

Seminar Jointly Organized by
Hong Kong Institute of Acoustics and The Australia Institute of Building

Noise reduction enabling natural ventilation technologies

Date: 02 August 2024 (Friday)

Time: 7:00 pm – 8:30 pm; registration starts at 6:30 pm (1.5 CPD Hours)

Venue: Room D0708 and D0709, Jockey Club Campus, Hong Kong Metropolitan University, Kowloon, Hong Kong

Fee: Free of charge. Priority to AIB, HKIOA Members and MU students

Seminar Highlights

The rapid pace of urbanization and the steady population growth have intensified the issue of traffic noise, especially in densely populated cities like Hong Kong, Singapore, and Shanghai. Residents often have to deal with disruptive traffic noise by closing windows and doors facing busy roads, which, unfortunately, also blocks natural ventilation. In the post-COVID-19 era, there is a greater recognition of the importance of natural ventilation for improving indoor air quality, reducing health risks, and promoting sustainable building practices. To address the challenge of reducing noise while maintaining natural ventilation, three innovative technologies have been introduced: the acoustic friendly ventilation window (AFVW), the ventilated acoustic meta-barrier (VAMB), and the ultracompact double-layered acoustic grating (UDLAG).

1. The AFVW consists of a double layer of glass panes with two staggered openings and a built-in mechanical ventilation system. Field measurements have shown that the AFVW can achieve a noise reduction level 13dB higher than that of a conventional window of the same size, while providing approximately five times the air changes per hour.
2. The VAMB is made up of layered Helmholtz Resonators (HRs) integrated with a ventilation duct, providing exceptional noise reduction performance across a broad frequency band.
3. The UDLAG is designed to deflect noise away from sensitive areas, using a double layer of rigid panels with multiple perforated slits. By optimising the positions of the slits on both layers, it can effectively concentrate the energy of an incoming acoustic wave within a predefined focusing region in any direction.

This seminar will offer a detailed discussion of these three innovative technologies, covering their initial prototype design and fabrication stages, as well as comprehensive evaluations of their noise reduction and natural ventilation capabilities.

Speakers



Dr. Liangfen Du , Assistant Professor at Department of Building Environment and Energy Engineering, Hong Kong Polytechnic University

Dr. Liangfen DU joined the Department of Building Environment and Energy Engineering as an Assistant Professor in April 2024. She obtained her BEng and MSc degrees in Environmental Engineering and Acoustics from Northwestern Polytechnical University in China in 2010 and 2013, respectively. She earned her second Master's degree and a Doctorate in Acoustics from the Institut National des Sciences Appliquées de Lyon (INSA Lyon) in France in 2012 and 2016, respectively. Following her postgraduate studies, she joined JD Acoustic Pte Ltd in Singapore as an Acoustic Consultant, responsible for various industrial projects involving noise impact assessment, acoustic design, building acoustics and more. After gaining valuable industrial experience during her year at JD Acoustic, she returned to academia, working as a research fellow at the College of Design and Engineering at the National University of Singapore (NUS) from 2017 to 2021. From 2021 to 2024, She continued her research fellowship at the School of Mechanical and Aerospace Engineering at the Nanyang Technological University (NTU) in Singapore. Dr. Du's research interests encompass noise reduction enabling natural ventilation technologies, acoustic metasurfaces, sound prediction, and environmental noise control.

Language

English

Registration

The seminar is free of charge and open to all interested parties. The total number of participants is limited to 90 for this event. Registration is accepted on a first-come-first-served basis, with priority given to AIB members, HKIOA members, and MU students. An electronic CPD certificate of 1.5 hours will be granted via email to the participants after the seminar. For any queries, please don't hesitate to contact admin@hkioa.org. Please complete the online registration by 26 July 2024 (Friday). Email notification of successful registration will be delivered by 29 July 2024 (Monday)

Please register here: <https://form.jotform.com/241901677437462>