

## ***Ahmed Samir Shehata, PhD***

### **Associate Professor**

Arab Academy for Science, Technology, and Maritime Transport

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### **PROFESSIONAL SUMMARY:**

An experienced PhD holder in Marine Engineering with 15 years of experience in the fields of theoretical and applied fluid mechanics, structural dynamics, structure design, aerodynamics, and thermodynamics as a Assistant Professor, research assistant, laboratory coordinator, and lecturer assistant. Expert on building numerical modeling and algorithms using commercial simulation and modeling software. Worked in many experimental and computational projects. Established a very strong theoretical understanding while teaching several undergraduate and postgraduate courses.

Main strength areas include Renewable Energy Systems, Desalination Systems, Computational Fluid Dynamics (CFD), Structural Analysis, Offshore Structure, Oil and Gas Engineer, Process Modeling, Multi-Physics Modeling, CAD, and Numerical Methods.

### **EDUCATION RECORD**

April 2013- January 2017

**PhD** in Department of Naval Architecture, Ocean and Marine Engineering University of Strathclyde, Glasgow, UK. ([www.strath.ac.uk](http://www.strath.ac.uk)), Thesis Title “Investigation and Improvement of Wells Turbine Performance- Fluid Analysis & 2<sup>nd</sup> Law of Thermodynamics Study”.

Fall 2007-Spring 2010

**M.Sc in Marine Engineering**, thesis entitled “Aerodynamic Performance of Wells Turbines Wave Energy Extractor”, Arab Academy for Science, Technology, and Maritime Transport ([www.aast.edu](http://www.aast.edu)), Alexandria, Egypt Overall Grade Point Average: 4.0 (Excellent with honor).

Fall 2001-Spring 2006

**Bachelor of Science**, Graduation Project under title “Offshore Design”, Arab Academy for Science, Technology, and Maritime Transport, Offshore and Marine Engineering, Alexandria, Egypt Overall Grade Point Average: 3.89 (Excellent with honor).

### **SOFTWARESKILLS**

Good command in using **AutoCAD, Auto SHIP, FLUENT, ANSYS, ICEM, Gambit, Star CCm+, MATLAB, AQWA and Open FOAM.**

## PUBLICATIONS

Magdy Tawfik, **Ahmed S. Shehata**, Amr Ali Hassan, Mohamed A. Kotb, “Renewable solar and wind energies on buildings for green ports in Egypt”, Environmental Science and Pollution Research, 2023, <https://doi.org/10.1007/s11356-023-25403-z>.

K A. Hassana, E O. Elgendi, **Ahmed S. Shehata**, M I. Elmasry, “ANN-based Seabed Soil Type Classification Economical Impact for Subsea Trenching Process”, 2023, 2022 5th International Conference on Civil Engineering and Architecture (ICCEA 2022).

A M Ellethy, **Ahmed S. Shehata**, A I Shehata, A Mehanna, “Modeling and assessment of accidental subsea gas leakage using a coupled computational fluid dynamics and machine learning approaches”, Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment, 2022, Pages 1-24, DOI: 10.1177/14750902221127755.

T Aborgela, **Ahmed S. Shehata**, M.A. Kotb, A. Radwan, “Heavy lift semi-submersible ships utilization in offshore wind turbines industry”, Energy Reports, Volume 8, Supplement 9, 2022, Pages 834–847, [doi.org/10.1016/j.egy.2022.07.097](https://doi.org/10.1016/j.egy.2022.07.097).

A M. Moustafa, **Ahmed S. Shehatab**, A I. Shehata, A A. Hanafy, “Reuse of Abandoned oil and gas wells for Power generation in Western Dessert and Gulf of Suez fields of Egypt” Energy Reports, Volume 8, Supplement 9, Pages 1349–1360, [doi.org/10.1016/j.egy.2022.07.067](https://doi.org/10.1016/j.egy.2022.07.067).

