Name: Dr. Aung Myat, Ph.D.
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Department of Mechanical and Manufacturing Engineering
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Citizenship: Singapore

Education

- **Ph.D. in Mechanical Engineering**, National University of Singapore (2012)
- **M.Sc. in Mechanical Engineering**, National University of Singapore (2006)
- **B.Eng. in Mechanical Engineering**, Yangon Technological University (2004)

Academic & Professional Experience

- **Assistant Professor**, Tennessee State University (August 2024–Present)
- **Assistant Professor**, Southeast Missouri State University (August 2023–July 2024)
- **Assistant/Associate Professor**, Singapore Institute of Technology (July 2016–July 2023)
- **Scientist**, Experimental Power Grid Center (May 2012–June 2016)
- **Research Engineer**, National University of Singapore (March 2009–April 2012)

Research Interests

- *AI-Driven Thermal-Fluid Sciences*
- *Multiphase Heat Transfer*
- *Infrastructure Resilience*
- *HVAC&R and District Scale Energy System Digital Twins*
- *AI/ML Optimization*
- *Hybrid Thermal Energy Storage*
- *Battery and High Heat Flux Thermal Management*

Dr. Myat's work is built upon three pillars that integrate data-driven intelligence with experimental and numerical modeling:

- **Pillar I: Advanced Thermal-Fluid Sciences**: Multiphase heat transfer, multi-scale transport phenomena in porous media, and hybrid nanofluid-PCM thermal storage.
- **Pillar II: AI, Digital Twins & Optimization**: Real-time predictive control, digital twin–based HVAC systems, and deep learning for cooling load forecasting.
- **Pillar III: Battery Thermal Management & High-Heat-Flux Systems:** Advanced thermal management for batteries, power electronics, and other high-heat-flux systems through multiphysics modeling, thermal buffering, and intelligent control.

Research Activities & Accomplishments

Dr. Myat has secured **over $4.7 million** in external research funding from national and international agencies.

- **Funded Research Leadership**:
  - **NSF Excellence in Research ($956,696I 2025-2028)**: Co-PI investigating phonon polaritons for enhanced polymer thermal transport.
  - **NSF Research Initiation Award ($298,715| 2024-2026)**: PI developing Boltzmann-based models for porous media transport.
  - **TSU Seed Grant ($10,000 | 2024–2025)**: **Principal Investigator investigating nanofluid-based HVAC efficiency enhancements.**
  - **BCA Singapore R&D Challenge ($738,540 | 2023–2025)**: PI implementing AI-based optimization of chilled water systems.
  - **Green Building Grant ($728,546 | 2020–2023)**: Lead PI in energy analysis for the design and evaluation of the Dual Passive Displacement Coil System.
  - **EDGE Program Grant ($1,924,188 | 2020–2023)**: **Lead PI in thermal integration for the development of AI-driven** energy forecasting models for microgrid digital twins.
  - **Industry-Sponsored Award ($110,000 | 2018–2019)**: Principal Investigator for Singapore Power Digital, designing an HVAC Smart Damper for energy-efficient climate control.

Teaching Activities

Dr. Myat is dedicated to inclusive, hands-on mechanical engineering education:

- **Courses Taught at Tennessee State University**:
  - MEEN 5140 (Convection Heat Transfer),
  - MEEN 4150 (Heat Transfer),
  - ENGR 2010 (Thermodynamics),
  - ENGR 2120 (Dynamics),
  - ENGR 3400 (Numerical Analysis).
  - MEEN 4021 (Thermal Fluid Systems Lab)
- **Course Taught at other universities**
  - SIE1109 Heat Exchanger and Heat Pump
  - SIE2111 Fluid Mechanics
  - SIE2117 Heating Ventilation and Air Conditioning 1
  - SIE3118 Heating Ventilation and Air Conditioning 2
  - MEC6011 District Cooling Systems
  - MN170 Engineering Materials and Design
  - MN203 Industrial Materials and Processes 1
  - MN220 Engineering Economics
  - MN383 Fluid Power

- MN412 Industrial Capstone Projects
- EP361 Engineering Thermodynamics
- EP363 Fluid Mechanics
- EP365 Heat Transfer

