



CURRICULUM VITAE



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H-index: 13, Citations: 476, Publications: 30

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Personal details

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Educations

1. PhD of Renewable Energy, Universiti Kebangsaan Malaysia (UKM) 2026
Grade: Graduated on Time (GoT)
2. Master of Engineering Science, The University of Queensland (UQ), Australia 2022
Grade: Pass

3. Bachelor of Mechanical Engineering (Honours), 2020
Universiti Tenaga Nasional (UNITEN)
Grade: 3.92/4.00 (First Class Honours)

Field of Expertise

Renewable Energy; Solar Thermal; Photovoltaic/Thermal (PVT); Heat Transfer; Drying Technology

Working Experiences

- Senior Lecturer, Department of Mechanical and Manufacturing Engineering, Universiti Putra Malaysia June 2026 – Present
- Tenaga Akademik Muda (TAM), Universiti Putra Malaysia (UPM) Sept 2023 – June 2026
- Executive Engineer, Malaysia Airports Holding Berhad (MAHB) Apr 2023 – Sept 2023
- Enumerator, Universiti Putra Malaysia (UPM) Dec 2022 – Jan 2023
- Research Assistant, Universiti Kebangsaan Malaysia (UKM) Oct 2021 – March 2023

Professional Qualification/Membership/Affiliation

- Board of Engineers Malaysia (BEM)
- Malaysian Board of Technologist (MBOT)
- Malaysian Society of Agricultural and Food Engineers (MSAE)
- International Association of Engineers (IAENG)
- Member of World Society of Sustainable Energy Technologies (WSSET)

Publications

Published papers (As first-author):

1. **M. A. A. Rahmat**, U. Syafiq, M. H. Hamzah, N. M. Nawawi, H. Jarimi, and A. Ibrahim, "Advancing heat pump dryers for agricultural products processing: A critical review of drying chambers and systems," *International Journal of Refrigeration*, vol. 188, p. 106979, 2026, doi: <https://doi.org/10.1016/j.ijrefrig.2026.106979>. - **WOS Q1 (Published)**
2. **Rahmat, M.A.A.**, Ibrahim, A., Al-Arife, K.M. et al. Field-based experimental investigation of energy and exergy performances of a novel solar thermal air collector. *Sci Rep* 16, 6621 (2026). <https://doi.org/10.1038/s41598-026-37250-2> - **WOS Q1 (Published)**
3. **Afham Rahmat, M. A.**, Ibrahim, A., Syafiq Mustaffa, M. U., Al-Arife, K. M., Azeez, H. L., Ud Din, S. I., Jaber, M., & Elmnifi, M. (2025). Revolutionizing drying chambers for sustainable energy technologies in food and agriculture: A comprehensive review. *Sustainable Energy Technologies and Assessments*, 2025. <https://doi.org/https://doi.org/10.1016/j.seta.2025.104205>. - **WOS Q1 (Published)**
4. **Afham Rahmat, M. A.**, Ibrahim, A., Al-Arife, K. M., Syafiq Bin Mustaffa, M. U., Harmailil, I. O., & Ud Din, S. I. (2025). Experimental analysis on the effect of multi-level array hollow semi-stadium fins (HSSF) and baffles on solar thermal air collector. *Case Studies in Thermal Engineering*, 71, 106165. <https://doi.org/https://doi.org/10.1016/j.csite.2025.106165> – **WOS Q1 (Published)**
5. **Afham Rahmat, M. A.**, Ibrahim, A., Aziat Ishak, M. A., Syafiq, U., & Al-Arife, K. M. (2025). Numerical investigation of thermal and airflow profiles in diverse solar dryer chamber configurations. *Case Studies in Thermal Engineering*, 73, 106612. <https://doi.org/https://doi.org/10.1016/j.csite.2025.106612> – **WOS Q1 (Published)**
6. **Rahmat, M. A. A.**, Ibrahim, A., Mustaffa, M. U. S., Al-Arife, K. M., Din, S. I. U., & Ishak, M. A. A. (2025). Design and performance optimization of hollow semi-stadium fins (HSSF) at multi-level array configuration for solar air collector. *International Communications in Heat and Mass Transfer*, 166, 109154. <https://doi.org/https://doi.org/10.1016/j.icheatmasstransfer.2025.109154> - **WOS Q1 (Published)**
7. **Muhammad Aqil Afham Rahmat**, Hassan Mohamed, Ahmad Wafi Mahmood Zuhdi, Mohd Eqwan Bin Mohd Roslan; Developing a spreadsheet-based simulator for solar

rooftop installation assessment. AIP Conf. Proc. 24 April 2023; 2544 (1): 040052.
<https://doi.org/10.1063/5.0119883> - **SCOPUS Indexed (Published)**

