

CURRICULUM VITAE

Personal Data

Full Name: Mohamed Elsayed Mohamed Emam Ali
Date of Birth: 07-12-1987.
Nationality: Egyptian
Scientific degree: PhD in Energy Resources Engineering on October 1st, 2018.
Academic position:

- Assistant professor at Shoubra faculty of engineering, Benha university, Egypt.
- Academic advisor at Energy and Sustainable Energy Engineering Department, Shoubra faculty of engineering, Benha university.

Marital Status: Married
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Academic Qualification:

Degree:	PhD in Energy Resources Engineering, From September 2015 to October 2018, From Egypt-Japan University of Science and Technology, Alexandria, Egypt.
Degree awarded:	01/10/2018
Field:	Energy Resources Engineering
Title of Thesis:	<i>Performance Enhancement of Concentrator Photovoltaic Systems Using Phase Change Materials.</i>
PhD Courses	Computational Fluid Dynamics, Sustainable Energy utilization, Advanced Fluid Mechanics, Advanced Computational Fluid Dynamics, Advanced Research Seminar on Energy Resources Engineering and Research Seminar on Recent Topics in Energy Resources Engineering. (with total GPA of 3.90 (A+))

Degree:	MSc. in Mechanical Engineering (Mechanical Power), From 2013 to 2015, Shoubra Faculty of Engineering, Benha University, Benha, Egypt.
Degree awarded:	12/01/2015
Field:	Mechanical Engineering (Renewable energies)
Title of Thesis:	<i>Effect of Cooling Parameters on Solar Cells Performance</i>
Master Courses	Theory of Measurements, Advanced Numerical Analyses, Advanced Thermodynamics, Advanced fluid mechanics, Advanced Mass and heat transfer and Air Conditioning and Refrigeration.

Degree:	B.Sc. in Mechanical Engineering (Mechanical Power), (Five years program from 2005 to 2010), Shoubra Faculty of Engineering, Benha University, Benha, Egypt
Year of Graduation:	29/07/2010
Field:	Mechanical Power Engineering with general grade of very good with honour degree (84 %).
Graduation Project:	<i>Cooling of Solar Cells</i>
Project Grade:	Excellent

Work Experiences:

- **Demonstrator** in the department of Mechanical Power Engineering, Benha University from Jan 11, 2011 to March 1, 2011.
- **Solider in Egyptian armed forces** March 1, 2011 until March 1, 2012.
- **Demonstrator** in the department of Mechanical Power Engineering, Benha University from March 1, 2012 to March 24, 2015.
- **Assistance Lecturer** in the department of Mechanical Power Engineering, Benha University from March 24, 2015 until September 14, 2015.
- **Full Time Student in Egypt Japan University of Science and Technology** to Study Ph.D. Degree at Energy Resources Engineering Department Under A Scholarship Provided by The Egyptian Ministry of Higher Education from September 14, 2015 Till September 18, 2017.
- **Representing Egypt Japan University of Science and Technology and presenting my paper** in the 8th International Exergy, Energy and Environment Symposium, May 2016 in Antalya, Turkey.
- **Representing Egypt Japan University of Science and Technology and presenting my paper** in the 10th International Conference on Energy Sustainability ES2016, ASME, June 2016 in Charlotte, North Carolina, USA.
- **A member** in the American Society of Mechanical engineers (ASME) from September 01, 2016 Till September 01, 2017.
- **Full Time Student in Tokyo Institute of Technology, Japan** to complete my PhD Study from September 18, 2017 Till May 31, 2018.
- **Assistant professor** in the department of Mechanical Power Engineering, Benha University from October 01, 2018 till now.
- **Academic advisor** at Energy and Sustainable Energy Engineering Department, Shoubra faculty of engineering, Benha university from December 24, 2018 till now.

Cooperation with industry:

- **I have participated** in the calibration of several measuring devices for a group of companies in the Combustion and Energy Technology Lab, Mechanical Engineering Department, Shoubra Faculty of Engineering, Benha University.
- **I have assisted in** the design and installation of two stand-alone off-grid solar water pumping systems for irrigation in remote areas.

Language's skills:

- **Mother Tongue:** Arabic
- **English:** Very good (IELTS (score 7.0)).

