POH HEE JOO (Dr)

PhD (Mech Eng) NUS, Master (Engineering), BEng (Mech Eng)(Hons), NTU

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PROFESSIONAL/ ACADEMIC QUALIFICATIONS:

Dec 2009	Doctor of Philosophy (PhD), NUS, Singapore
March 2000	Master in Engineering (Research), NTU, Singapore
July 1997	Bachelor Degrees in Mechanical and Production Engineering, (2nd Upper Honours), NTU, Singapore

EMPLOYMENT RECORDS:

Aug 2024 – Present	Associate Professor, Department of The Built Environment, NUS
Apr 2023 – July 2024	Principal Scientist 2 & Domain Specialist (Built Environment), IHPC
Apr 2020 – Mar 2023	Senior Scientist 2 & Domain Specialist (Built Environment), IHPC
Apr 2015 – Mar 2020	Senior Scientist 1 & Capability Group Manager (Environmental Modelling), Fluid Dynamics Department, IHPC

ADMINISTRATIVE LEADERSHIP:

Jul 2025 – Present	Deputy Programme Director for Master of Science (Building Performance and Sustainability), NUS
Apr 2020 – Aug 2024	Domain Specialist (Built Environment), IHPC
Apr 2015 – Mar 2020	Capability Group Manager (Environmental Modelling), Fluid Dynamics Department, IHPC

PROFESSIONAL/CONSULTING ACTIVITIES:

Apr 2026 – Apr 2027	Invited as International Scientific Committee of International Building Physics Conference 2027 (IBPC27), 19 – 22 Apr 2027, https://ibpc2027.org/
Jul 2025 – June 2026	Invited as International Scientific Committee of Indoor Air 2026 (IA2026) conference, 14 – 18 June 2026, https://www.indoorair2026.org/
Mar 2025 – Sep 2026	Appointed as Scientific Committee to the 7th International Conference on Countermeasures to Urban Heat Islands (IC2UHI), Sep 2026, Nanjing, China, https://www.ic2uhi2026.com/

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Apr 2025 – Oct 2026	Guest Editor for MDPI Building Journal Special Issue Advances in Green Building and Environmental Comfort, https://www.mdpi.com/journal/buildings/special_issues/27CDMSAO6U
Dec 2024 – Sep 2025	Invitation to the Scientific Committee of the 6th Central European Symposium on Building Physics conference, 11th - 13th September 2025, https://cesbp2025.bme.hu/
Oct 2024 – Jul 2025	Appointed as International Scientific Committee to the 6th International Conference on Building Energy and Environment (COBEE 2025), 6 – 10 July 2025, https://cobee2025.cobee2025.org/71-committee
Aug 2024 – Jul 2026	Board of Directors to International Association of Building Physics (IABP, https://www.iabp.info/board-committee/)
Apr 2024 – Mar 2026	International Building Performance Simulation Association (Singapore Chapter) – President, https://ibpsasingapore.org/chapter-committee/
Aug 2017 – Mar 2024	International Building Performance Simulation Association (Singapore Chapter) – Committee Head for Training & Seminar
Feb 2023 – Jan 2025	Appointment to the Working Group on Hydrogen Refuelling Station by Enterprise Singapore (EnterpriseSG) and contribute towards Technical Reference for Safe Transportation, Requirement and Operation of HRS in Singapore
July 2022 - Dec 2023	Appointed as Scientific Committee to the 6th International Conference on Countermeasures to Urban Heat Islands (IC2UHI), 3 – 6 Dec 2023, https://www.ic2uhi2023.com/committees
Oct 2021 – Dec 2023	Invited by MSE as Singapore Urban Heat Island (UHI) Research and Development (R&D) steering committee and contribute towards UHI analysis, modelling, simulation, optimization and implementation
Sep 2021	Advisory committee to e ASIA JRP 11 for "Greener Digital Cities" workshop
Jan 2021	Nominated by A*STAR as contributor to Open Ideation Workshop for Built Environment, 2021
Oct 2020	Organize, supervise and chair the webinar Modelling Wind-Tree Interaction: Novel Approaches and Practical Applications, 28 - 30 Oct 2020
Apr 2017	Chair workshop on Urban Microclimate: From Research To Application " jointly organised by the A*STAR, HDB, & NUS on 26 April 2017 at HDB Centre of Building Research (Woodlands).
Sep 2016	Workshop chair on 20 Sep 2016 to organize the inaugural workshop on “Environmental Modelling and Simulation for the Building Industry”, jointly with Kajima Corporation, Japan; and supported by Building and Construction Authority (BCA).
Aug 2015	Invitation to be a Panellist at the NUS High Sustainable Development Youth Convention (SDYC), a 3-day student-organised Model United Nations (MUN) conference that focuses on issues of sustainable development.
May 2014	Nominated by Ministry of National Development (MND) Singapore as a World Cities Summit Young Leader in recognition of contribution to the field of urban liveability and sustainability; and attend the inaugural WCS Young Leaders Symposium, on 31st May 2014 in Singapore
Aug 2010 - present	Invited reviewer for numerous peer-reviewed journals such as Building & Environment, Energy & Building, Sustainable Cities and Societies, Journal of Building Physics, International Journal of Heat and Mass Transfer, Architectural Science Review, Science & Technology for the Built Environment.

