

# CURRICULUM VITAE

## ESSAM SHABAN BERSY MOHAMED



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NATIONALITY: EGYPTIAN

DATE OF BIRTH: 27-11-1971

FAMILY STATUS: MARRIED

### EDUCATION

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#### **2010-2011**

Post – Doctoral research - Agricultural University of Athens Department of Natural Resources & Agricultural Engineering

Post – Doctoral studies regarding Energy and water management in hydroponic greenhouses.

#### **2002-2009**

PhD - Agricultural University of Athens Department of Natural Resources & Agricultural Engineering, joint with the Laboratory of Solar and other Energy Systems, Institute of Nuclear Technology – Radiation Protection, National Center of Scientific Research - NCSR “Demokritos”

PhD in Application of renewable energy systems for sea water desalination by reverse osmosis.

Degree Grade: 10/10

#### **2000-2002**

MSc - Agricultural University of Athens Department of Natural Resources & Agricultural Engineering Section of Agricultural Constructions & Agricultural Engineering

MSc in Energy system

Degree Grade: 10/10

### 1989-1993

BSc – Cairo University, Faculty of Agriculture, Department of Agricultural Engineering  
BSc of Agricultural Science  
General Grade: 7/10

### SCHOLARSHIPS

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One year Post – Doctoral scholarship from the State Scholarships Foundation (IKY) for the conduction of Post – Doctoral study at the Agricultural University of Athens, Department of Natural Resources & Agricultural Engineering Section of Agricultural Constructions & Agricultural Engineering.

Five years PhD scholarship from the Laboratory of Solar and other Energy Systems, Institute of Nuclear Technology – Radiation Protection, National Center of Scientific Research - NCSR “Demokritos” for the completion of PhD thesis.

### PUBLICATIONS

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#### ***Publications in international Journals***

- 1 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis and V. Belessiotis. A direct coupled photovoltaic seawater reverse osmosis desalination system toward battery based systems — a technical and economical experimental comparative study. *Desalination*, Volume 221, Issues 1-3, 1 March 2008, Pages 17-22.  
8 Citations in Web of Knowledge
- 2 D. Manolakos, **Essam Sh. Mohamed**, I. Karagiannis and G. Papadakis. Technical and economic comparison between PV-RO system and RO-Solar Rankine system. Case study: Thirasia Island. *Desalination*, Volume 221, Issues 1-3, 1 March 2008, Pages 37-46.  
11 Citations in Web of Knowledge
- 3 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis and V. Belessiotis. An experimental comparative study of the technical and economic performance of a small reverse osmosis desalination system equipped with hydraulic energy recovery unit. *Desalination*, Volume 194, Issues 1-3, 10 June 2006, Pages 239-250.  
19 Citations in Web of Knowledge
- 4 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis and V. Belessiotis. The effect of hydraulic energy recovery in a small sea water reverse osmosis desalination system; experimental and economical evaluation. *Desalination*, Volume 184, Issues 1-3, 1 November 2005, Pages 241-246.  
15 Citations in Web of Knowledge
- 5 D. Manolakos, G. Papadakis, **Essam Sh. Mohamed**, S. Kyritsis and K. Bouzianas. Design of an autonomous low-temperature solar Rankine cycle system for reverse osmosis desalination. *Desalination*, Volume 183, Issues 1-3, 1 November 2005, Pages 73-80.  
24 Citations in Web of Knowledge

- 6 **Essam Sh. Mohamed** and G. Papadakis. Design, simulation and economic analysis of a stand-alone reverse osmosis desalination unit powered by wind turbines and photovoltaics. *Desalination*, Volume 164, Issue 1, 25 March 2004, Pages 87-97.  
27 Citations in Web of Knowledge

