

# OSAMA Y. AYADI

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Dr. Osama Ayadi is an international energy expert and trainer, during the last decade he participated in many projects, conferences and workshops in Europe, North and South Africa and Middle East aiming to achieve his dream of ensuring clean, renewable and secure energy for all.

## EXPERIENCE

APRIL 2012 – PRESENT

**ASSISTANT PROFESSOR, THE MECHANICAL ENGINEERING DEPARTMENT,**  
THE UNIVERISTY OF JORDAN

## ACADEMIC EXPERIENCE

Participating in the development of several postgraduate and undergraduate programs and courses in the fields of sustainability, environment and energy in the framework of Tempus and Erasmus+ projects:

- Modernizing Undergraduate Renewable Energy Education: EU Experience for Jordan. "MUREE"
- Development of an interdisciplinary program on CLIMate change and Sustainability Policy. "CLIMASP"
- MAster oN SUstainable development And Renewable Energy. "MANSUR"
- "Development of higher Education teaching modules on the Socio-economic Impacts of the Renewable Energy implementation. "DESIRE"

## COURSES TAUGHT

- Undergraduate courses: Solar energy, Refrigeration systems, Air conditioning (I), Air conditioning (II), Energy conversion, Thermodynamics (I), and Engineering drawing.
- Graduated courses: Renewable energy systems, Energy conversion, Energy management, and Concentrated solar power.

## MASTER THESIS SUPERVISED

- Yousef Al Turk, Design of a control system to optimize the Performance of a solar air conditioning

system under Jordanian climate.

- Zaid Al Atari, Mechatronic Design of Solar Tracking System for Compact Linear Fresnel Reflectors
- Obadah Abdel Ghani, Performance simulation for optimization of a supposed 50mw hybrid natural gas- csp operated power plant in Jordan.
- Mohammad Al Matarneh, Modeling and simulation of a combined solar thermal and ground source heat pump system.
- Ahmad Al Omari, Integrating Solar PV (Photovoltaic) Plants with the Electricity Grid through Conventional Power Plants (Hybridization), Analytical Framework and Qatrana CCPP Case Study
- Rami Al Asaad, Techno-economic assessment of grid connected photovoltaic systems in Jordan.
- Ishraq Al Salaheen, Techno-economic assessment of concentrating solar power and wind hybridization in Jordan
- Majdi Al Jarrah, Evaluating the performance of energy auditing to the local education buildings in accordance with the international energy auditing standard ISO-50002
- Mohammad Al Qasas, Characterization of PV systems using thermographic infrared camera in Jordan.
- Layali Abu Hussien, Performance comparison for sun tracking mechanism PV and concentrated PV solar panels with fixed system PV panels in Jordan.

## **PROFESSIONAL EXPERIENCE**

- Design of the Mechanical engineering systems for the new National Center for Diabetes, Endocrinology and Genetics building.
- Member of the committee responsible of the design and tender preparation of the University of Jordan's solar electricity project of 16 MW capacities.
- Member of the committee selected by the Higher Council for Science and Technology for the testing of the newly developed geothermal heating and cooling system.
- Member of the Accreditation Committee selected by Coalition of Energy Services Associations (CESA) in Jordan for the accreditation of energy service companies in the fields of HVAC, Solar thermal and solar PV.

**OCTOBER 2007 – APRIL 2012**

## **RESEARCHER IN THE FIELD OF SOLAR ENERGY, POLITECNICO DI MILANO-ITALY**

Working on the design, modeling and simulation, monitoring and performance evaluation of several solar energy and solar cooling systems installed within European and MENA region :

- Mediterranean Food and Agro Industry Applications of Solar Cooling technologies. "MEDISCO"
- Increasing the Market Implementation of Solar Air Conditioning Systems for Small and Medium

Applications in Residential and Commercial Buildings. " SOLAIR"

- Integrated small scale solar heating and cooling systems for a sustainable air-conditioning of buildings "SOLERA"
- Polygeneration with advanced small and medium scale thermally driven air-conditioning and refrigeration technology. "POLYSMART"
- High solar fraction heating and cooling systems with combination of innovative components and methods. "HIGH-COMBI"

Delivered several courses for engineers and technicians in Italy, Egypt, Montenegro and Tunisia

- Training course for 'Solar thermal systems for installers', MONTESOL Programme July 5th to 7th, 2011, City hotel, Podgorica-Montenegro
- Training course for 'Solar thermal systems for installers', EGYSOL Programme March 27th to 30th, 2011, NREA headquarter, Cairo-Egypt

**JULY 2007 – SEPTEMBER 2007**

**RESEARCH AND DEVELOPMENT, CLIMATEWELL AB. STOCKHOLM- SWEDEN**

Trnsys model development and validation via experimental measurements of the Climatewell 10 chiller.