UNDERGRADUATE TEACHING:

PF3502: Smart Facilities

PF3210: Total Building Performance

PF4101/ IPM4101/ IPM4101T Dissertation

GRADUATE TEACHING:

BPS5112: Green Building Integration and Evaluation Studio

BPS5234: CFD Application in the Built Environment

RESEARCH INTERESTS:

Computational Fluid Dynamics, Integrated Environmental Modelling, Building Performance and Sustainability, Building Physis and Moisture, Computational Fuel Cell Dynamics, Indoor & Outdoor Air Pollution

SELECTED PUBLICATIONS:

1. **Hee Joo POH**, Computational Fluid Dynamics Application in the Built Environments, HC: ISBN: 978-981-98-3016-9, SC: ISBN: 978-981-98-3088-6, Pages: 568, May 2026, 1st Edition, World Scientific Publisher, Singapore, https://doi.org/10.1142/14790
2. Subin Lin, Jason Leong, **Hee Joo Poh**, Design trade-offs in building porosity: A parametric analysis of vertical placement and geometry for urban ventilation, Journal of Wind Engineering and Industrial Aerodynamics, Volume 271, 2026, 106369, https://doi.org/10.1016/j.jweia.2026.106369
3. **Hee Joo Poh**, Poh Seng Lee, Seeram Ramahrishna & Arun Mujumdar (10 Sep 2025): Reimagining the PhD journey: Nurturing thinkers, builders, and leaders for global demand, Drying Technology, https://doi.org/10.1080/07373937.2025.2556081
4. Vinh-Tan Nguyen, Bharathi Boppana, Jason Leong, **Hee Joo Poh**, Yong Eng, Irene Lee, Hwee Sien Tan (2025), Analysis and assessment of natural ventilation in the design of urban precincts using an overset grid CFD approach, Building and Environment, Volume 269, 1 February 2025, 112352, https://doi.org/10.1016/j.buildenv.2024.112352
5. **Poh, H.J**. et al. (2025). Wind Driven Rain Analysis for Effective Industrial Building Design in Singapore to Mitigate Rainwater Penetration. In: Berardi, U. (eds) Multiphysics and Multiscale Building Physics. IABP 2024. Lecture Notes in Civil Engineering, vol 552. Springer, Singapore. https://doi.org/10.1007/978-981-97-8305-2_26
6. Ang, L., Cui, F. & **Poh, H.J**., (2024). Benchmarking the aircraft noise mapping package developed for a unified urban environmental modelling tool. *Noise Mapping*, *11*(1), 20240001. https://doi.org/10.1515/noise-2024-0001
7. Zheng, A. Chong, **H.J. Poh** et al., Impact of building porosity on exterior convective heat transfer coefficients: An experimental and computational parametric study, *Building and Environment* (2023), doi: https://doi.org/10.1016/j.buildenv.2023.111023
8. George Xu, Kendrick Tan, Zhengwei Ge, **Hee Joo Poh**, Chin Chun OOI, Yong ENG, Automatic selection of release plane for Lagrangian-based wind-driven rain studies, International Journal of Wind Engineering and Industrial Aerodynamics, 232 (2023) 105232. https://doi.org/10.1016/j.jweia.2022.105242
9. Chiu P-H, **Poh HJ**. Development of an improved divergence-free-condition compensated coupled framework to solve flow problems with time-varying geometries. *Int J Numer Meth Fluids*. 2020;1–27. https://doi.org/10.1002/fld.4874