### ***Book chapters***

- 1 Operating RE/Desalination Units, *Seawater Desalination Green Energy and Technology*, 2009, 247-272, DOI: 10.1007/978-3-642-01150-4\_10  
Michael Papapetrou, **Essam Sh. Mohamed**, Dimitris Manolakis, George Papadakis, Vicente J. Subiela and Baltasar Peñate.  
<http://www.springerlink.com/content/m0l5m73l154j4073/>
- 2 The Economy of Water, INTERDISCIPLINARY INSTITUTE FOR ENVIRONMENTAL RESEARCH (DIPE). Athens 2009, ISBN 978-960-19-0448-1, in Greek.
- 3 SMALL AUTONOMOUS RO DESALINATION SYSTEMS POWERED BY RENEWABLE ENERGIES. TECHNOLOGICAL ADVANCES AND ECONOMICS. G. PAPANAKIS, **E.SH. MOHAMED** and D. MANOLAKOS  
*Solar Desalination for the 21st Century. NATO Security through Science Series*, 2007, 293-303, DOI: 10.1007/978-1-4020-5508-9\_22  
<http://www.springerlink.com/content/31j012458p21675p/>
- 4 ADIRA HANDBOOK - A guide to autonomous desalination system concepts. Co funded by the European Union. ISBN 978-975-561-311-6 , 2007

### ***Publications in International Conferences***

- 1 B.F. Tchanche, **Essam Sh. Mohamed**, and G. Papadakis, Solar energy: a solution for energy poverty in Africa, in Proc. of ISES Solar World Congress, 11-14 Oct. 2009, Johannesburg, South Africa.
- 2 G. Papadakis, **Essam Sh. Mohamed**, G. Kyriakarakos, Abdel-Wahab S. Kassem "Hybrid renewable energy systems for the supply of services in rural settlements of mediterranean partner countries. The HYRESS project "The case study of the hybrid system in Egypt" 24<sup>th</sup> European photovoltaic conference, Hamburg, Germany – 2009.
- 3 George Kyriakarakos, **Essam Mohamed**, George Papadakis "Experimental Operation and Evaluation of a Hybrid Renewable Energy Polygeneration Microgrid "International Conference and Exhibition Renewable Energy BEXCO & Nurimaru, Busan, Korea – 2008.
- 4 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis, and V. Belessiotis "A direct coupled photovoltaic seawater reverse osmosis desalination system toward battery based systems — a technical and economical experimental comparative study", paper presented at International Conference - Desalination and the environment, 22-25 April

Halkidiki-Greece - (2007).

- 5 G. Papadakis, **Essam Sh. Mohamed**, and D. Manolakos (2007), Small autonomous RO desalination systems powered by renewable energies. Technological advances and economics, paper presented at 3rd International Conference on Solar Radiation and Day Lighting SOLARIS 2007, 7-9 February, New Delhi-India.
- 6 G. Kyriakarakos, **Essam Sh. Mohamed** and G. Papadakis (2006), Creation of a software design model and realization of a hybrid renewable energy polygeneration system. Renewable Energy Conference, Japan
- 7 G. Kyriakarakos, **Essam Sh. Mohamed** and G. Papadakis (2006), Creation of a multi criteria environmental economic model to assist the design of autonomous renewable energy polygeneration systems. Great Wall Renewable Energy Forum, China.
- 8 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis, and V. Belessiotis (2006), A techno-economic experimental investigation of a direct coupled photovoltaic sea water reverse osmosis desalination system. Paper presented at Global Conference on Renewable Energy Approaches for Desert Regions GCREADER, 18-22 September, Amman-Jordan.
- 9 G. Kyriakarakos, **Essam Sh. Mohamed**, S. Rozakis, and G. Papadakis (2006), Renewable Energy Polygeneration Systems: A viable Solution for the Desert Regions, paper presented at Global Conference on Renewable Energy Approaches for Desert Regions - GCREADER, 18-22 September, Amman - Jordan.
- 10 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis, and V. Belessiotis (2005), The effect of hydraulic energy recovery in a small sea water reverse osmosis desalination system, an experimental and economical evaluation, paper presented at International Conference of Desalination and the environment, 22-25 May, Santa Margherita-Portofino-La Spezia-Italy.
- 11 **Essam Sh. Mohamed**, and G. Papadakis (2004a), A stand alone sea water reverse osmosis desalination unit powered by hybrid wind-photovoltaic system for rural development and small villages, paper presented at CIGER International Conference, 11-14 October, Beijinh - China.
- 12 **Essam Sh. Mohamed**, and G. Papadakis (2004b), A stand alone sea water reverse osmosis desalination unit powered by hybrid wind-photovoltaic system for rural development and small villages, paper presented at International Conference in Agricultural Engineering AgEng 2004 'Engineering the future', September, Leuven - Belgium.
- 13 **Essam Sh. Mohamed**, and G. Papadakis (2004c), A TRNSYS Dynamic Simulation Model for a stand alone PV system powering a reverse osmosis desalination unit with energy recovery system, paper presented at 19<sup>th</sup> European Photovoltaic Solar Energy Conference and Exhibition, 7-11 June, Paris - France.
- 14 **Essam Sh. Mohamed**, and G. Papadakis (2003c), TRANSYS dynamic simulation of a stand alone hybrid wind-PV system powering a reverse osmosis desalination unit with hydraulic energy recovery, paper presented at 2<sup>nd</sup> European PV-Hybrid and Mini-Grid Conference, 25-26 September, Kassel - Germany.

