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Emad Gamal Barakat Hussein

Education:

1- **M.Sc. in Mechanical Engineering** **January 2016, Assiut University**

- **Cumulative grade point average on M.Sc. coursework:** 81.8 %.
- **Thesis Title:** "*Effect of Flow Passage Configurations on the Performance of Proton Exchange Membrane Fuel Cells (PEMFCs)*".

2- **B.Sc. in Mechanical Engineering** **June 2009, Assiut University**

- **Grade:** Very Good with the honor degree.
- **Cumulative grade point average:** 81.43 % [**Ranked 5th** on the whole department of Mechanical Engineering]
- **Graduation Project**: Design and Analysis of Fuel Cells.
  - **Grade**: Distinction

Research Experience:

- **Postgraduate Researcher [M.Sc. student, September 2009 - Jan 2016 - Assiut University]**
  - **A Critical review on flow channel that developed for PEM fuel cells** to know all possible flow channel designs, compare between them, and improve to a new design.
  - **Developed a physical model** simulating the real events and processes describing the PEM fuel cell performance. The events and processes I simulated are carried out by:
    - **Developing a one straight flow channel model** to study the effect of such geometrical parameters (Direction of the reactants flow, Channel length, and Channel cross-section).
    - **Investigating the effect of the flow field pattern,** which done using a complete fuel cell modelling.

- **Validation process,** the model results obtained are validated with experimental data available in the literature.
- **The solving process**, which carried out using ANSYS FLUENT 14.0.
- **Result discussion** to get the best geometry for such PEM fuel cell.

Publications:

[1] **E. Barakat**, K. Ahmed, M. Ahmed, Ali K. Abdel-Rahman, and Ahmed Hamza H. Ali, "Influence of Parallel Flow Field Design on the Performance of PEM Fuel Cells", ICCE 2013: Proceedings of the International Conference and Exhibition on Clean Energy, Ottawa, Canada, Sept. 2013, pp. 268-282, http://iaemm.com/ , 2013.

[2] **Emad G. Barakat**, Ali K. Abdel-Rahman, Mahmoud A. Ahmed, and Ahmed Hamza H. Ali, "An Experimental Study of Operational Parameters on the Performance of PEMFC", ASME, IMECE2010, Vancouver, British Columbia, Canada, November 12–18, 2010, Volume 5: Energy Systems Analysis, Thermodynamics and Sustainability; NanoEngineering for Energy; Engineering to Address Climate Change, Parts A and B, Paper No. IMECE2010-39080, pp. 927-933; 7 pages, http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleID=1616243, 2010.

Teaching Experience:

- Tutor and marker of Fluid Mechanics I, Fluid Mechanics II, Hydraulic machines (Pumps and Hydraulic Turbines), Gas Dynamics, Steam Turbines, and Engineering Drawing, *every academic year.*
- I tutored for 4 semesters the following courses: Thermodynamics, Engineering Analysis, Engineering programming using FORTRAN, Computer-aided Drawing with AutoCAD, and Machine construction. In addition, I tutored Industrial ventilation for one semester.
  - Average teaching load (30 hrs/week). This is tutoring and office hours time. It does not include the marking time.
  - Tasks include solving examples, Supervision course projects, helping students during the office hours, and marking midterms.
  - Class size ranges from 30 to 145 students.

Undergraduate Summer Training Experience:

- **Upper Egypt Mills company [Summer of 2007]**
  - Recognized the Flour production process.
  - Oriented in the different areas of the production line as: Wheat mills, packing.
  - Worked on mills re-thread machine.
- **Daewoo Motors Egypt Aboul-Fotouh company [Summer of 2007]**
  - Recognized the car assembly process.
  - Detail tracing to the main four shops in the factory (Body shop, Paint shop, Assembly shop, and Quality & test shop).
- **Daewoo Motors Egypt Aboul-Fotouh company [Summer of 2008]**
  - Recognized the Utilities & Maintenance sector in the factory.

- Oriented between many mechanical machines and processes: Compressors, steam generation process, valves & heat exchangers.

Awards and Academic Achievements:

- **Awarded The Young Innovators Awards (YIA) prize** (6000 EGP) funded by Nahdet El Mahrousa Association with support from the Egyptian ministry of Industry for **the graduation project**. [2009]
- **Awarded Prof. Dr. Yehia Elheney Award** (200 EGP) for the best mark in heat transfer course from the mechanical engineering department in Assiut University. [2008]
- **Academic excellence awards** in the form of financial award of 200 EGP for the academic years 2004, 2005, 2006, 2007, and 2008. These awards are given to student with overall grade of DISTINCTION or VERY GOOD.

Attended Courses:

- **How to publish paper.** [Assiut University, February 2011].
- **Grant proposal and behind the scene of review process.** [Assiut University, April 2013].
- **Examination systems and students evaluation** [Assiut University, January 2014].

Computer Skills:

- Microsoft Office Word, Excel, and Power point.
- FORTRAN & Familiar with MATLAB.
- C++.
- ANSYS FLUENT 14.0.
- GAMBIT 2.4.
- SOLIDWORKS.
- Catia V5.
- AutoCAD 2D.
- Familiar with LABVIEW.

Languages:

- Arabic: Native Language.
- English: Very Good.

Professional Membership:

Syndicate of Egyptian Engineers.

References:

Prof. Dr. Ahmed Hamza H. Ali

Professor of Heat transfer - Mechanical Engineering department, Assiut University.

He was the Director for; Center of Research Excellence for Energy Resources and Management, Egypt-Japan University of Science and Technology (E-JUST), New Borg El-Arab City, Alexandria, Egypt.

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