Research Experiences:

- I have published **eight** (ISI) journal articles, **five** conference papers, and **one** book chapter in high-impact factor international journals and prestigious conferences, and most of them have already been widely cited in a short period, as can be seen in the table below:

	Name	Impact factor	No. of published articles	Year
International. Journals	Energy conversion and management	9.709 (Q1)	Two articles	2018, 2021
	Solar Energy	5.742 (Q1)	Four articles	2017 to 2020
	Renewable Energy	6.274 (Q1)	One article	2019
	International Journal of Energy Research	3.741 (Q1)	One article	2020
International. Conferences	American Society of Mechanical engineers (ASME), USA	-	Four articles	2016 and 2017
	International Exergy, Energy and Environment Symposium, (IEEES), Turkey	-	One article	2016
Book chapters	Exergetic, Energetic and Environmental Dimensions, Elsevier Publisher	-	One chapter	2018

- I have **one** more journal article submitted to the **Solar Energy** journal it is now being reviewed.
- I am a **technical reviewer** in a group of prestigious journals such as “**Applied thermal engineering**”, “**International journal of energy research**”, “**Energy reports**”, and “**Renewable Energy Focus**” and have reviewed more than **30** journal articles in various fields so far.
- I have a strong background in **CFD** simulations gained through my Ph.D. studies and after going back to my home university.
- I have a strong background in **laboratory, experimental, numerical and practical experience** as well as **theoretical and engineering skills** that enable me to build and develop a laboratory that keeps up with state-of-the-art research in the field of concentrated solar power, thermal storage and energy conservation and management.
- I have the necessary skills and experience to carry out excellent research that is acceptable for publication in highly impacted journals or registered as a patent if possible.

List of Publications:

(A) International Journals:

1. Ismaila Zarma, **Mohamed Emam**, Shinichi Ookawara, Mahmoud Ahmed. Thermal management of concentrator photovoltaic systems using Nano-enhanced phase change materials-based heat sink. **International Journal of Energy Research** 2020;1-21. doi.org/10.1002/er.5504.
2. Mohamed Awad, Ali Radwan, O Abdelrehim, **Mohamed Emam**, Ahmed N Shmroukh, Mahmoud Ahmed. Performance evaluation of concentrator photovoltaic systems integrated with a new jet impingement-microchannel heat sink and heat spreader. **Sol Energy** 2020; 199:852-863. doi: 10.1016/j.solener.2020.02.078.
3. **Mohamed Emam**, Shinichi Ookawara, Mahmoud Ahmed. Thermal management of electronic devices and concentrator photovoltaic systems using phase change material heat sinks: Experimental investigations. **Renew Energy** 2019; 141:322–39. doi: 10.1016/j.renene.2019.03.151.
4. Ramy Rabie, **Mohamed Emam**, Shinichi Ookawara, Mahmoud Ahmed. Thermal management of concentrator photovoltaic systems using new configurations of phase change material heat sinks. **Sol Energy** 2019;183:632–52. doi:10.1016/j.solener.2019.03.061.
5. **Mohamed Emam**, Mahmoud Ahmed. Performance analysis of a new concentrator photovoltaic system integrated with phase change material and water jacket. **Sol Energy** 2018;173:1158–72. doi:10.1016/j.solener.2018.08.069.
6. **Mohamed Emam**, Mahmoud Ahmed. Cooling concentrator photovoltaic systems using various configurations of phase-change material heat sinks. **Energy Convers Manag** 2018. doi:10.1016/j.enconman.2017.12.077.
7. **Mohamed Emam**, Shinichi Ookawara, Mahmoud Ahmed. Performance study and analysis of an inclined concentrated photovoltaic-phase change material system. **Sol Energy** 2017;150:229–45. doi:10.1016/j.solener.2017.04.050.
8. Hesham Zaghoul, **Mohamed Emam**, M. A. Abdelrahman, M. F. Abd Rabbo. Optimization and parametric analysis of a multi-junction high-concentrator PV cell combined with a straight fins heat sink. **Energy Convers Manag** 2021;243:114382. <https://doi.org/10.1016/j.enconman.2021.114382>.
9. Ramy Rabie, **Mohamed Emam**, Ahmed Elwardany, Shinichi Ookawara, Mahmoud Ahmed. Performance evaluation of concentrator photovoltaic systems integrated with combined passive cooling techniques. **Sol Energy** 2021 (Under Review).

(B) International Conferences:

1. **Mohamed Emam**, Mahmoud Ahmed, Shinichi Ookawara, 2016, “Performance enhancement of concentrated photovoltaic system using phase-change material”, Proceedings of the **ASME 2016** 10th International Conference on Energy Sustainability, June 26-30, Charlotte, North Carolina, USA.
2. **Mohamed Emam**, Mahmoud Ahmed, Shinichi Ookawara, 2016, “Thermal regulation enhancement of Concentrated Photovoltaic systems using phase-change materials”,

Proceedings of the 8th International Exergy, Energy and Environment Symposium, **IEEEES-2016**, 1-3 May, Antalya-**Turkey**.