- 15 **Essam Sh. Mohamed**, and G. Papadakis (2003a), Design simulation and economic analysis of reverse osmosis desalination plant powered by hybrid renewable energy system, paper presented at Renewable Energy Sources for Islands Tourism and Water Desalination, 25-28 May, Crete - Greece.
- 16 **Essam Sh. Mohamed**, and G. Papadakis (2003b), Design simulation and economic analysis of reverse osmosis desalination plant powered by Wind turbine and Photovoltaics, paper presented at 3<sup>rd</sup> European PV-Hybrid and Mini-Grid Conference, 25-26 September, Kassel - Germany.

#### ***Publications in National Conferences***

- 1 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis and V. Belessiotis, Experimental study of a direct coupled reverse osmosis desalination unit with Photovoltaic system. 5<sup>th</sup> National Conference on Agricultural Engineering, Larisa, Greece, November 2007.
- 2 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis and V. Belessiotis, Development of a hybrid Wind /PV system for electricity production for an autonomous reverse osmosis desalination unit. 4<sup>th</sup> National Conference on Agricultural Engineering, Athens, Greece, 6 – 8 October 2005.
- 3 **Essam Sh. Mohamed**, G. Papadakis, E. Mathioulakis and V. Belessiotis, Theoretical and experimental investigation of hybrid Wind / PV system powering reverse osmosis desalination unit. National Conference for renewable energy applications. Athens, Greece, 23 – 25 2005.

#### ***Thesis***

- 1 Post-doctoral Thesis: Energy and water consumption reduction in hydroponic greenhouses through the implementation of the NGS hydroponic system and the penetration of renewable energy using Solyndra panels.
- 2 PhD Thesis: Design and simulation of sea water reverse osmosis system with energy recovery powered by hybrid Wind/PV system.
- 3 MSc Thesis: “Design and Simulation of small scale sea water reverse osmosis unit powered by hybrid renewable energy system”
- 4 Diploma Thesis: Hydraulic Calculations in Drip and sprinkler irrigation.

#### ***Project Reports***

- 1 Report “Green Village project, Agios Georgios, Municipality of Makrakomis. Towards a zero energy balance and zero CO<sub>2</sub> emissions village” **THE MINISTRY OF ENVIRONMENT, ENERGY AND CLIMATE CHANGE AND THE CENTER OF RENEWABLE ENERGY SOURCES AND SAVING** (2012)
- 2 Report “Waste Cooking Oil (WCOs) and Animal Fats (AFs) as feedstock for biodiesel production”, **HELLAS OIL BIODIESEL COMPANY** Project, (2012).