A H.Harby, **Ahmed S. Shehata**, R S.Afify, A A.Hanafy, “Experimental investigation for suction slots of wells turbine and shapes of point absorber”, Energy Reports, 2022, Volume 8, Supplement 9, Pages 1275–1287, [doi.org/10.1016/j.egy.2022.07.132](https://doi.org/10.1016/j.egy.2022.07.132).

M M. K Dawood, A I. Shehata, **Ahmed S. Shehata**, A E Kabeel, K Ramzy, A M. Abdalla, T Nabil, M Elsabahy, B E. Elnaghi, “Experimental investigation of a stepped solar still employing phase change material, a conical tank, and a solar dish”, International Journal of Energy Research, 2022, Pages 1-15, DOI: 10.1002/er.8337.

K A. Hassana, E O. Elgendi, **Ahmed S. Shehata**, M I. Elmasry, “Energy saving and environment protection solution for the submarine pipelines based on deep learning technology”, (2022) Energy Reports, Volume 8, Supplement 9, Pages 1261–1274.

Shimaa K.Elshehawy, Elbadr O.Elgendi, **Ahmed S. Shehata**, “ Construction waste management: For biodiesel production process”, Energy Reports, Volume 8, Supplement 9, November 2022, Pages 67-76.

Dawood, M.M.K., Omar, A.H., Shehata, A.I., **Ahmed S. Shehata** A.A. Taha, M.N. El-Shaib & M. Kamel, “3E enhancement of freshwater productivity of solar still with heater, vibration, and cover cooling”. Environmental Science and Pollution Research (2022). <https://doi.org/10.1007/s11356-022-20340-9>

Ahmed Bedair, **Ahmed S. Shehata**, Mostafa Hamad, Adil Tawfiq, “ A Novel Forced Air/ Water Injection System for Efficient Cooling of Solar Panels”, 2022, AIP Conference Proceedings, 2437, 020109-1–020109-14; <https://doi.org/10.1063/5.0092377>.

Abdullah Harby, **Ahmed S. Shehata**, Ahmed Hanafy, Rola Afify, “Experimental and Mathematical investigation of Wells Turbine under bi-directional flow”, 2022, AIP Conference Proceedings,

2437, 020113-1–020113-8; <https://doi.org/10.1063/5.0092574>.

Ali Salah, **Ahmed S. Shehata**, Mohamed A. kotb, Ibrahim Sadek, “Improved HHO Generator Design Approach to Supplement Fossil Fuel in Internal Combustion Engine”, 2022, AIP Conference Proceedings, 2437, 020009-1–020009-6; <https://doi.org/10.1063/5.0092316>.

Magdy Tawfik, **Ahmed S. Shehata**, Mostafa S. Hamad, Amr Ali Hassan, Mohamed A. kotb, “Energy Management Strategies for a marine port in Egypt”, 2022, AIP Conference Proceedings, 2437, 020093-1–020093-14; <https://doi.org/10.1063/5.0092277>.

Mohamed El-Sawy, **Ahmed S. Shehata**, A.H. Elbatran, Adil Tawfiq, “ Numerical simulation of flow in hydrokinetic turbine channel to improve its efficiency by using first and second-law efficiency analysis”, 2022, Ocean Engineering, 244 (2022):110400.

Ibrahim M. Ibrahim, Jacques Belanger, **Ahmed S. Shehata**, Ali I. Shehata, Andrew Davol ”Enhancement of Photovoltaic Power Farms Using a New Power Prediction Approach”, 2021, International Journal of Energy Research, 2021;1-25, doi:10.1002/er.7422.

H M. Elnajjar, **Ahmed S. Shehata**, A.H. Elbatran, M. F. Shehada, “Experimental and Techno-Economic Feasibility Analysis of Renewable Energy Technologies for Jabel Ali Port in UAE”, 2021, Energy Report, 7S5 (2021) pp. 116-136.

