking Improvement for Photovoltaic Systems (ID - 421)** *Rachid Belaidi*

Contacts

Abdelaaziz El Hibaoui	*Youssef Zaz*
a.hibaoui@gmail.com	*zaz@med-space.org*
+212 (0) 677 507 231	*+212(0) 662 102 167*