- 3 Report “Legal framework and possibilities for establishing multimillion battery recycling factory and/or importing lead and scrap batteries from Egypt”, **ALTERNATIVE SYSTEMS FOR BATTERY RECYCLING COMPANY** (2012)
- 4 Report – Study “New type of greenhouses in Greek market” a study and report submitted on behalf **SOLAR LOGIC S.A. COMPANY** to the Hellenic Ministry of Rural Development and Food for obtaining a permission of manufacturing and installation of agricultural greenhouses using photovoltaics as a source of Energy, (2012).
- 5 Report “Current status of automotive batteries recycling industry in Egypt”, **ALTERNATIVE SYSTEMS FOR BATTERY RECYCLING COMPANY** Project Alternative Systems for Batteries Recycling Company Project, (2011).
- 6 Report “DESIGN OF 100 KW UNIT (50 KW PV AND 50 KW WIND TURBINE) INCLUDING DESIGN SOFTWARE, LIST OF COMPONENTS, SIZE AND NUMBERS OF EACH COMPONENT AND BLUE PRINTS” Development of Hybrid Renewable Energy – RO Desalination System and Minigrids For Remote And Desert Areas in Egypt. **Project funded by Egyptian Science and Technology Development Funds, STDF**, (2010).
- 7 Report “STATE OF THE ART, LITERATURE REVIEW OF HYBRID RE SYSTEMS MAIN PLAYERS IN HYBRID RE SYSTEMS IN EGYPT AND WORLDWIDE AND SOCIOECONOMIC PORTRAIT OF EGYPT RELATED TO RE” Development of Hybrid Renewable Energy – RO Desalination System and Minigrids For Remote And Desert Areas in Egypt. **Project funded by Egyptian Science and Technology Development Funds, STDF**, (2010).
- 8 Report “ANALYTICAL SYSTEM SPECIFICATIONS FOR THE CALL OF TENDER” Development of Hybrid Renewable Energy – RO Desalination System and Minigrids For Remote And Desert Areas in Egypt. **Project funded by Egyptian Science and Technology Development Funds, STDF**, (2010).
- 9 Report “IDENTIFICATION OF CURRENT AVAILABILITY OF COMMERCIAL HYBRID RES TECHNOLOGIES AND ITS COMPONENTS” Hybrid Renewable Energy Systems in Rural Settlements of Mediterranean Partner Countries, HYRESS project” **SIXTH FRAMEWORK PROGRAMME**, Specific measures in support of international cooperation — Mediterranean Partner Countries (MPC), Specific Targeted Research Projects (STREP) and Coordination Actions (CA) for Mediterranean Partner Countries (MPC), (2006).
- 10 Report “PROPOSITION OF APPROPRIATE CONCEPTS AND TOPOLOGIES FOR RENEWABLE ENERGY HYBRID SYSTEMS TO BE DEVELOPED AND APPLIED” Hybrid Renewable Energy Systems in Rural Settlements of Mediterranean Partner Countries, HYRESS project” **SIXTH FRAMEWORK PROGRAMME**, Specific measures in support of international cooperation — Mediterranean Partner Countries (MPC), Specific Targeted Research Projects (STREP) and Coordination Actions (CA) for Mediterranean Partner Countries (MPC), (2007).
- 11 Report “HYBRID SYSTEMS DESIGN BLUE PRINTS FOR THE SYSTEMS IN

EGYPT AND TUNISIA” Hybrid Renewable Energy Systems in Rural Settlements of Mediterranean Partner Countries, HYRESS project” **SIXTH FRAMEWORK PROGRAMME**, Specific measures in support of international cooperation — Mediterranean Partner Countries (MPC), Specific Targeted Research Projects (STREP) and Coordination Actions (CA) for Mediterranean Partner Countries (MPC), (2008).

