Prof. PhD.Adel A. Eidan

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EDUCATION

- BS.c in Mechanical Engineering (A/C and Refrigeration systems), University of Technology, 2000.
- MS.c in Mechanical Engineering, (A/C and Refrigeration systems), University of Technology, 2003.
- Ph.D in Mechanical Engineering, Thermal Mechanics (A/C and Refrigeration systems), Basrah University, 2016.

PROFESSIONAL EXPERIENCE

Academic Employment

- 2002-2005 External lecturer, Department of Mechanical Engineering in University of Technology.
- 2005-1/9/2022 faculty member in Department of Machines and Equipment Techniques, Technical Institute of Najaf.
- 2009-2010 Head of Department of Machines and Equipment Techniques - Technical Institute of Najaf.
- 2017-2018 Head of Department of Machines and Equipment Techniques - Technical Institute of Najaf.
- 2018-2022 Dean Assistance for Scientific and Student Affairs - Technical Institute of Najaf.
- 1/9/ 2022- present, faculty member in Department of Aeronautical Engineering. Technical Engineering College-Najaf
- 2/1/ 2023- present, Head of Department power mechanics Engineering. Technical Engineering College-Najaf

Teaching Experience

Assistant lecturer, lecturer and Assist. Prof in Department of Machines and Equipment Techniques, Technical Institute of Najaf, and Prof. in Department of Aeronautical Engineering, Technical Engineering College-Najaf from 2005 to 2025. The teaching experience includes Engineering courses such as thermodynamics, heat transfer, Air conditioning and refrigeration plant, Mechanical drawing, two phase flow, PCM, Solar energy, Cryogenics systems for undergraduate and postgraduate (PhD and MSc courses)

Research Interest Areas

Heating Ventilation and Air-Conditioning, Turbulence Modeling, Computational Fluid Dynamics, Numeric, Numerical Modeling, Fluid Mechanics, Numerical Simulation, Numerical

Analysis, Modeling and Simulation, Thermal Engineering, Heat Exchangers, Finite-Difference Scheme, Solar energy, Phase change materials, Nano fluids, Heat pipe.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Society Memberships

- IEEE, 2016-present
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), 2016-present.

Editorial and Reviewing Service

Journals:

- Reviewer for - Journal of ENERGY AND BUILDINGS, Case study in thermal engineering, Energy, Helyon, Energy storge, Renewable energy, Elsevier
- Reviewer for - Journal of Building Simulation, Springer.
- Reviewer for - INTERNATIONAL JOURNAL OF AMBIENT ENERGY. Taylor and Francis Ltd.
- Reviewer of International Conference on Achieving the Sustainable Development Goals conference.
- Reviewer of Conference on Science and Technology for Early Career Researchers and Postgraduate Students
- Reviewer of Al-Noor International Conference for Science and Technology
- Reviewer of International Conference On Scientific And Humanitarian Studies
- Reviewer of International Conference of Computer and Applied Sciences
- Reviewer of International Conference on Sustainable Engineering and Technology (INTCSET)
- Reviewer of International Engineering Conference (IEC)

PUBLICATIONS

Journals

1- MJ Alshukri, AA Eidan, SI Najim. (2021) "Thermal performance of heat pipe evacuated tube solar collector integrated with different types of phase change materials at various location" Renewable Energy 171, 635-646

2- MJ Alshukri, AA Eidan, SI Najim, (2021)"The influence of integrated Micro-ZnO and Nano-CuO particles/paraffin wax as a thermal booster on the performance of heat pipe evacuated solar tube collector" Journal of Energy Storage 37, 102506

3- Najaam, A., Alsahlani, A., Eidan, A., (2021) "Experimental Investigation on Performance of Fresnel lens Concentrator in Iraqi Climate" *Al-Furat Journal of Innovation in Mechanical and Sustainable Energy Engineering, Vol. 1, No 2, pp. 55-63.*

4- A. H. Obaid and A. A. E., Assaad Al Sahlani, (2021) "Fresnel Lens Solar Concentrator to Utilize the Extreme Solar Intensity in Heat Exchanger Receivers*," J. Eng. Sci. Technol., Vol. 16, No. 5, pp. 3866–3879.*

5- *Adel A. Eidan, Mohammed J. Alshukri, Mohamed Al-fahham, Assaad Alsahlani, Dhurgham M. Abdulridha,(2021)"*Optimizing the performance of the air conditioning system using an innovative heat pipe heat exchange*" Case Studies in Thermal Engineering, Vol. 26.*

6- *AA Eidan, SE Najim, JM Jalil, (2016) "Experimental and numerical investigation of thermosyphone performance in HVAC system applications" Heat and Mass Transfer 52 (12), 2879-2893*

7- *AA Eidan, SE Najim, JM Jalil, (2017) "An experimental and a numerical investigation of HVAC system using thermosyphon heat exchangers for sub-tropical climates" Applied Thermal Engineering 114, 693-703*