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10. Woei-Leong Chan, Yong Eng, Zhengwei Ge, Chi Wan Calvin Lim, Like Gobeawan, **Hee Joo Poh**, Daniel Joseph Wise, Daniel Christopher Burcham, Daryl Lee, Yongdong Cui, Boo Cheong Khoo. Wind Loading on Scaled Down Fractal Tree Models of Major Urban Tree Species in Singapore. *Forests* **2020**, *11*, 803; https://doi:10.3390/f11080803
11. **Poh, H.J**.; Chan, W.L.; Wise, D.J.; Lim, C.W.; Khoo, B.C.; Gobeawan, L.; Ge, Z.; Eng, Y.; Peng, J.X.; Raghavan, V.S.G.; Jadhav, S.S.; Lou, J.; Cui, Y.D.; Lee, H.P.; Lin, E.S.; Burcham, D.C.; Lee, D.; Li, K.W.; Lee, I. Wind load prediction on single tree with integrated approach of L-system fractal model, wind tunnel and tree aerodynamic simulation. *AIP Advances* **10**, 075202 (2020). https://doi.org/10.1063/1.5144628
12. Chan, W.L.; Cui, Y.; Jadhav, S.S.; Khoo, B.C.; Lee, H.P.; Lim, C.W.C.; Gobeawan, L.; Wise, D.J.; Ge, Z.; **Poh, H.J**.; Raghavan, V.; Lin, E.S.; Burcham, D.C. Experimental study of wind load on tree using scaled fractal tree model. *International Journal of Modern Physics B* **2020,** 2040087-1. https://doi:10.1142/S0217979220400871
13. C.C. Ooi, Z. Ge, **H.J. Poh** and G. Xu, Assessing effectiveness of physical barriers against wind-driven rain for different raindrop sizes, *Engineering Analysis with Boundary Elements*, 111 (2020), 186 – 194. https://doi.org/10.1016/j.enganabound.2019.11.007
14. George Xu, Arthur Lim, Harish Gopalan, Jing Lou and **Hee Joo Poh**, "CFD Simulation of Chemical gas Dispersion under Atmospheric Boundary Conditions", International Journal of Computational Methods, Vol. 17, No. 5 (2020) 1940011, https://doi.org/10.1142/S0219876219400115
15. Ge Zhengwei, Xu George, **Poh Hee Joo**, Ooi Chin Chun, Xing, Xiuqing, CFD Simulations of Thermal Comfort for Naturally Ventilated School Buildings, (2019) IOP Conf. Ser.: Earth Environ. Sci. 238 – 012073. https://iopscience.iop.org/article/10.1088/1755-1315/238/1/012073
16. **POH, HEE JOO**; CHIU, Pao-Hsiung; NGUYEN, Hoang Huy; XU, Xiangguo, George; CHONG, Chiet Sing; LEE, Lai Tee; PO, Ken; TAN, Phay Ping; WONG, Nyuk-Hien; LI, Ruixin; LEE, Sui Fung; WONG, Ngian Chung, Airflow Modelling Software Development for Natural Ventilation Design - Green Building Environment Simulation Technology (GrBEST), (2019) IOP Conf. Ser.: Earth Environ. Sci. 238 012077. https://iopscience.iop.org/article/10.1088/1755-1315/238/1/012077
17. **POH, HEE JOO**; CHIU, Pao-Hsiung; OOI, Chin Chun; RAGHAVAN, Venugopalan; WAN, Yee Ming, Stephen; XU, Xiangguo, George; LI, Ruixin; Leong-Kok, Su-Ming, Development of GM2015 Computational Fluid Dynamics (CFD) Methodology for Naturally-ventilated Non-residential Buildings (NRB) in Singapore , (2019) IOP Conf. Ser.: Earth Environ. Sci. 238 012079. https://iopscience.iop.org/article/10.1088/1755-1315/238/1/012079
18. Bharathi Boppana, Chin Chun Ooi, Daniel Wise, Edward Zhmayev, **Hee Joo Poh**, CFD Assessment on Particulate Matter Filters in Urban Areas, Sustainable Cities and Society, 46 (2019), 101376, doi.org/10.1016/j.scs.2018.12.004
19. Chin Chun Ooi, Pao-Hsiung Chiu, Venugopalan Raghavan, Stephen Wan & **Hee Joo Poh**, Porous Media Representation of Louvers in Building Simulations for Natural Ventilation, *Journal of Building Performance Simulation, Vol. 12 (2019), Issue 4, 494 – 503,* https://doi.org/10.1080/19401493.2018.1510544
20. Wise, D.J., Boppana, V.B.L., Kelvin LI, **Poh, H.J**, Effects of Minor Changes in the Wind Direction on Urban Flow Simulations, Sustainable Cities and Society, 37 (2018), 492 – 500, https://doi.org/10.1016/j.scs.2017.11.041
21. Wei-Jiang Zhao, En-Xiao Liu, **Hee Joo Poh**, Binfang Wang, Si-Ping Gao, Ching Eng Png, Kelvin Wenhui Li, Shyh Hao Chong, 3D traffic noise mapping using unstructured surface mesh representation of buildings and roads, Applied Acoustics, Volume 127, 1 December 2017, pp. 297-304. https://doi.org/10.1016/j.apacoust.2017.06.025