- 12 Report “Decision Support Tool”, Euro-Mediterranean Regional Program For Local Water Management. Autonomous desalination system concepts for sea water and brackish water in rural areas with renewable energies – Potentials, Technologies, Field Experience, Socio-technical and Socio-economic impacts – **ADIRA Project**. (2003 – 2007).

## WORKING EXPERIENCE

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### *Research work*

- 1 **June 2010 – Today**  
“Development of Hybrid Renewable Energy – RO Desalination System and Minigrids For Remote And Desert Areas in Egypt”, HAREDES, Research program funded by Egyptian Science and Technology Development Funds, STDF. Alexandria University.
- 2 **January 2012 – Today**  
“Green Village project, Agios Georgios, Municipality of Makrakomis. Towards a zero energy balance and zero CO<sub>2</sub> emissions village”, Project funded by the Municipality of Makrakomis.
- 3 **July 2011 – November 2011**  
“Used **cooking** oil and animal fats as feedstock for biodiesel production”, Research program funded by a biodiesel production company named HELLASOIL.
- 4 **October 2006 – October 2009**  
“Hybrid Renewable Energy Systems in Rural Settlements of Mediterranean Partner Countries, HYRESS project”, Project funded by the European Commission, Fb6 framework program.
- 5 **July 2005 – July 2006**  
“Co-ordination action for autonomous desalination units based on renewable energy systems – ADU-RES”, Project funded by the European Commission, Fb6 - INCO framework program.
- 6 **January 2005 – January 2006**  
“Reformation of the undergraduate study program of the Department of Natural Resources & Agricultural Engineering of Agricultural University of Athens”, Program of the Greek Ministry of Education.
- 7 **September 2003 – May 2004**  
“The INCO Project Cluster for Water Application Projects in the South Mediterranean Countries – Med Aqua 2”, Project funded by the European Commission, INCO - MED framework program.

- 8 **October 2004 – May 2005**  
“Development of an Autonomous low temperature solar Rankine Cycle System for Reverse Osmosis Desalination”, Project funded by the European Commission, Cooperative research Project.
  
- 8 **December 2003 – July 2008**  
“Autonomous desalination system concepts for sea water and brackish water in rural areas with renewable energies – Potentials, Technologies, Field Experience, Socio-technical and Socio-economic impacts – **ADIRA Project**”, Project funded by the European Commission, MEDA framework program.
  
- 9 **December 2003 – May 2006**  
“Alternative fuels for industrial gas turbines - (AFTUR)”, Project funded by the European Commission, Fb5 framework program.
  
- 10 **December 2002 – March 2003**  
“Application of neural networks for sizing hybrid renewable energy systems for electricity production”, Project funded by the Hellenic Ministry of Development, General Secretary for Research and Technology. Joint research and Technology Projects between Greece and Hungary.
  
- 11 **May 2000 – June 2000**  
“Investigation of Photovoltaic water pumping systems”, Project funded by the European Commission, Cooperative project.

**Work in private sector**

- 1 **January 2011 – March 2012**  
Project manager at Solar +Logic S. A. Energy analyst – Photovoltaic and agricultural applications - project manager
  
- 2 **April 2010 – January 2011**  
Project manager at AGREK C. Samantouros S. A. Coordinating Agricultural constructions projects from design to realization.
  
- 3 **January 1993 – September 2002**  
Agricultural Engineer at the Embassy of Saudi Arabia in Athens – Greece

**Teaching Experience**

**June 2009 – June 2010**

Lecturer in desalination systems design, National Technical University of Athens, Faculty of Chemical Engineering, (Lectures and distant learning program).



## **September 2002 – December 2009**

Teaching assistant of the Laboratory of Agricultural Mechanization - Agricultural University of Athens in Renewable Energy Applications, Design and Simulation.