Ibrahim M. Ibrahim, **Ahmed S. Shehata**, Ali I. Shehata, Mohamed A. Abbassy, “Performance analysis of 10MWp grid-connected photovoltaic system in the Mediterranean climate using PVsyst software” International Journal of Smart Grid and Clean Energy, vol. 10, no. 4, October 2021: pp. 286-291.

Ibrahim, M., **Ahmed S. Shehata**, Elharidi, A., Hanafy, A., “Effect of PV Shadow on Cooling Load and Energy Consumption of Zone Toward Achieving NZEB”, IOP Conference Series: Earth and Environmental Science, 2021, 801(1), 012027.

A.M. Ragab, **Ahmed S. Shehata**, A.H. Elbatran, M.A. Kotb “Numerical optimization of hybrid wind-wave farm layout located on Egyptian North Coasts” 2021, Ocean Engineering, 234 : 109260.

Ellethy, A.M., **Ahmed S. Shehata**, Shehata, A.I., Mehanna, A. “Modelling and assessment of accidental gas release from damaged subsea pipelines” International Journal of Environmental Science and Development, 2021, 12(6), pp. 162–168.

A.M. Ragab, **Ahmed S. Shehata**, A.H. Elbatran, M.A. Kotb ” Preliminary Design of an Offshore Wind Farm on the Egyptian Coast” 2020 IEEE The 3rd International Conference on Power and Energy Applications (ICPEA) October 9-11, 2020, At: Busan, South Korea, P: 159-163, 978-1-7281-9028.

M.Z. Mansour, **Ahmed S. Shehata**, A. I. Shahata, A. F. Elsafty ”Techno Selection Approach of Working Fluid for Enhancing the OTEC System Performance” 2020 IEEE The 3rd International Conference on Power and Energy Applications (ICPEA) October 9-11, 2020, At: Busan, South Korea, P: 154-158, 978-1-7281-9028.

AM Hamouda, AS Abutaleb, SS Rofail, **Ahmed S. Shehata**, AH Elbatran” Comparative Analysis of Different Current Turbine Designs Based on Conditions Relevant to main canals of the Nile River in Egypt”, 2019, 20<sup>th</sup> Commemorative Annual General Event of AGA20, Proceedings of the

International Association of Maritime Universities (IAMU) Conference Book, P. 365-379, 30 October – 1 November 2019, ISSN: 2706-6762, Tokyo Japan.

A.H. Elbatran, OB Yaakob, Yasser M. Ahmed, **Ahmed S. Shehata**, “Numerical and experimental investigations on efficient design and performance of hydrokinetic Banki cross flow turbine for rural areas”, 2018, Ocean Engineering, 159 : 437-456 .

**Ahmed S. Shehata**, Q. Xiao, M.A. Kotb, M. Selim, A. H. EL-Batran, D. Alexander, “Effect of passive flow control on the aerodynamic performance, entropy generation and aeroacoustic noise of axial turbines for wave energy extractor”, 2018, Ocean Engineering, 157 : 262-300 .

**Ahmed S. Shehata**, Q. Xiao, M. Selim, A. H. EL-Batran, M. F. Shehadeh, D.Alexander, 2018. “Reply to: Discussion on “performance analysis of wells turbine blades using the entropy generation minimization method” by Shehata, A. S., Saqr, K. M., Xiao, Q., Shahadeh, M. F. and Day, A”, Renewable Energy, 118, 402-408.

A.H. Elbatran, Yasser M. Ahmed, **Ahmed S. Shehata**, 2017. “Performance study of ducted nozzle Savonius water turbine, comparison with conventional Savonius turbine”, Energy 134, 566-584.

**Ahmed S. Shehata**, Q. Xiao, M. M. Selim, A. H. EL-Batran, D. Alexander, 2017. “Enhancement of performance of Wave Turbine during Stall Using Passive Flow Control: First and Second Law Analysis”, Renewable Energy, 113, 369-392.

Mohamed M Selim, Roy P Koomullil, **Ahmed S Shehata**, “Incremental approach for radial basis functions mesh deformation with greedy algorithm”, 2017, Journal of Computational Physics, 340 : 556–574.