3. Ali Radwan, Radwan M. Elzoheiry, **Mohamed Emam**, Mahmoud Ahmed: An Investigation of a Novel Structure Polycrystalline Silicon Solar Cell for Concentrated Solar Power, Proceedings of the **ASME 2017** 11th International Conference on Energy Sustainability, ICOPE-2017, Charlotte, North Carolina, **USA**,
4. **Mohamed Emam**, Mahmoud Ahmed, Shinichi Ookawara, 2016, “Cooling of concentrated photovoltaic system using various configurations of phase-change material heat sink”, Proceedings of the **ASME 2016** International Mechanical Engineering Congress and Exposition, November 11-17, 2016, Phoenix, Arizona, **USA**.
5. **Mohamed Emam**, Mahmoud Ahmed, Ali Radwan, 2017, “Analysis of a new hybrid water-phase change material heat sink for low concentrated photovoltaic systems”, **ASME 2017**, International Mechanical Engineering Congress & Exposition, June 26-30, 2017, Tampa, Florida, **USA**.

(C) Book Chapters:

1. Ali Radwan, **Mohamed Emam**, Mahmoud Ahmed: Section 2, Energy Systems and Analyses, Chapter 16, Comparative Study of Active and Passive Cooling Techniques for Concentrated Photovoltaic Systems, hand book edited by Ibrahim Dincer, Can Ozgur Colpan, Onder Kizilkan: and titled by Exergetic, Energetic and Environmental Dimensions, 1st Edition. Hardcover ISBN: 9780128137345. **Elsevier Publisher**.

(D) Local Journals:

1. TS Hussein, **M Emam**, AAA Attiaa, MF Abd Rabbo. Experimental Evaluation Of A New Design Of Heat Pipe-Based Heat Sink For Passive Cooling Of Photovoltaic Systems. Engineering research journal (erj), Journal Homepage: www.feng.bu.edu.eg, Vol. 1, No. 40 April 2019. pp.39-47.

Current Research interests:

- After returning to my home university, I actively participate in the supervision of many postgraduate students, as well as in many research teams working on several research points that cover the following research areas:

Field	Research point	Methodology	
		Exp.	Num.
Energy efficiency in buildings.	Innovate and test new building facade designs combined with a semi-transparent photovoltaic glazing to enhance energy efficiency in buildings.	✓	✓
	Exergetic and numerical analysis of multi-generation systems combines a solar thermal energy storage unit and a geothermal heat pump (GHP) used for heating and/or cooling of buildings.	✓	✓
Energy storage systems	Thermal energy storage using phase change materials (<u>low</u> temperature range) for buildings heating, cooling and domestic applications.	✓	✓

	Thermal energy storage using molten salts (<u>high</u> temperature range) for electricity generation applications.	✓	✓
	Improving the electrical energy storage capabilities of Li-ion batteries used for portable electronics, electric vehicles and aerospace applications using different techniques.	✓	-
Energy management of Concentrated PV cells	Enhancing the thermal and electrical performance of concentrator single-junction solar cells using phase change material cooling and heat pipe-based heat sinks.	✓	✓
	Thermal regulation of concentrator multi-junction solar cells using various active and passive cooling techniques such as different configuration of Microchannel -based heat sink (single and two-phase flow) and various designs of aluminum-based heat sink.	✓	✓
	Investigating the overall performance of a hybrid Multijunction-thermoelectric generator system under different operating scenarios.	-	✓
Solar water desalination applications	Boosting the productivity of Solar water desalination techniques via innovating and testing new designs of solar still operating under Concentrated solar energy.	✓	-
	Improving the productivity of RO membranes by regulating the temperature of the saltwater feed using solar energy and different heat exchanger designs.	✓	-

Research projects:

- **A Supervisor** of a research project funded by the ministry of higher education (Management of supporting excellence), **Egypt** under the title of “Concentration and storage system of solar energy in a salt tank for use in water vapor generation used for electricity generation applications when applied in a large scale” from November 2019 to November 2020.
- **A member** in a research project funded by Tiabah University (Deanship of Scientific Research), **KSA** under the title of “Thermal management of a highly-concentrator triple-junction solar cell combined with a thermoelectric generator using different cooling techniques” started at December 2020 till December 2022.

Courses Assisting in Teaching:

- Renewable energies and environment protection
- Energy storage systems
- Energy economics
- Advanced numerical analyses.
- Computer applications in fluid mechanics
- Energy conservation and management.
- Energy systems design
- Solar cells fundamentals
- Solar energy systems
- Water desalination

Important links:

- Google scholar account:
<https://scholar.google.com.eg/citations?user=WS50Ds4AAAAJ&hl=en>

- ResearchGate account:
https://www.researchgate.net/profile/Mohamed_Emam7
- Scopus account:
<https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=57192233896&zone=>
- The recently published research entitled: "*Thermal management of photovoltaic systems using new configurations of phase-change material heat sinks*" has received much praise and appreciation from specialized international media, as in the following link:
“https://www.pv-magazine.com/2020/08/17/testing-cpm-based-passive-cooling-for-cpv-systems/?utm_source=dlvr.it&utm_medium=facebook”.