Dr. Aung Myat

Education

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

Academic Appointments

- **Assistant Professor**, Mechanical Engineering, Texas State University, USA — Aug 2026–Present
- **Assistant Professor**, Mechanical & Manufacturing Engineering Tennessee State University, USA — Aug 2024–July 2026
- **Assistant Professor**, Engineering Southeast Missouri State University, USA — Aug 2023–Jul 2024
- **Assistant/Associate Professor**, Mechanical Engineering Singapore Institute of Technology, Singapore — Jul 2016–Jul 2023
- **Scientist**, Experimental Power Grid Centre, Singapore — May 2012–Jun 2016
- **Research Engineer**, National University of Singapore — Mar 2009–Apr 2012

Research Profile

Dr. Aung Myat's research focuses on thermal–fluid transport, heat and mass transfer, and multiphysics modeling for advanced energy systems, including energy storage, hybrid energy systems, and thermal management of high-power and large-scale energy infrastructure. His work integrates first-principles modeling, computational multiphysics, and AI-enabled digital twins to improve the safety, efficiency, reliability, and resilience of modern energy systems. Application areas include thermal energy storage, battery thermal management, high-performance building energy systems, district energy systems, microgrids, and emerging advanced energy technologies such as nuclear energy systems and hydrogen- and ammonia-integrated energy systems.

Research Themes and Areas

Research Themes

- Thermal–Fluid Systems for Energy and Thermal Management
- Advanced Energy Systems and Energy Storage
- AI-Enabled Multiphysics Modeling and Digital Twins
- Thermal Management for Batteries and High-Heat-Flux Systems
- High-Performance Buildings and District Energy Systems
- Thermal–Fluid Aspects of Advanced Nuclear and Hydrogen Energy Systems

Research Areas

- Thermal–Fluid Transport in Advanced Energy Systems
- Energy Storage and Thermal Management
- Multiphysics Modeling and Computational Heat Transfer
- AI-Enabled Digital Twins for Energy Infrastructure
- Hybrid and Integrated Energy Systems

- Thermal–Fluid Aspects of Advanced Nuclear and Energy Systems

Research Methods and Technical Expertise

- Computational heat transfer and fluid dynamics
- Multiphase and porous media transport modeling
- Lattice Boltzmann and finite volume methods
- Energy system modeling and optimization
- AI / machine learning for engineering systems
- Digital twin development for energy infrastructure

Publication Metrics

- Journal papers: 20
- Total publications: 40
- Google Scholar citations: 919
- h-index: 12
- i10-index: 14

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

Books And Book Chapters

1. Zaw, K., Myat, A., Md Raisul Islam, K., Keng, P. T., & Nyunt, A. K. (2025). District Cooling Systems: A Practical Approach and Application for Design, Operations, and Best Practice. Routledge/Taylor & Francis.
2. Myat, A. (2022). Application of Artificial Intelligence in Air Conditioning Systems. In Recent Updates in HVAC Systems. IntechOpen.
3. Myat, A. (accepted). Comprehensive Food Refrigeration Fundamentals: Vapor Compression Cycles for Food Refrigeration. Elsevier.
4. Myat, A. (accepted). Comprehensive Food Refrigeration Fundamentals: Thermodynamics. Elsevier.

Patent

Method and Apparatus for the Waste-Heat-Driven Desiccant Dehumidifier, PCT-SG2011-000028.

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). Optimisation 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.

Manuscripts in Preparation / In Progress

1. Rahman, M. M., Akbar, M., & Myat, A. Modeling of Electrochemical Flow Battery using Finite Volume Lattice Boltzmann Method (in progress).
2. Rahman, M. M., Akbar, M., & Myat, A. Lattice Boltzmann modeling of spiral-coil PCM thermal storage systems with hybrid nanoparticles (in progress).
3. Myat, A., & Quddus, M. A. Challenges and Innovations in Energy and Water Utilization in the Textile Industry: Toward a Greener Supply Chain (in progress).
4. Su, Y., Hutter, T., & Myat, A. 3D-Printed Micropore Evaporator for Increasing Concentration of Analytes in Aqueous Solutions (in progress).