**Ahmed S. Shehata**, Q. Xiao, K. M. Saqr, A. Naguib, D. Alexander, “Passive flow control for aerodynamic performance enhancement of airfoil with its application in Wells turbine – Under oscillating flow condition”, 2017, Ocean Engineering, 136 : 31-53 .

**Ahmed S. Shehata**, Q. Xiao, M.N. El-Shaib, A. Shrara, D. Alexander, “Comparative analysis of different wave turbine designs based on conditions relevant to northern coast of Egypt”, 2017, Energy, 120 : 450-467 .

**Ahmed S. Shehata**, Q. Xiao, K.M. Saqr, D. Alexander, “Wells turbine for wave energy conversion: a review”, 2017, International Journal of Energy Research, 41(1), 6-38.

**Ahmed S. Shehata**, K. M. Saqr, Q. Xiao, M. F. Shehadeh and A. Day, "Performance Analysis of Wells Turbine Blades Using the Entropy Generation Minimization Method", 2016, Renewable Energy :86, 1123-1133.

**Ahmed S. Shehata**, K. M. Saqr, M. Shehadeh, Q. Xiao and A. H. Day, "Entropy Generation Due to Viscous Dissipation around a Wells Turbine Blade: A Preliminary Numerical Study", 2014, Energy Procedia 50: 808-816.

Mohamed A .Kotb, Amr Ali, Yasser A .Razzak and **Ahmed S. Shehata**, "Offshore Wells Turbines Performance Assessment " , Nov.2010, Port Said Engineering Research journal PSERJ, Port Said, Egypt.

## WORK EXPERIENCE

**04/2022 – Current** Head of Marine and Offshore Engineering Department, College of Engineering & Technology, Arab Academy for Science, Technology, and Maritime Transport, Alexandria, Egypt.

**02/2021 – Current** Associate Professor, College of Engineering & Technology, Arab Academy for Science, Technology, and Maritime Transport, Alexandria, Egypt.

**01/2017 – 01/2021** Assistant Professor, College of Engineering & Technology, Arab Academy for Science, Technology, and Maritime Transport, Alexandria, Egypt.

- Create and Work on a Development Plan for the Department of Marine and Offshore Engineering, College of Engineering and Technology (Advertising- Cooperation- Dual Degree- Training and Employment Opportunities- Student Activities- Accredited Training Courses- Advanced Smart and Green Maritime Services Center).
- Founder and Chairman of the renewable energy research group named ‘Sustainable Energy Research Group (SERG)’.
- Board Member of the international journal “Environmental Sciences & Sustainable Development”.
- Certified Scottish Qualifications Authority (SQA), 9Di **Assessor** and **Verifier** Certification. Dudhope Castle Ltd - Scotland UK.
- Taught undergraduate courses: *Computational Fluid Dynamic, Design and Construction of Offshore Structures, Engineering Drawing and Projection, Maintenance Planning, and Underwater Technology.*
- Taught postgraduate courses: *Advanced Computational Methods, Marine Renewable Energy, Advanced Underwater Technology, Subsea Pipelines and Structural Design of Offshore Structures, Research Methodology.*
- Supervising final year graduation projects.
- Supervising postgraduate research students.
- Paper and administrative work (such as Department laboratory development committee, Head of department sports committee, Organizing scientific trips for undergraduate students, Head of department Final Exams committee, Head of department Quality assurance unit committee, and Academic advisor for postgraduate studies ) and other activities in the department.
- Leading project team to use the CFD to improve the drug delivery systems of chemotherapy for cancer.
- Collaborating with researchers from Virginia Tech University and Helwan University build a full size model test for wave and current energy at the Norse coast of Egypt.
- Leading project team to study the marine energy potential in Mediterranean-sea, Red-sea and Nile-river, and to establish the methods and techniques to extract the maximum energy from the marine energy systems according to the Egyptian operating condition parameters.
- Formulated several STDF and Erasmus+ proposals as Co-Pi that targeted various applications.