### TRAINING DIPLOMAS

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#### **1 06 – 15 December 2012**

Several seminars in the following subjects:

- Modern hydroponic greenhouses
- Private and Public landscape design
- Food safety management systems
- GIS applications in Agriculture and Natural Resources Management
- Biological Agriculture

Hellenic Society of Agricultural Engineers, Athens - Greece

#### **2 February 2011**

Design, Installation and Energy Yield model for Solyndra 200 Series  
Solar+Logic sa. And Boots on the Roof – Athens - Greece

#### **3 30 – 31 January 2008**

Electrical Power Supply for off-grid locations  
SMA Solar Academy – Kassel - Germany

#### **4 29 January 2008**

Communication of SMA products  
SMA Solar Academy – Kassel - Germany

#### **5 June 2007**

Power electronics for renewable energies  
Ostbayerisches Technologie Transfer Institute (OTTI), Freiburg – Germany

#### **4 April 2007**

Membrane Fouling and Pre treatment  
European Desalination Society (EDS), Halkidiki, Greece

#### **6 June 2005**

Renewable energy systems - Photovoltaic systems  
Hellenic Ministry Of National Education

#### **7 June 2004**

Renewable energy systems – Wind Turbines and Wind parks Systems

Hellenic Ministry Of National Education

8 **March 2001**

Wind Energy Technology – Wind Energy Applications  
Technological Educational Institute of Crete, Crete – Greece

9 **January 1998**

Automatic Irrigation systems  
The Institute of Agricultural Sciences (IAS)

10 **July 1998**

Floriculture, Gardening and Automatic Irrigation Systems, a training for professionals  
The Institute of Agricultural Sciences (IAS)

11 **October 1993**

Data Base III Plus  
European Center For System, Cairo - Egypt

#### LANGUAGES

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- Arabic Mother tongue
- Greek: (Certificate of Completion of studies in Modern Greek Language form the department of Modern Greek Language, Athens University, Faculty of Philosophy.
- English: First Certificate in English (University of Cambridge)

#### COMPUTER SKILLS

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- Most Microsoft Windows and office software
- Fortran
- TRNSYS
- European Computer Driving License, AutoCad – ECDL CAD
- Solyndra energy Yield Model
- HOMMER
- RETSCREEN
- PVsyst
- STATISTICA
- STATISTICA Neural Networks
- Several software packages for the design and simulation of water pumping, desalination and renewable energies.

#### EXTRACURRICULAR ACTIVITIES

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- “ISES Solar World Congress”, Johannesburg, South Africa - 2009.
- “24<sup>th</sup> European photovoltaic conference”, Hamburg, Germany – 2009.
- “International Conference and Exhibition Renewable Energy BEXCO & Nurimaru” Busan, Korea – 2008.
- “International Conference - Desalination and the environment” Halkidiki-Greece, 2007.
- “3<sup>rd</sup> International Conference on Solar Radiation and Day Lighting SOLARIS” New Delhi-India, 2007.
- “Great Wall Renewable Energy Forum” China – 2006.
- “Renewable Energy Conference” Japan – 2006.
- “Global Conference on Renewable Energy Approaches for Desert Regions GCREADER”, Amman-Jordan – 2006.
- “International Conference of Desalination and the environment”, Santa Margherita-Portofino La Spezia-Italy – 2005.
- “CIGER International Conference,,” Beijing – China – 2004.
- “International Conference in Agricultural Engineering AgEng 2004 ' Engineering the future”, Leuven – Belgium – 2004.
- Volunteer participation in the Athens Olympic and Paralympic Games, Athens – 2004.
- “19<sup>th</sup> European Photovoltaic Solar Energy Conference and Exhibition”, Paris – France – 2004.
- “2<sup>nd</sup> European PV-Hybrid and Mini-Grid Conference”, Kassel – Germany – 2003.
- “Renewable Energy Sources for Islands Tourism and Water Desalination”, Crete – Greece, 2003.
- “3<sup>rd</sup> European PV-Hybrid and Mini-Grid Conference.” Kassel – Germany – 2003.

#### INTERESTS

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- Reading
- Sports in general
- Music

#### OTHERS

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- Car & motorcycle driving license (2006)