22. Venugopalan S.G. Raghavan, **Poh Hee Joo**, Chiu Pao-Hsiung, Aytac Kubilay, Jonas Allegrini, Determination of Optimal Parameters for Wind Driven Rain CFD Simulation for Building Design in the Tropics, Procedia Engineering, Volume 180, 2017, Pages 1345-1354. https://doi.org/10.1016/j.proeng.2017.04.297
23. Pao-Hsiung Chiu, Venugopalan S.G. Raghavan, **Hee Joo Poh**, Erna Tanb, Osrithalit, Gabriela, Nyuk-Hien Wong, T. van Hooff, B. Blocken, Ruixin Li, Su Ming Leong-Kok, CFD Methodology Development for Singapore Green Mark Building Application, Procedia Engineering, Volume 180, 2017, Pages 1596-1602. https://doi.org/10.1016/j.proeng.2017.04.322
24. **Hee Joo POH**, Mapping Singapore Urban Heat Island Phenomena, Asia Research News 2015, Environment, pg. 13, 2015. https://www.sciencedaily.com/releases/2015/05/150526093228.htm
25. Van Bo Nguyen , **Hee Joo Poh**, Yong-Wei Zhang, Predicting shot peening coverage using multiphase computational fluid dynamics simulations, Powder Technology, Volume 256, Feb 2014, pp. 100 – 112. https://doi.org/10.1016/j.powtec.2014.01.097

AWARDS:

Jan 2021	MTI Innovative Project/Policy Award 2020 (Silver) for Development of Integrated Environmental Modeller (IEM), a Multi-Physics Approach for Urban Microclimate Modelling and City Planning
Oct 2020	Named as top 100 outstanding researchers in Asia. The Asian Scientist 100, compiled by the Asian Scientist Magazine, is an annual compilation of continent's brightest people that made a significant scientific discovery. https://www.asianscientist.com/as100/#2020
Oct 2019	President Technology Awards 2019 - For development of the Integrated Environmental Modeller (IEM), an advanced modelling tool that is capable of integrating combined wind-solar-noise environmental factors, their interrelationship, and their total impact on an urban setting
Sep 2019	Winner of ASEAN Outstanding Engineering Achievement Awards 2019 for "Integrated Multi-Physics Approach for Urban Microclimate Modelling". Dr. POH Hee Joo is project PI.
Aug 2019	Winner of IES Prestigious Engineering Achievement Awards 2019 for project titled Integrated Multi-Physics Approach for Urban Microclimate Modelling. Dr. POH Hee Joo is project PI.
July 2019	Winner of 2019 Minister (National Development) R&D Merit Awards for project "Integrated Environmental Modeler" (IEM) which Dr. POH Hee Joo is project PI.
Apr 2015	MTI Borderless Silver Award for L2NIC project "Development of Integrated Multi-physics Urban Microclimatic Modelling Tool" at the 2015 MTI Awards Prize Ceremony at Firefly Symposium, 30 April 2015 @9.30am, The Matrix, Biopolis - to recognise and celebrate teams in the MTI family of agencies which demonstrated outstanding innovation and collaboration in their work
May 2014	Honored as a World Cities Summit Young Leader in recognition of his contribution to the field of urban liveability and sustainability and attending inaugural WCS Young Leaders Symposium, on 31st May 2014 in Singapore