**2012 – 2016** **Research/Teaching Assistant**, Department of Naval Architecture, Ocean and Marine Engineering (NOME) University of Strathclyde, Glasgow, UK.

- Research Member Computational Fluid Dynamics and Fluid Structure Interaction Research Group.
- Broad experience in High performance computer, 3D wave maker tank, design and load testing.

**2007- 2011**      **Assistant Lecturer**, College of Engineering & Technology, Arab Academy for Science, Technology & Maritime Transport (AASTMT), Alexandria, Egypt.

- Taught undergraduate courses: (Marine engineering- Diesel engines - Marine and offshore simulation- Introduction to offshore engineering- Offshore engineering Offshore design and Construction – Oil and Gas production- Under water technology- CFD).
- Senior projects advisor
- Student advising and administrative work (such as ISO committee, scheduling committee, status report for marine Engineering department, Final Exams committee .....etc) and other activities in the department.
- Sharing in ABET Self Study Report Preparation.

**Fall 2003**      **Cadet engineer**, Finished my practical seagoing term of 6 months with AIDA IV, the Arab Academy's practical training ship, where the different skills of watch keeping, marine engineering, marine diesel, fire prevention and detection, marine safety on a marine facility with hands-on practical approach have been introduced and enforced all along the different trips in the Red Sea and the Mediterranean Sea (toward Tunisia). This qualifies me for the Third Engineer Officer Certificate of Competency Exam.

## **ACTIVITIES AND TRAINING EXPERIENCE**

- Three Weeks Training on Floating Dock for maintenance of AIDA IV Ship.
- One Month Training in engine room simulator (D P S 100 MC) on watch-keeping duties.
- Five Days Participated in Educational Skills course (AASTMT 17-21 Aug. 2008).
- Three Days Training on “Teaching using Technology – MOODLE” (Oct. 2009).
- Participated in ABET workshop at Engineering College, AASTMT (March 2010).
- Attend the workshop organized by Public University of Navarra in Pamplona, Spain, within the framework of Erasmus+ programme, “Euro-Mediterranean Cooperation on Education Research and Business in Solar Energy” (2019).
- Participated in Social and Sporting Activities at Engineering College, AASTMT (2007 until now).
- Participated in college Seminars at Engineering College, AASTMT (2007 to present).
- Chairing a session at conference TMREES 2021 “Technologies and Materials for Renewable Energy, Environment and Sustainability, European Academy for Sustainable Development”.
- Chairing a session at conference TMREES 2022 “Technologies and Materials for Renewable Energy, Environment and Sustainability, European Academy for Sustainable Development”.

## **JUDGING AND REVIEWER ASSIGNMENTS**

- Reviewer of Ocean Engineering journal \_ joined in 2016 till now (Recognized reviewer certificate and outstanding reviewer certificate).
- Reviewer of Alexandria Engineering Journal \_ joined in 2016 till now.
- Reviewer of Applied Thermal Engineering journal \_ joined in 2017 till now (Recognized reviewer

certificate and outstanding reviewer certificate).

- Reviewer of Renewable energy journal \_ joined in 2017 till now (Recognized reviewer certificate and outstanding reviewer certificate).
- Participating judge in NASA Space Apps Alexandria 2017 on the 29<sup>th</sup> and 30<sup>th</sup> of April in the AAST.
- Reviewer of Journal of Ocean Engineering and Marine Energy \_ joined in 2019 till now.

## **FUNDED PROJECTS**

### **2014-2017 TEAM MEMBER AT TEMPUS - Tempus project (517401-2011-ES)**

Funded from European Commission through Tempus project (517401-2011-ES) to create laboratory for wave energy and establishment of a new Master of Science degree program in the field of renewable energy.

### **2018-2019 Supervision & Team Leadership (45,000 EGP Financial support)**

“My project- My start “is one of the programs that the Academy of Scientific Research and Technology (ASRT) launched for funding graduation projects for students of the final years of applied faculties. Funded from ASRT to create an experimental model for OTEC\_Closed cycle system.