8- A., Eidan, A., Al-Fahham, M., Hachim, D., Alsahlani, A., (2018) "Effect of Enhanced Evaporative Cooling on the Performance of Air-Conditioning in Severe Hot Weather" *Journal of Engineering and Applied Sciences, Vol. 13, No 6, pp. 6814-6822.*

9- AlSahlani, A., Eidan, A., (2018) “Controllable Vibrating System to Enhance the Performance of Heat Pipe Evacuated Tube Solar Collector” *Journal of Mechanical Engineering Research and Developments Vol. 41, No 3, pp. 67-73.*
10- Eidan, A., Alsahlani, A., Alwan, K., (2017) “Experimental Investigation on the Performance of Evacuated Tube Solar Collector with Wickless Heat Pipe Under Iraq Climatic Conditions’ *Advances in Natural and Applied Sciences. Vol. 11, No 11, pp. 11-18.*
11- Dhafer M. Hachim, Assaad Alsahlani, and Adel A. Eidan (2017) "Measurements of Wind and Solar Energies in Najaf, Iraq." *Advances in Natural and Applied Sciences, Vol. 11, No 9, pp. 110.*

12- Eidan, A., Alsahlani, A., Ahmed, A., Al-Fahham, M., Jalil, J., (2018) “Improving the Performance of Heat Pipe-Evacuated Tube Solar Collector Experimentally by Using Al2O3 and CuO/acetone Nanofluids” *Solar Energy, Vol. 173, pp. 780-788.*
13- Adel A. Eidan Kareem J. Alwan Assaad Alsahlani; Mohamed Alfahham (2017), “Enhancement of the Performance Characteristics for Air-Conditioning System by Using Direct Evaporative Cooling in Hot Climates” *Energy Procedia Vol. 142, pp. 3998–4003.*
14- Adel A Eidan, Sarah H Ali, Assaad Al Sahlani, Mohammed J Alshukri, Ali Mahmood Ahmed, Hussein A Z AL-bonsrulah, Vijayanandh Raja, Mohammed Al-Bahran (2022) "Effect of PCM material and vibration on the performance of evacuated tube solar collector" *International Journal of Low-Carbon Technologies*, Volume 17, Pages 1261–1270,
15- Madlool, N. A., Alshukri, M. J., Alsabery, A. I., Eidan, A. A., & Hashim, I. (2023). Numerical Analysis of Transfer of Heat by Forced Convection in a Wavy Channel. *International Journal of Renewable Energy Development, 12*(1), 155-165.
16- Mohammed J.Alshukri, Ahmed Kadhim, Hussein, Adel A.Eidan, Ammar I.Alsabery, (2022)"A review on applications and techniques of improving the performance of heat pipe-solar collector systems" Solar Energy, Volume 236, Pages 417-433
17- NS Mahdi, AA Eidan, HH Abada, M Al-Fahham, (2022) "Recent review of using nanofluid based composite PCM for various evacuated tube solar collector types" Australian Journal of Mechanical Engineering, 1-13
18- NS Mahdi, M Al-fahham, AA Eidan. (2021) "Influence of the adiabatic section thermal break on the thermal performance of a gravity-assisted heat pipe integrating with evacuated tube solar collector" AIP Conference Proceedings 2404 (1), 080022
19- AAESINJM Jalil, (2016) "ANALYSIS THE EFFECT OF THE WORKING FLUID AND FILLING RATIO ON THE THERMAL PERFORMANCEOF THERMOSYPHONEEXPERIMANTALY" Babylon First International Engineering Conference 1 (Issue (D)), 572-586
20- SA Abbas, AA Eidan, A Al Sahlani, (2022) "Solar Reactor Review" Journal homepage: http://iieta. org/journals/ijht 40 (3), 671-684.

21- SIN Mohammed J. Alshukri, Adel A. Eidan, (2021) "An Experimental Study on Micro-Enhanced TESM Incorporated Inside Evacuated Tube Solar Collector Equipped with Heat Pipe" Basrah Journal for Engineering 21 (3), 1-9
22- RH Hashim, SH Hammdi, AAA Eidan, (2022) "Evaporative Cooling: A Review of its Types and Modeling" Basrah Journal for Engineering Sciences 22 (1)

23- JMJ Adel A. Eidan, Saleh Ismail Najim, (2015) "Experimental Investigation of Thermosyphone Heat Exchanger on Dehumidification Enhancement for Hot and Humid Climates Used in HVAC Systems" First Conference for Engineering Sciences and Technology 2015 12 (Special Issue)
24- Raisan F. Hamad, Mohammed J. Alshukri, Adel A. Eidan, Ammar I. Alsabery, Numerical investigation of heat transfer augmentation of solar air heater with attached and detached trapezoidal ribs, Energy Reports, Volume 10,2023.