Externally Funded Research (PI / Co-PI / Lead PI)

Summary of Sponsored Research

- Total external funding: **$4.7M+**
- Funding as PI/Lead PI: **$3.0M+**
- Funding from: **NSF, Government Agencies, Industry, Energy Programs**
- Research areas: Energy systems, thermal-fluid systems, HVAC, microgrids, digital twins, thermal energy storage

Selected Pending / Proposed Funding

- PI, DOE – AI-Driven Optimization of Carbon-Neutral District Energy Systems
- PI, NSF CAREER – Nanofluid-Based HVAC Systems

Research Leadership and Program Development

- Developed externally funded research programs in thermal-fluid and energy systems.
- Led interdisciplinary research projects in energy systems, HVAC, and digital twin technologies.
- Established collaborations with NC State University, University of Texas at Austin, and industry partners.
- Supervised graduate and undergraduate researchers in thermal-fluid and energy systems.
- Developed computational multiphysics and digital twin research platforms for energy systems.

Laboratory and Computational Capabilities

- Thermal-fluid system instrumentation and experimental design
- Thermal energy storage system design and testing
- HVAC and building energy system performance testing
- High-performance computing for multiphysics simulations
- Development of digital twin simulation platforms
- Data acquisition, sensor integration, and system monitoring

Student Mentorship

Supervised graduate and undergraduate research projects in thermal energy storage, AI-enabled energy systems, and multiphysics modeling.

Level	Number	Role
Postdoctoral Research Fellow	2	Advisor
PhD Students	3	Advisor / Co-Advisor
MS Students	7	Advisor
Undergraduate Researchers	30+	Advisor

Research Collaborations and Engagement

- **North Carolina State University** – Data-driven optimization and resilient energy infrastructure
- **University of Texas at Austin** – Micro-scale thermal systems and microfluidic devices
- Industry collaborations in **smart HVAC systems, energy storage, microgrid digital twins, and low-carbon building technologies**
- Engagement with interdisciplinary teams spanning **thermal sciences, energy systems, data science, and infrastructure resilience**

Teaching and Curriculum Development

Course	Level	University
Engineering Thermodynamics	UG	TXST
Heat Transfer	UG	TSU, SEMO
Thermodynamics	UG	TSU, SEMO, SIT
Numerical Analysis	UG	TSU, SWUST
Dynamics	UG	TSU
Convection Heat Transfer	Grad	TSU
Lattice Boltzmann	Grad	TSU
Thermal Fluid Labs	UG	TSU
Fluid Power	UG	SEMO
Engineering Economics	UG	SEMO
Engineering Materials and Design	UG	SEMO
Fluid Mechanics	UG	SIT
HVAC	UG	SIT
District Cooling Systems	Grad	SIT

Synergistic Activities

- Reviewer of 120+ manuscripts across major journals in thermal sciences and building energy, including Energy and Buildings, International Journal of Heat and Mass Transfer, Journal of Building Engineering, Applied Energy, Applied Thermal Engineering, Thermal Science and Engineering Progress, Energy, and Green Technologies & Sustainability.
- Guest Editor, Special Issue on Digital Twinning of Energy and Thermal Systems for Urban Sustainability, Sustainability.
- Book Editor, HVAC Systems, IntechOpen, 2025–Present.
- Panel Reviewer for the U.S. National Science Foundation and Department of Defense research programs.

Research Vision and Future Research Directions

- Thermal–fluid systems for advanced reactors and small modular reactors (SMRs)
- Thermal energy storage for grid-scale and hybrid energy systems
- AI-enabled digital twins for battery systems and energy infrastructure
- Multiphysics transport in porous media and high heat flux thermal systems
- Hydrogen-integrated thermal energy systems and industrial decarbonization

Honors, Awards, And Outreach

- Teaching Excellence Award, 2026
- Applied Research Excellence Award, 2023.
- NUS Research Scholarship, 2006.
- Departmental recruitment and outreach activities, including K–12 STEM workshops and college fairs at Tennessee State University.
- Polytechnic-to-university pathway mentoring and outreach activities at the Singapore Institute of Technology.
- Community and industry engagement to support smart HVAC pilot systems and broaden participation in engineering.

Professional Affiliations and Certifications

Singapore Certified Energy Manager (SCEM-0414), 2014–Present.
Chartered Engineer (UK, IMechE), Jul 2022–Present.