### **2019-2020 Supervision & Team Leadership (75,000 EGP Financial support)**

“My project- My start “is one of the programs that the Academy of Scientific Research and Technology (ASRT) launched for funding graduation projects for students of the final years of applied faculties. Funded from ASRT to create an experimental model for Wave Energy Extractor System (oscillating water system “Wells Turbine” and the point absorber system “Floating Buoy”).

## **LANGUAGE SKILLS**

- Arabic: Mother Language.
- English: V. Good spoken and written.

## **AWARDS**

- First of my Graduate College in all terms.
- Dean’s list of First highest GPA in all terms.
- Two prizes in "cultural & Social Activities" and Prize in football.
- Prize in "AIDA IV" for (Best student & Cultural& Social Activities).
- I was Honored for my Superiority in The Engineer’s Day 2006, “Engineers Syndicate“.
- Honored in Eni Award 2017 SCIENTIFIC SECRETARIAT \_ Prize section: Energy Transition.
- Award of excellence in Scientific Research from 2016 till now (Four times).
- Best paper award in conference TMREES 2021 “Technologies and Materials for Renewable Energy, Environment and Sustainability, European Academy for Sustainable Development”
- Three Best papers award in conference TMREES 2022 “Technologies and Materials for Renewable Energy, Environment and Sustainability, European Academy for Sustainable Development”

## **SUPERVISION\_ MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY**

- 1- Optimization of Hybrid Wind Wave Farm Layout Located in Egyptian Coasts.
- 2- Solar-boosted Ocean Thermal Energy Conversion (OTEC) Offshore Platform.
- 3- Abatement of Air Pollution at a Jebel Ali Port Utilizing Shore Side Electricity and Renewable Energy.
- 4- Modeling & Optimization of Water Desalination Systems Utilizing Waste heat recovery on Ships.
- 5- Enhancement of Performance of the Roll Stabilization Systems used for Ships.
- 6- Reusing Abandoned Oil and Gas Wells for Co-Generate Power and Water Desalination.
- 7- Renewable energy extractor work as a Breakwater.
- 8- Reduction of vortex-induced vibration in marine riser by using modified (optimized) fairing.
- 9- Hydrogen-fueled internal combustion engines for Marine Applications.
- 10- Predictive Maintenance for Upstream Oil and Gas.
- 11- Tidal Range Energy Resource and Optimization for a Low Head Bidirectional Tidal Turbine.
- 12- Power Prediction and Set Selection of Solar Power Plants Site in Egypt using a Solar Performance Modeling Software and an Actual Solar Field Data.
- 13- Smart Guidance System for ROV Manipulator Arm Control Unit using Stereo Camera and Virtual Reality in Marine Application.
- 14- Approaches for Integrating Renewable Energy Technologies in Oil and Gas Operations.
- 15- Enhancement of Experimental Design of a Wave Energy Extraction systems for Egyptian Coasts.
- 16- Ocean thermal energy application technologies for Autonomous Underwater Vehicle.
- 17- Design and Simulation of a Geothermal–Solar Combined Chimney Power Plant for Continuous Power Generation.
- 18- Marine Hydrogen for Green Ports.
- 19- Enhancing the performance of trenching underwater excavation process using image regression machine learning technology.
- 20- Evaluate the economic, performance, and environmental impacts of using biodiesel in construction equipment.
- 21- Guidelines and Cost-Benefit Analysis of the Structural Health Monitoring Implementation in Offshore Structures.

### **GENERAL INFORMATION:**

**Date of birth:** 25 / 06 / 1984

**Nationality:** Egyptian

**Gender:** Male

**Marital Status:** Married

#### **ORCID:**

<https://orcid.org/0000-0001-9984-8295>

#### **Scopus:**

<https://www.scopus.com/authid/detail.uri?authorId=56315620500>