## **EDUCATION**

**MARCH 2012**

**Ph.D. IN ENERGY, POLITECNICO DI MILANO - ITALY**

Dissertation: Solar cooling systems utilizing concentrating solar collectors; design, experimental evaluation & optimization

Courses: Fuel cell energy systems, Measurements for engineering systems, Experimental thermal fluid dynamics, Power system economics, Renewables for terawatt world energy challenge, Refrigeration and heatpump technology, Research management, Electronic resources for research

**JULY 2007**

## **M.Sc., DALARNA UNIVERSITY - SWEDEN**

Degree of Master of Science with a Major in Mechanical Engineering.

Thesis: Measurements, Modelling and System Simulation of Thermo- Chemical Accumulator used for Solar Cooling.

### **SEPTEMBER 2004**

## **M.Sc., THE UNIVERSITY OF JORDAN- JORDAN**

1<sup>st</sup> Class Honors.

Graduation Project: design, manufacturing and assembly of a lid capping machine.

## **TRAINING**

- Cultural intelligence and successful teams. British council, Milan- Italy 29/4-21/6/2011
- Trainers meet trainers. Technical University Hamburg Harburg, Germany 28/10-30/10/2015
- Training of trainers. Canada Global Consulting and Training Centre Ltd. , held in Amman- Jordan
- Instructional Matrix Analysis System. Canada Global Consulting and Training Centre Ltd. Held in amman- Jordan
- Renewable energy systems. Kassel University, Germany
- Advanced solar collectors. Czech Technical University, Prague, Czech Republic

## **LANGUAGES**

- Arabic (mother)
- English (Fluent)
- Italian (spoken: v. good, written: fair)

## **MEMBERSHIP**

- Association of energy engineers AEE
- International Solar Energy Society ISES
- International Energy Agency Task 38: Solar Air-Conditioning and Refrigeration
- International Energy Agency Task 44: Solar and heat pump systems
- Jordanian Engineering Association
- "Our Common Future" Fellow

## COMPUTER SKILLS

<ul style="list-style-type: none"><li>• TRNSYS</li><li>• AutoCAD</li><li>• Matlab</li></ul>	<ul style="list-style-type: none"><li>• MS project</li><li>• Excel VBA</li><li>• LabView</li></ul>
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## COMMUNICATION SKILLS

- Effective **intercultural communication skills** gained through working and studying in intercultural environment, in addition to training courses attended in this area.
- Effective **presentation skills** developed during exposure to a variety of conferences and training activities for hundreds of engineers and technicians, as well lecturing at different courses and universities.

## LATEST PUBLICATIONS

- I. Alsalahen, O. Ayadi, Techno- Economic Assessment of Concentrating Solar Power and Wind Hybridization in Jordan, in: Mechanical Engineering and Its Applications, Tafila, 2017.
- R. Al-Rbaihat, A. Sakhrieh, J. Al-Asfar, A. Alahmer, O. Ayadi, A. Al-Salaymeh, Z. Al\_hamamre, A. Al-bawwab, M. Hamdan, Performance Assessment and Theoretical Simulation of Adsorption Refrigeration System Driven by Flat Plate Solar Collector, JJMIE. 11 (2017).
- Ahmad Al Omari, & Ayadi, O. (2017). Integrating solar PV with the electricity grid through conventional power plants. In 2017 8th International Renewable Energy Congress (IREC) (pp. 1–6). IEEE. <http://doi.org/10.1109/IREC.2017.7926015>
- Al-Assad, R., & Ayadi, O. (2017). Techno-economic assessment of grid connected photovoltaic systems in Jordan. In 2017 8th International Renewable Energy Congress (IREC) (pp. 1–5). IEEE. <http://doi.org/10.1109/IREC.2017.7926014>
- Al-Omari A., Ayadi O., Qudah M. (2016) Integrating Solar PV with the Electricity Grid through Conventional Power Plants (Hybridization); Qatrana CCP Case Study. Integration of Large Capacity Renewable Energy Systems on Transmission & Distribution Networks Conference, Amman-Jordan, April 26th – 27th 2016
- Al-Omari A., Al-Issawi M., Al-Salaymeh A., Ayadi, O. (2016) Energy Audit for a Power Plant Output and its In-House Load: A Case Study in Jordan. GCREEDER 2016, Amman-Jordan, April 4th – 6th 2016

