

# Alaa H. Salah

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## Contact Info.

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## Research interest

Renewable energy, Thermal Power plants, Greenhouses, Desalination.

## Academic qualifications

- 2014-2017 **M.Sc. in mechanical engineering, Alexandria University, (GPA: 3.58).**  
**Courses:** Heat and mass transfer, Multi-phase flow, Air conditioning, Solar energy, Computational Fluid Dynamics, Marine power plants systems.  
**Thesis title:** Transient modeling of solar-greenhouse-desalination system self-sufficient of energy and irrigation water demand.  
**Supervisors:** Prof. Samy Elsherbiny, Prof. Hassan Fath, Dr. Mohamed Elhelw.  
**Publications:** Two papers.
- 2007-2012 **B.Sc. in mechanical engineering, Alexandria University, (Excellent with honors (86.21%) - rank: 6<sup>th</sup>)**  
**Thesis title:** Natural gas pipeline design  
**Supervisors:** Prof. Hassan Warda in association of ENNPI Company.

## Experience

### Research Experience

- 2013-present **Research Assistant, City of Scientific Research and Technological Applications, Alexandria, Egypt.**
- Conducted a literature review in greenhouse technologies simulation.
  - Participated in publishing four research papers.
  - Obtained good experience in simulation using MATLAB.
  - Participated in research project proposal writing.
  - Participated in various research projects.
  - Pended a patent for Smart piping external inspection robot that can avoid piping systems obstacles.
  - Learned simulation software such as ANSYS, COMSOL and TRNSYS.
  - Participated in air conditioning maintenance tender preparation.

### Teaching Experience

- 2015-2016 **Demonstrator, Borg Al Arab High Institute of Engineering and Technology, Alexandria, Egypt.**
- Taught physics course in Physics Branch, Elementary Department for two semesters.
- 2012-2013 **Demonstrator, Faculty of Engineering , Alexandria University**
- Taught mechanical drawing course in Design Branch, Mech. Eng. Department for one semester.

### Professional Experience

- 2017-2017 **Grid Tied Solar System**
- Evaluated and compared between two technical offers for “grid tied solar system” suggested for Merghem complex.
- 2017-2017 **Maintenance of HVAC, SRTA City.**
- Participated in tendering “Maintenance of HVAC in the animal house building”, SRTA City.
  - Evaluated and compared between three technical offers for “Maintenance of HVAC system” suggested for animal house building in SRTA city.
- 2016 **Corn Dryer**
- Designed a horizontal corn dryer of 20 T/hr.
- 2016 **Fan Pad System**
- Participated in design and installation of Fan Pad system for a rabbit farm.
- 2015 **Hydroponic System construction**
- Participated in design and construction of a hydroponic system.

## Projects

### Current

- 2017-present **Smart fish sorting machine for different species, Venture Capital for Africa incubator (fund of 300k EGP)**
- Conducted a literature survey for fish sorting machines.
  - Invented a novel smart fish sorting machine.
  - Wrote and applied a proposal for a novel fish sorting machine and accepted in the first phase.
- 2017-present **Development of ship simulator with six degree of freedom (6 DOF), Funded by ASRT (3M EGP).**
- Conducted a literature survey for motion mechanisms and their simulation.
  - Designed a special base for the cabin of simulator to avoid unbalance during system movement.
  - Developed MATLAB code doing kinematic and Dynamic Analysis of 6 DOF Stewart mechanism.
  - Participated in quarterly report writing for mechanical parts design and selection.
- 2017-present **Multipurpose Applications by Thermodynamic Solar (MATS), FP7-ENERGY2010-2 (22M €), grant No. 268219**
- Developed a mathematical model for each component of the Solar Power and MED desalination Plant.
  - Built a MATLAB code that simulate transiently overall Solar Power and MED desalination Plant based on mass and heat transfer equations.

### Completed

- 2016-2017 **Solar-Greenhouse-Desalination System Self productive of Energy and Irrigating Water Demand, funded by STDF/NCP (1.5M EGP), grant No: 10495**
- Conducted a literature survey for different greenhouses technologies.
  - Developed a mathematical model to simulate climate conditions inside greenhouse.
  - Built a MATLAB code that simulates transiently greenhouse micro-climate.
  - Published thesis and four research papers.

### Graduation Projects

- 2011-2012 **Natural gas pipeline design**
- Participated as a team leader of mechanical design branch in “Natural gas pipeline design” project.
  - Developed MATLAB code to analyze stresses on each component of the pipeline.

## Publications

### Patents

*under development (to be filed)*

1. **Alaa H. Salah**, Mohamed Farahat,” Smart piping external inspection robot that can avoid piping systems obstacles”.