Publications and Scholarly Activities

- **Book Author**:
  - *District Cooling Systems: A Practical Approach and Application for Design, Operations, and Best Practice*, Routledge (2025).
- **Book Chapter**:
  - *Application* of Artificial Intelligence in air conditioning systems," *Recent Updates in HVAC Systems*, IntechOpen (2022).
  - Vapor compression cycles for food refrigeration, *Comprehensive Food Refrigeration Fundamentals*, Elsevier (2025).
  - Thermodynamics, *Comprehensive Food Refrigeration: Fundamentals*, Elsevier (2025).
- **Patent**: "Method and apparatus for the waste-heat-driven desiccant dehumidifier" (PCT-SG2011-000028).
- **Citations**: 940+ on Google Scholar with an h-index of 12.
  - Google Scholar

Publications

Journal Publications

1. Myat, A., Rahman, M. M., & Akbar, M. (2025). Nanofluid-Enhanced HVAC&R Systems (2015–2025): Experimental, Numerical, and AI-Driven Insights with a Strategic Roadmap. Sustainability, 17, 7371. https://doi.org/10.3390/su17167371
2. Jeggathishwaran, J., Myat, A., Soh, Y. L., Hui, A., Wang, P. C., & Steve, K. J. (2025). Experimental study of the application of a passive displacement dual coil cooling system in a tropical climate: A case study in a hotel environment. Journal of Building Engineering. https://doi.org/10.1016/j.jobe.2025.112252
3. Myat, A., Kondath, N., Soh, Y. L., & Hui, A. (2024). A hybrid model based on multivariate fast iterative filtering and long short-term memory for ultra-short-term cooling load prediction. Energy and Buildings. https://doi.org/10.1016/j.enbuild.2024.113977
4. Kondath, N., Myat, A., Soh, Y. L., & Hui, A. (2024). Enhancing day-ahead cooling load prediction in tropical commercial buildings using advanced deep learning models: A case study in Singapore. Buildings, 14(2). https://doi.org/10.3390/buildings14020397
5. Myat, A., Yang, J., Jeggathishwaran, P., Soh, Y. L., Hui, A., Wang, P. C., & Steve, K. J. (2023). Mathematical modeling of Passive Displacement Dual Cooling Coil (PDDCC) system in a tropical climate. Energy and Buildings, 294, 113212. https://doi.org/10.1016/j.enbuild.2023.113212
6. Steve, K. J., Myat, A., Hui, A., Soh, Y. L., Jeggathishwaran, P., Wang, P. C., Soo, J. H., Nicholas, T., Neo, P. H., & George, N. (2023). Experimental and numerical investigation of a novel Passive

Displacement Dual Cooling Coil (PDDCC) system in Singapore. Building and Environment. https://doi.org/10.1016/j.buildenv.2023.110302