Published papers (As co-author):

1. M. A. A. Ishak et al., "Wavy jet plate induced turbulence for enhanced thermo-fluid performance of jet impingement photovoltaic thermal (PVT)," Thermal Science and Engineering Progress, vol. 76, p. 104826, 2026, doi: <https://doi.org/10.1016/j.tsep.2026.104826> .**(Published)**, **Q1**
2. E. S. Alkaabi et al., "Experimental study of a double-pass solar air heater integrated with perforated PCM V-baffles for enhanced latent heat storage," Case Studies in Thermal Engineering, vol. 84, p. 108295, 2026, doi: <https://doi.org/10.1016/j.csite.2026.108295> .**(Published)**, **Q1**
3. Sahibzada Imad Ud Din, Adnan Ibrahim, Ahmad Fazlizan, Norasikin Ahmad Ludin, Muhammad Aqil Afham Rahmat, Muhammad Ashhad Shahid, Anwer.B. Al-Aasam, Mohd Afzanizam Mohd Rosli, Muhammad Amir Aziat Bin Ishak, "Heat transfer and flow analysis of a double-pass solar air heater with sandwich-structured PCM cylinders," Solar Energy, vol. 304, Jan. 2026, doi: 10.1016/j.solener.2025.114212. **(Published)**, **Q1**
4. M. A. A. bin Ishak, K. M. Al-Arife, M. A. A. Rahmat, S. I. U. Din, A. Singh, and A. Ibrahim, "Honeycomb checkered fins Photovoltaic Thermal (PVT): Numerical analysis and experiment validation," Case Studies in Thermal Engineering, vol. 75, p. 107095, 2025, doi: <https://doi.org/10.1016/j.csite.2025.107095> .**(Published)**, **Q1**
5. Din, S. I. U., Ibrahim, A., Fazlizan, A., Kazem, H. A., Sopian, K., Al-Aasam, Anwer. B., & Rahmat, M. A. A. (2025). Performance analysis of a photovoltaic double-pass solar air heater with staggered-Sandwich PCM cylinders as dual cooling and latent heat storage. Journal of Energy Storage, 132, 117739. <https://doi.org/https://doi.org/10.1016/j.est.2025.117739> **(Published)**, **Q1**
6. Ud Din, S. I., Ibrahim, A., Fazlizan, A., Ludin, N. A., Afham Rahmat, M. A., Ali, H., Djebara, A., & Noui, Z. (2025). Double-pass solar air heater with staggered vertical phase change material cylinders: Thermal performance evaluation. Applied Thermal

Engineering, <https://doi.org/https://doi.org/10.1016/j.applthermaleng.2025.126762>
(Published), **Q1**

7. Din, S. I. U., Ibrahim, A., Dol, S. S., Fazlizan, A., Rahmat, M. A. A., Azeez, H. L., Ahmed, B. O., Alkaabi, E. S., & Shahid, M. A. (2025). Thermohydraulic performance optimization of a novel double-pass solar air heater with vertical PCM-integrated cylinders: A comparative study. *Case Studies in Thermal Engineering*, 71, 106226. <https://doi.org/https://doi.org/10.1016/j.csite.2025.106226> (Published), **Q1**
8. Siti Nuraisyah Razali, Adnan Ibrahim, Ahmad Fazlizan, Anwer B. Al-Aasam, **Muhammad Aqil Afham Rahmat**, Muhammad Amir Aziat Ishak. "Superior thermal dissipation through natural convection in a passive cooling system using multidirectional tapered fin heat sinks (MTFHS)". *International Journal Of Renewable Energy Development (IJRED)* (2025). <https://doi.org/10.61435/ijred.2025.60742> (Published), **Q4**
9. Luqman Azeez, H., Ibrahim, A., Omer Ahmed, B., Al-Waeli, A. H. A., Jaber, M., & **Aqil Afham Rahmat, M.** (2024). Energy and exergy analysis of a novel collector design in a photovoltaic thermal system: An experimental study. *Applied Thermal Engineering*, <https://doi.org/10.1016/j.applthermaleng.2024.124125> (Published), **Q1**
10. Ismail, Firas Basim, **Muhammad Aqil Afham Rahmat**, Hussein A. Kazem, Abdulkareem Sh Mahdi Al-Obaidi, and Muhammad Syauqi Ridwan. "Maximizing energy via solar-powered smart irrigation: An approach utilizing a single-axis solar tracking mechanism." *Irrigation and Drainage* (2024). <https://doi.org/10.1002/ird.2937> (Published), **Q2**
11. Jaber, M., Ibrahim, A., Luqman Azeez, H., Omer Ahmed, B., Dol, S. S., & **Rahmat, M. A. A.** (2025). Energetic and exergetic investigation of an innovative solar collector: Experimental study. *Case Studies in Thermal Engineering*, 74, 106848. <https://doi.org/https://doi.org/10.1016/j.csite.2025.106848> (Published), **Q1**
12. M A Noor Zelan; Nabil M. Hidayat; Muhammad Umair; N. H. Nik Ali; Ezmin Abdullah; **M. A. A. Rahmat.** (2025). Enhancing the Performance of Bidirectional DC-DC Push Pull Converter with RC Snubber Circuits for Electric Vehicle Applications. <http://dx.doi.org/10.1109/SCOReD64708.2024.10872736> (Published), **Scopus-indexed**