### Refereed Journal Articles

1. **Alaa H. Salah**, Gasser E. Hassan, Hassan Fath, Mohamed Elhelw, Samy Elsherbiny, "Analytical investigation of different operational scenarios of a novel greenhouse combined with solar stills", Applied Thermal Engineering, Vol.122, 2017.
2. **Alaa H. Salah**, Gasser E. Hassan, Mohamed Elhelw, Hassan Fath and Samy M. Elsherbiny, "Performance Improvement of Roof Transparent Solar Still Coupled with Agriculture Greenhouse", Journal of Renewable Energy and Sustainable Development (RESO), vol. 3, 2017.
3. Gasser E. Hassan, **Alaa H. Salah**, Mohamed Elhelw, Amany Hassan, Khalid M. Saqr, Hassan Fath, "Optimum Operational Performance of a New Stand-Alone Agricultural Greenhouse with Integrated-TPV Solar Panels", Solar energy, vol.136, P.303–316, 2016.

### Refereed Conference Articles

4. Gasser Hassan, **Alaa Salah**, Mohamed Elhelw, Amany Hassan, Hassan Fath, "Development of A Novel Solar Driven Agriculture Greenhouse: Self Sufficient of Energy and Irrigating Water", International Desalination Association (IDA) World Congress on Desalination and Water Reuse, San Diego, CA, USA, 2015.

### Under Review Articles

5. **Alaa H. Salah**, Gasser E. Hassan, Hassan Fath “shape, size and orientation of greenhouse integrated with on-roof transparent solar still units”.

### Thesis

1. **Alaa H. Salah**, “Transient modeling of solar-greenhouse-desalination system self-sufficient of energy and irrigation water demand”, mechanical department, faculty of engineering, Alexandria University, Oct. 2017.

## Presentations in Conferences/Workshops/Seminars

### Conferences

1. **Alaa H. Salah**, Gasser E. Hassan, Mohamed Elhelw, Hassan Fath and Samy M. Elsherbiny, "Performance Improvement of Roof Transparent Solar Still Coupled with Agriculture Greenhouse", First International

Conference On New Trends For Sustainable Energy (ICNTSE), Pharos University, Alexandria, Egypt, (ISSN: 2357-0865, paper Code: 02A5), 2016.

### Workshops

1. **Alaa H. Salah**, “introduction to ANSYS fluent”, SRTA city, 2016.

### **Honors and Awarded**

- 2017 Academy of Scientific Research and Technology (ASRT) award (2,000 EGP) for participating in “Innovation GATE” project Co-funded by the European Union and the Government of Egypt as an examiner for students, Alexandria, Egypt.
- 2017 City of Scientific Research and Technological Applications award (600 EGP) for participating in “Maintenance of HVAC in the animal house building” tender, Alexandria, Egypt.
- 2017 City of Scientific Research and Technological Applications award (5,000 EGP) for distinctive publishing (Top 5 % ISI Journals, 2017), Alexandria, Egypt.
- 2016 City of Scientific Research and Technological Applications award (4,000 EGP) for distinctive publishing (Top 20 % ISI Journals, 2016), Alexandria, Egypt.
- 2014-2017 Tuition fee for a M.Sc. in Mechanical Engineering, Faculty of Engineering, Alexandria University from City of Scientific Research and Technological Applications, Alexandria, Egypt.
- 2012 Faculty of Engineering, Alexandria University honor for getting an excellence during all years of Mechanical Engineering Department.

### **Activities**

- 2017 **Innovation GATE, Co-funded by the European Union and the Government of Egypt.**  
- Evaluated different novel ideas for technical school students.
- 2016-2017 **First Winter School on CFD applications (ANSYS & COMSOL), SRTA City.**  
- Instructed ANSYS software in “First Winter School on CFD applications (ANSYS & COMSOL)”, Informatics Research Institute, for one week.
- 2016 **ICNTSE Conference**  
- Attended and presented paper in "The First International Conference on New Trends for Sustainable Energy" in Pharos University in Alexandria, 2016.
- 2012 **Pathways to higher education, Alexandria University**  
- Successfully completed the training program “Development of thinking and managerial skills”, “managerial approach” with GPA 3.89, the participant attended 75 hours of training and completed the following courses; 1) Problem solving and decision making, 2) teams and work groups, 3) negotiation skills, 4) economic feasibility study, 5) basics of managerial economics, 6) planning and controlling.

### **Leadership**

1. Leader of team consisting of three colleagues in “Smart fish sorting machine for different species” project.
3. Leader of team consisting of three students in “Natural gas pipeline design” graduation project.

### **Skills**

#### Technical Skills

MATLAB, TRNSYS, ANSYS, COMSOL, AutoCAD, Inventor

#### Language Skills

1. **Arabic:** Native language.
2. **English:** Excellent spoken and very good written and reading.

### **Membership**

2013-Now Member of Egyptian Engineers Syndicate.

### **References**

#### **Prof. Hassan Elbanna Fath**

Professor in Heat transfer and Energy Resources, Department of Environmental Engineering, Egypt Japan University of Science and Technology (E-JUST), Borg El-Arab City, Alexandria, Egypt.

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#### **Prof. Dr. Osama Elsamni**

Professor in Heat transfer, Department of Mechanical Engineering, Faculty of Engineering, Alexandria University

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#### **DR. Mohamed Azab**

Assistant Prof. in computer science, City of Scientific Research and Technological Applications, Alexandria, Egypt.

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