7. Thangavelu, S. R., Myat, A., & Khambadkone, A. (2017). Energy optimization methodology of multi-chiller plant in commercial buildings. Energy, 123, 64–76. https://doi.org/10.1016/j.energy.2017.01.116
8. Thangavelu, S. R., Nutkani, I. U., Hwee, C. M., Myat, A., & Khambadkone, A. (2015). Integrated electrical and thermal grid facility—Testing of future microgrid technologies. Energies, 8(9), 10082–10105. https://doi.org/10.3390/en80910082
9. Thu, K., Chakraborty, A., Kim, Y.-D., Myat, A., Saha, B. B., & Ng, K. C. (2013). Numerical simulation and performance investigation of an advanced adsorption desalination cycle. Desalination, 209–218. https://doi.org/10.1016/j.desal.2012.04.021
10. Myat, A., Ng, K. C., Thu, K., & Kim, Y.-D. (2013). Experimental investigation on the optimal performance of zeolite-water adsorption chiller. Applied Energy, 102, 582–590. https://doi.org/10.1016/j.apenergy.2012.08.005
11. Thu, K., Kim, Y.-D., Myat, A., Chakraborty, A., & Ng, K. C. (2013). Performance investigation of advanced adsorption desalination cycle with a condenser–evaporator heat recovery scheme. Desalination and Water Treatment, 51, 150–163. https://doi.org/10.1080/19443994.2012.693659
12. Shahzad, M. W., Myat, A., Chun, W.-G., & Ng, K. C. (2013). Bubble-assisted film evaporation correlation for saline water at sub-atmospheric pressures in the horizontal-tube evaporator. Applied Thermal Engineering, 50(1), 670–676. https://doi.org/10.1016/j.applthermaleng.2012.07.003
13. Thu, K., Kim, Y.-D., Myat, A., Chun, W.-G., & Ng, K. C. (2013). Entropy generation analysis of an adsorption cooling cycle. International Journal of Heat and Mass Transfer, 60, 143–155. https://doi.org/10.1016/j.ijheatmasstransfer.2012.12.055
14. Kim, Y.-D., Thu, K., Myat, A., & Ng, K. C. (2013). Numerical simulation of solar-assisted multi-effect distillation desalination systems. Desalination and Water Treatment, 51, 1242–1253. https://doi.org/10.1080/19443994.2012.695044
15. Myat, A., Thu, K., Kim, Y.-D., & Ng, K. C. (2013). Performance investigation of a temperature cascaded cogeneration system equipped with adsorption desalination unit. Desalination and Water Treatment, 51, 1900–1907. https://doi.org/10.1080/19443994.2012.714580
16. Myat, A., Thu, K., Kim, Y.-D., & Ng, K. C. (2013). Performance of a temperature cascaded cogeneration system producing steam, cooling and dehumidification. Desalination and Water Treatment, 51, 1915–1921. https://doi.org/10.1080/19443994.2012.694232
17. Myat, A., Thu, K., Kim, Y.-D., Saha, B. B., & Ng, K. C. (2012). Entropy generation minimisation: A practical approach for performance evaluation of temperature cascaded cogeneration plants. Energy, 46(1), 493–521. https://doi.org/10.1016/j.energy.2012.07.062
18. Myat, A., Thu, K., & Ng, K. C. (2012). Experimental investigation on the performance of a low-temperature waste heat-driven multi-bed desiccant dehumidifier and minimization of entropy generation. Applied Thermal Engineering, 39, 70–77. https://doi.org/10.1016/j.applthermaleng.2012.01.041
19. Myat, A., Thu, K., & Ng, K. C. (2012). Entropy generation and genetic algorithm optimization of two-bed adsorption cooling cycle. Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, 226(2), 142–156.
20. Myat, A., Thu, K., Kim, Y.-D., Chakraborty, A., Chun, W.-G., & Ng, K. C. (2011). A second law analysis and entropy generation minimization of an absorption chiller. Applied Thermal Engineering, 31(14), 2405–2413. https://doi.org/10.1016/j.applthermaleng.2011.04.004