25- Mohammed J. Alshukri, Raisan Faris Hamad, Adel A. Eidan, Ahmed Al-Manea,Convective Heat Transfer Analysis in Turbulent Nanofluid Flow Through a Rectangular Channel with Staggered Obstacles: A Numerical Simulation, International Journal of Thermofluids, 2024,

26- Ahmed Mohsin Alsayah, Johain J. Faraj, Adel A. Eidan, The augmentation of the heat recovery by using evaporative cooling in HVAC applications: Experimental study, International Journal of Thermofluids, Volume 22, 2024,

27- Alsahlani, Assaad, Alsabery, Ammar I., Al-Khateeb, Amjed, Eidan, Adel A. and Alshukri, Mohammed J.. "Vibration suppression of smart composite beam using model predictive controller" Open Engineering, vol. 14, no. 1, 2024, pp. 20240001. https://doi.org/10.1515/eng-2024-0001

28- Maher A. R. Sadiq Al-Baghdadi,Nabeel Abdulhadi Ghyadh, Mohammed J. Alshukri, Sahib Shihab Ahmed, Adel A. Eidan, CFD modelling and thermal performance investigation of an industrial shell and tube heat exchanger operated with Al2O3 nanofluids, *AIP Conf. Proc.* 3092, 050005 (2024) https://doi.org/10.1063/5.0199599

29- Angham Fadil Abed, Raisan Faris Hamad, Adel A. Eidan, Mohammed J. Alshukri, Boosting storage collector efficiency with new corrugated absorbers: A numerical simulation approach, Cleaner Engineering and Technology, Volume 18, 2024.

30- Muna Ali Talib, Adel A Eidan, Ahmed Hasan Tawfeeq, Fatima Muhammed K AL-Fatlawe. Effect of Changing the Water Flow Rate on the Efficiency of Hybrid PV/T Uncovered Collectors without Glasses: Numerical Study, CFD Letters, Volume 16, 2024.

31- Dhafer Manea Hachim, Adel A Eidan, Mohammed J Alshukri, Mohamed Al-Fahham, Assaad Al-Sahlani, Ahmed Al-Manea, Raed Al-Rbaihat, Ali Alahmer. INTEGRATION OF THERMAL ENERGY STORAGE MATERIALS IN HEAT PIPE EVACUATED TUBE SOLAR COLLECTOR SYSTEMS FOR ENHANCED SOLAR THERMAL PERFORMANCE. Computational Thermal Sciences: An International Journal, 16 (6) 2024.

32- Ali Kareem Mohammed, Assaad A. Alsahlani, Adel A. Eidan, Numerical study of temperature distribution in a solar receiver with a focus on water heating in an internal helical tube, Desalination and Water Treatment, Volume 320, 2024,

33- Alsahlani, A., Al-Khateeb, A., Ahmed, M., Eidan, A.A. (2024). Active vibration control of piezoelectric composite plates using gain scheduling method. Revue des Composites et des Matériaux Avancés-Journal of Composite and Advanced Materials, Vol. 34, No. 5, pp. 557-563. https://doi.org/10.18280/rcma.340503.

STUDENTS SUPERVISED

MSc Students

1. Ahmad H. Najaam, July 2019 – June 2020. (ETC Najaf, Iraq)
Thesis title: "Modeling Of A Multi-Purpose Heating System By Using Solar Tracking And Fresnel Lens Concentrator".

2. Sarah H. Jabur, July 2019 – June 2020. (ETC Najaf, Iraq)
Thesis title: "Enhancing The Thermal Performance Of Heat Pipe Evacuated Tube Solar Collector Via Controllable Vibrating System"

3. Noora S. Mahdi July 2020 – October 2021. (ETC Najaf, Iraq)
Thesis title: *"An Experimental Study Of Axial Conduction Through An Evacuated Tube Heat Pipe Solar Collector Integrated With Phase Change Material"*

4. Sarah Abdulabbas July 2021. (ETC Najaf, Iraq)
Thesis title: " Thermal Analysis Of A Tubular Solar Reactor With Granular Flowing Media: Numerical And Experimental Study"

5. Jaafar Saleem July 2022. (EC Karabuk, Turkey)
Thesis title: " Improving Air-Conditioning Systems Numerically By Using Direct Evaporative Cooling In Severely Hot Weather".

PhD Students

1- Mohammed Jasim Saleh Alshukri July 2019 – October 2021. (Basrah, Iraq)
Thesis title: "Enhancement Of The Performance Of Heat Pipe Evacuated Tube Solar Collector Integrated With Different Types Of PCMs".

2- Rasha Hashim July 2022. (BEC Basrah, Iraq)
Thesis title: "Improving the performance of air-conditioning systems in severely hot weather experimentally and numerically by using direct and indirect evaporative cooling with thermosyphon heat exchangers"

3- Ahmed Mohsin Alsayah July 2024 . (ETC Baghdad, Iraq)
Thesis title: "Passive energy recovery with double effect of evaporative cooling for energy efficiency in HVAC systems applications".

4- Zahraa A. Faisal *Jun 2025-* (ETC Najaf, Iraq)

Energy efficient in HVAC system via indirect evaporative cooling integrated with Heat Pipe Heat Exchanger: "experimental and numerical study.

5- Noora S. Mahdi *July 2023- present* (ETC Najaf, Iraq)

Optimization and performance evaluation of different condenser designs in heat pipe heat exchangers for HVAC systems. Experimental and numerical investigations.