- Al Turk Y., Ayadi O., (2015) Optimize and validate the Performance of a Solar Air Conditioning System under Jordanian Climate. 5th Jordanian IIR International Conference on Refrigeration and Air Conditioning 5th JIIRCAC, Aqaba, Jordan, 8-10 March, 2015.
- Ayadi O., Al-Atari, Z., (2014) Design and Manufacturing of Linear Fresnel Reflectors for Industrial Process Heat, The 8th Jordanian International Mechanical Engineering Conference, Amman, Jordan, 22–23 September, 2014.
- Al Asfar, J., Ayadi O., & Al Salaymeh, A. (2014). Design and Performance Assessment of a Parabolic Trough Collector. Jordan Journal of Mechanical and Industrial Engineering.
- Ayadi O., Mauro, A., Aprile, M., & Motta, M. (2012). Performance assessment for solar heating and cooling system for office building in Italy. Energy Procedia, 30(0), 490–494.  
doi:<http://dx.doi.org/10.1016/j.egypro.2012.11.058>

## CONFERENCES

- Fifth Global Conference on Renewables and Energy Efficiency for Desert Region (GCREEDER) 2016  
Scientific committee coordinator, Amman, Jordan 4 – 6 April 2016  
  
(Organizing and scientific committees)
- The 5th Jordanian IIR International Conference on Refrigeration and Air Conditioning 5th JIIRCAC, Aqaba, Jordan, 8-10 March, 2015.  
  
(Organizing and scientific committees)
- The 8th Jordanian International Mechanical Engineering Conference, Amman, Jordan, 22–23 September, 2014.  
  
(Organizing and scientific committees)

- Third Global Conference on Renewables and Energy Efficiency for Desert Region (GCREEDER) 2011  
 Scientific committee coordinator, Amman, Jordan 10 – 12 September 2013  
 (Organizing and scientific committees)
  
- Fourth Jordanian IIR International Conference on Refrigeration and Air Conditioning 4th JIIRCRAC,  
 Amman, Jordan, 10-12 September, 2012.
  
- SolarPACES 2011 (Solar Power And Chemical Energy Systems),  
 Granada, Spain 20-23 September 2011
  
- SolarPACES 2010 (Solar Power And Chemical Energy Systems),  
 Perpignan, France 21-24 September 2010
  
- IEA Task 38 Solar Air-Conditioning and Refrigeration “expert meeting”  
 Graz, Austria 27-28 September 2010
  
- EuroSun 2010 “International Conference on Solar Heating, Cooling and Buildings”.  
 Graz, Austria 28 September- 1 October 2010
  
- Our Common Future “The interdisciplinary congress for a cross-generational dialogue about issues  
 of our common future” - Climate change and Energy group  
  
 Intermediate meeting: Essen, Germany 21 June 2010  
  
 Conference: Hannover & Essen, Germany 2-6 November 2010
  
- Otti - 4th International Conference Solar Air-Conditioning  
 Larnaka, Cyprus, 12 October – 14 October 2009

- Effstock 2009 - The 11th International Conference on Energy Storage  
International Fairs in Stockholm, Sweden, 14-17 June 2009
- Otti - 3rd International Conference Solar Air-Conditioning  
Università degli Studi di Palermo, Palermo, Sicily, Italy, 30 September – 2 October 2009
- The International Solar Energy Society Solar World Congress 2009  
Sandton Convention Center, Johannesburg, South Africa, 11-14 October 2009
- IEA Task 38 Solar Air-Conditioning and Refrigeration “expert meeting”  
Solar Info Center, Freiburg, Germany, 27-28 April 2009
- IEA Task 44 “Solar and heat pump systems”  
EURAC research center, Bolzano , Italy 29-30 April