Conference Proceedings

1. Prova, M.N., Myat. A., Investigating Nano-PCM Thermal Management Performance in EV Battery Modules: A Lattice Boltzmann Framework, 2027 Electrical Energy Storage Applications & Technologies Conference (Accepted)
2. Prova, M.N., Myat. A., An FVDBM-Based Single-Sphere Electro-Thermal Modeling Framework for PCM Thermal Buffering in Battery Energy Storage Systems, 2027 Electrical Energy Storage Applications & Technologies Conference (Accepted)
3. Steve, K. J., Myat, A., Soh, Y. L., Hui, A., Jeggathishwaran, P., & Wang, P. C. (2022, July 28). Dual-Coil Passive Displacement Cooling System Performance Evaluation Through Experimental Study in a Controlled Environment Laboratory. Global Experts Meet on Mechanical Engineering and Mechatronics, Amsterdam, Netherlands.
4. Myat, A., Steve, K. J., Chein, S. C., & Allan, T. (2022, July 28). Artificial Intelligence (AI)-Powered Airside Optimization for Improving Efficiency and Thermal Comfort. Global Experts Meet on Mechanical Engineering and Mechatronics, Amsterdam, Netherlands.
5. Myat, A., & Thangavelu, S. R. (2013, July 1–4). Exergetic Performance of Single Effect Lithium Bromide Absorption Cooling System. International Conference on Applied Energy, Pretoria, South Africa.
6. Thangavelu, S. R., & Myat, A. (2013, July 1–4). Multi-Physics Model for Office Buildings in a Tropical Climate. International Conference on Applied Energy, Pretoria, South Africa.
7. Myat, A., Thu, K., Kim, Y.-D., & Ng, K. C. (2012, April 23–26). Experimental Investigation on the Performance of a Temperature Cascaded Cogeneration System Producing Electricity, Steam, Cooling and Dehumidification. Conference and Exhibition on Desalination and the Environment, Barcelona, Spain.
8. Myat, A., Thu, K., Kim, Y.-D., & Ng, K. C. (2012, April 23–26). Performance Investigation of a Temperature Cascaded Cogeneration System Producing Electricity, Steam, Cooling, Distilled Water and Dehumidification. Conference and Exhibition on Desalination and the Environment, Barcelona, Spain.
9. Kim, Y.-D., Thu, K., Myat, A., & Ng, K. C. (2012, April 23–26). Numerical Simulation of Solar-Assisted Multi-Effect Distillation (MED) Desalination Systems. Conference and Exhibition on Desalination and the Environment, Barcelona, Spain.
10. Thu, K., Myat, A., Kim, Y.-D., Chakraborty, A., & Ng, K. C. (2012, April 23–26). Performance Investigation of Advanced Adsorption Desalination Cycle with Condenser-Evaporator Heat Recovery Scheme. Conference and Exhibition on Desalination and the Environment, Barcelona, Spain.
11. Thu, K., Kim, Y.-D., Myat, A., & Ng, K. C. (2012, March 4–7). Numerical Analysis of the Low-Temperature Waste Heat-Driven Multi-Effect Evaporation System. United Arab Emirates.
12. Myat, A., Thu, K., Kim, Y.-D., & Ng, K. C. (2011, October 3–4). Performance Investigation of a Cogeneration Plant with the Efficient and Compact Heat Recovery System. International Meetings of Advanced Thermal Fluids, Melaka.
13. Shahzad, M. W., Ng, K. C., Thu, K., & Myat, A. (2011, October 3–4). An Improved Film Evaporation Correlation for Saline Water at Sub-Atmospheric Pressures. International Meetings of Advanced Thermal Fluids, Melaka.
14. Myat, A., Ng, K. C., Thu, K., & Kim, Y.-D. (2011, November 2–5). Performance Testing of Waste Heat-Driven Novel Zeolite Adsorption Cooling System. 9th International Conference on Clean Energy, Taichung, Taiwan.
15. Shahzad, M. W., Ng, K. C., Thu, K., Myat, A., & Wong, G. C. (2011). An Improved Film Evaporation Correlation for Saline Water at Sub-Atmospheric Pressures. AIP Conference Proceedings.
16. Myat, A., Thu, K., Kim, Y.-D., & Ng, K. C. (2011). Performance Investigation of a Cogeneration Plant with the Efficient and Compact Heat Recovery System. AIP Conference Proceedings.

17. Myat, A., Thu, K., & Ng, K. C. (2011, July 10–13). Optimization of Multi-Beds Regenerative Adsorption Cooling System. 8th Asia Pacific Conference on Sustainable Energy & Environmental Technologies, Adelaide, Australia.
18. Myat, A., Ng, K. C., Yanagi, H., & Thu, K. (2010, June 7–9). Experimental Investigation on the Performance of a Waste Heat-Driven Advanced Desiccant Dehumidifier Without Moving Parts. 5th Asian Conference on Refrigeration and Air-Conditioning, Tokyo, Japan.
19. Myat, A., Thu, K., Chakraborty, A., & Ng, K. C. (2010, August 24–27). A Waste Heat-Driven Multi-Bed Desiccant Dehumidifier (MBDD): Performance and Entropy Generation Minimization Analysis. 9th International Conference on Sustainable Energy Technologies, Shanghai, China.
20. Myat, A., Thu, K., & Ng, K. C. (2011, April 5–8). Performance Analysis and Entropy Generation for Multi-Bed Adsorption Cooling System. International Sorption Heat Pump Conference, Padua, Italy.

Technical Journal Activities

- **Editorial Roles**: Book Editor for *HVAC Systems* (IntechOpen) and Guest Editor for *Sustainability* and *Advancements in Adaptive, Inclusive, and Responsive Buildings*.
- **Peer Review**: **120 total reviews** across 11 Elsevier journals, including 41 for *Energy and Buildings*.

Honors and Awards

- **Chartered Engineer (UK)**, Institution of Mechanical Engineers (IMechE).
- **Teaching Excellence Award (2026)**
- **Applied Research Excellence Award** (2023).
- **Singapore Certified Energy Manager**.
- **NUS Research Scholarship** (2006)