13. Ismail, Firas Basim, Muhammad Idzmir Fahmy, Azher M. Abed, Hussein A. Kazem, Miqdam T. Chaichan, and **Muhammad Aqil Afham Rahmat**. "Malaysian Rainwater Harvesting System for In-House Power Generation." *Applied Mechanics and Materials* 922 (2024): 123-134. <https://doi.org/10.4028/p-LJjFi0> (Published), **Non-indexed**
14. Ismail, Firas Basim, Kareena Balan, Abdulkareem Abdulwahab, Hussein A. Kazem, Miqdam T. Chaichan, and **Muhammad Aqil Afham Rahmat**. "Enhancing Efficiency of Rural Cooking Stove: Numerical and Experimental Validation of Design and Development." *Engineering Headway* 8 (2024): 151-165. <https://doi.org/10.4028/p-idJmS8> (Published), **Non-indexed**
15. Ismail, F.B., Izzuan, M.F., Abdulwahab, A., Kazem, H.A. and **Rahmat, M.A.A.**, 2024. Design and Development of Natural Lighting System in Modern Malaysian Building. *Construction Technologies and Architecture*, 12, pp.97-110. <https://doi.org/10.4028/p-1H7VqR> (Published), **Non-indexed**

Chapter in Book:

1. bin Ishak, M. A. A., Ibrahim, A., & **Rahmat, M. A. A.** (2025). Energy Analysis of a Bifacial PVT Solar Collector Cooled by a Reversed Circular Flow Jet Impingement. In *Renewable Energy Technologies and Strategies in the Global Energy Transition* (Vol. 1499, pp. 103–112). American Chemical Society. <https://doi.org/doi:10.1021/bk-2025-1499.ch006> (Published)

Conferences & Academic Engagements

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|---|-----------------------------------|---------------|------|
| 1. 6 th Sustainability Challenge, Advancing Towards Decarbonization for Sustainable Future | Presenter (<i>Silver Award</i>) | University | 2025 |
| 2. 5 th ASEAN International Conference on Energy and Environment (AICEE) | Presenter and Committee | International | 2025 |

3. National Agricultural and Food Engineering Convention 2025 (NAFEC 2025)	Presenter(<i>Bronze Award</i>)	National	2025
4. 10 th SERI Colloquium	Presenter	University	2025
5. Program STEM Untuk Semua (PROFESSOR @SCHOOL)	Committee	National	2024
6. 2 nd International Conference on Sustainable, Renewable, and Energy Efficiency	Presenter	International	2024
7. 5 th SERI Publication Workshop	Participant	University	2024
8. Three Minute Thesis (3MT) competition	Presenter	University	2024
9. The 2 nd International Conference on The Future Sustainable Energy	Participant	International	2024
10. Final Year Project Competition	Presenter (<i>Best Technical Award</i>)	University	2020
11. Sukan Institusi Pendidikan Tinggi (SUKIPT) - Catur	Participant (University Representative)	National	2018
12. Masiswa - Catur	Participant (University Representative)	National	2018

Research Project Involvement

- Solar Driven Dc Heat Pump For Food Drying And Water Harvesting (Solardry-H20Gen) UKM 2026
- Green Heat Pump Dryer for Drying Algae UKM- PETRONAS 2025

• Double-Pass Solar Air Collector with Hollow Semi-Stadium Fins (HSSF) and Baffles	UKM	2023-2026
• GEGAR GEMPAK STEM	UKM	2025
• Development of Rapid Chopper for Pineapple Residue	UPM	2022-2023
• Passively Cool High Performance Photovoltaic Panel	UKM	2021-2023

References

1. Prof. Madya Dr. Mohd Idris Shah Ismail,

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UPM,

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