

Case Studies

Acoustics, Ventilation and Overheating Guide
launch and workshop – 30.1.20

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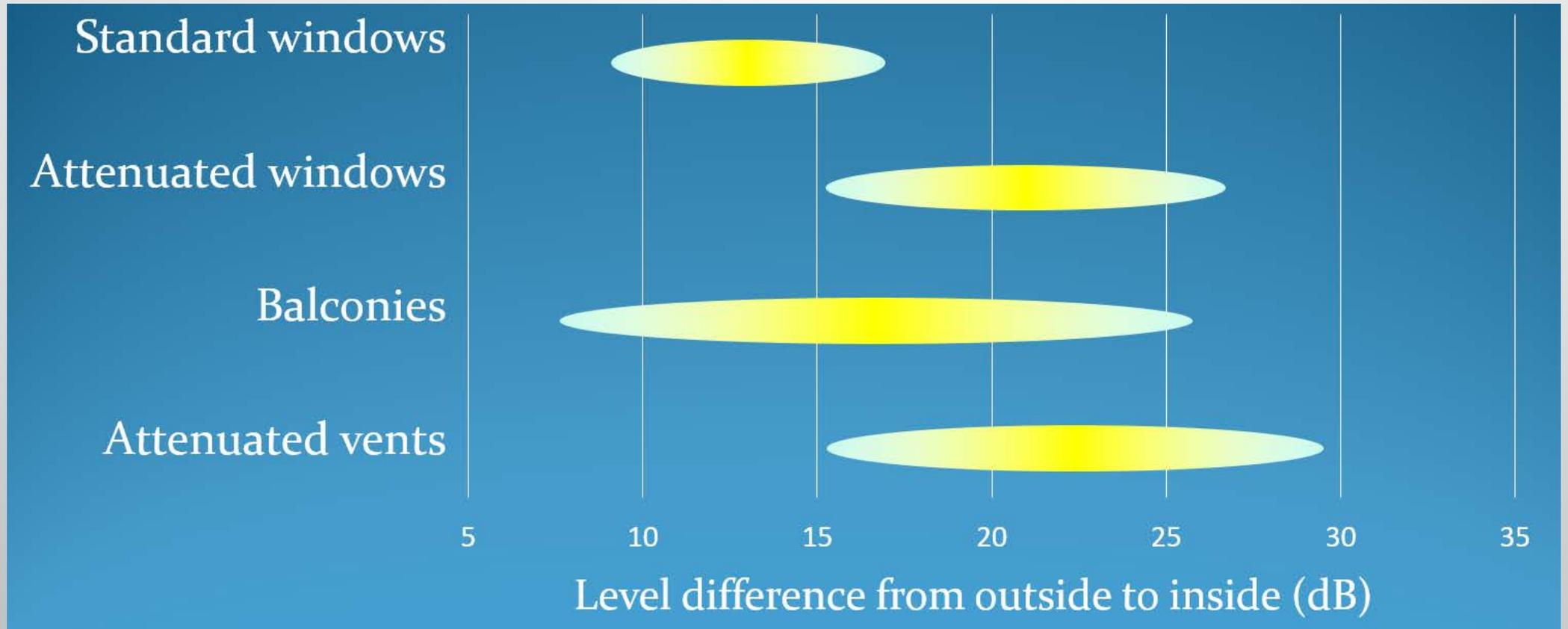
Evidence of current strategies

- 2018 study of noise and overheating assessments
- 23% overheating assessments considered noise when discussing opening windows for ventilation
- Of those where noise was a potential issue:
 - 15 proposed mechanical ventilative cooling
 - 3 proposed comfort cooling
 - 1 proposed attenuated vents

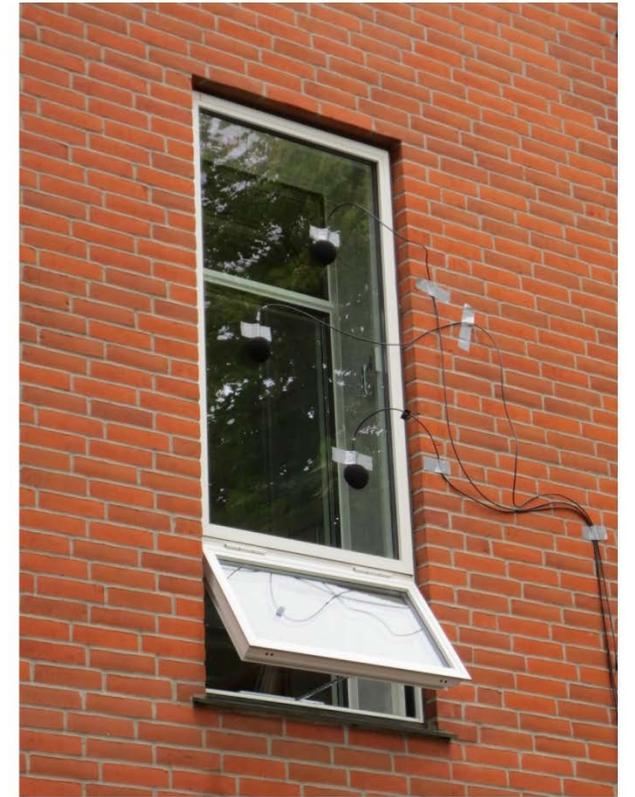
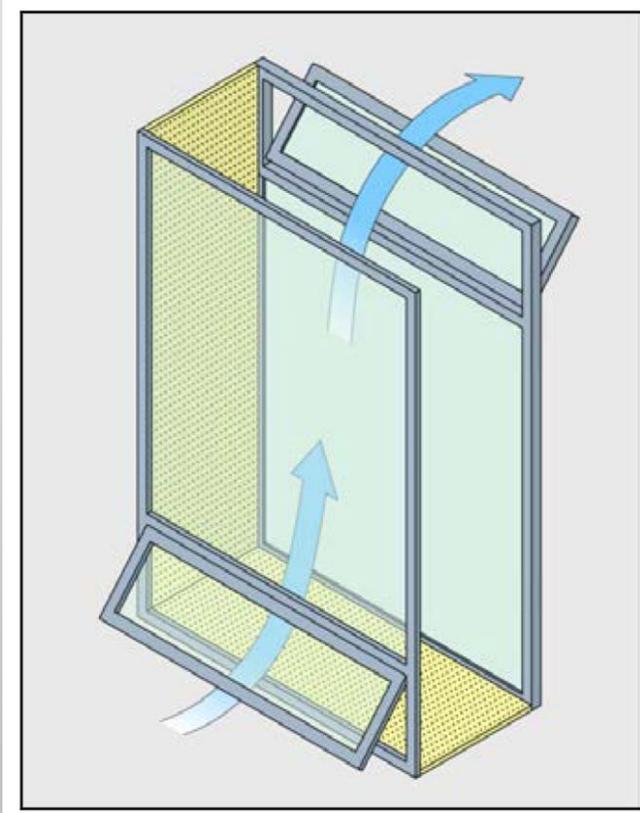
Mechanical options

- MVHR is usually **NOT** a solution
- Ventilation rates vary, but MVHR typically sized for 0.5 air changes per hour
- Overheating ventilation typically 2 to 6 air changes per hour

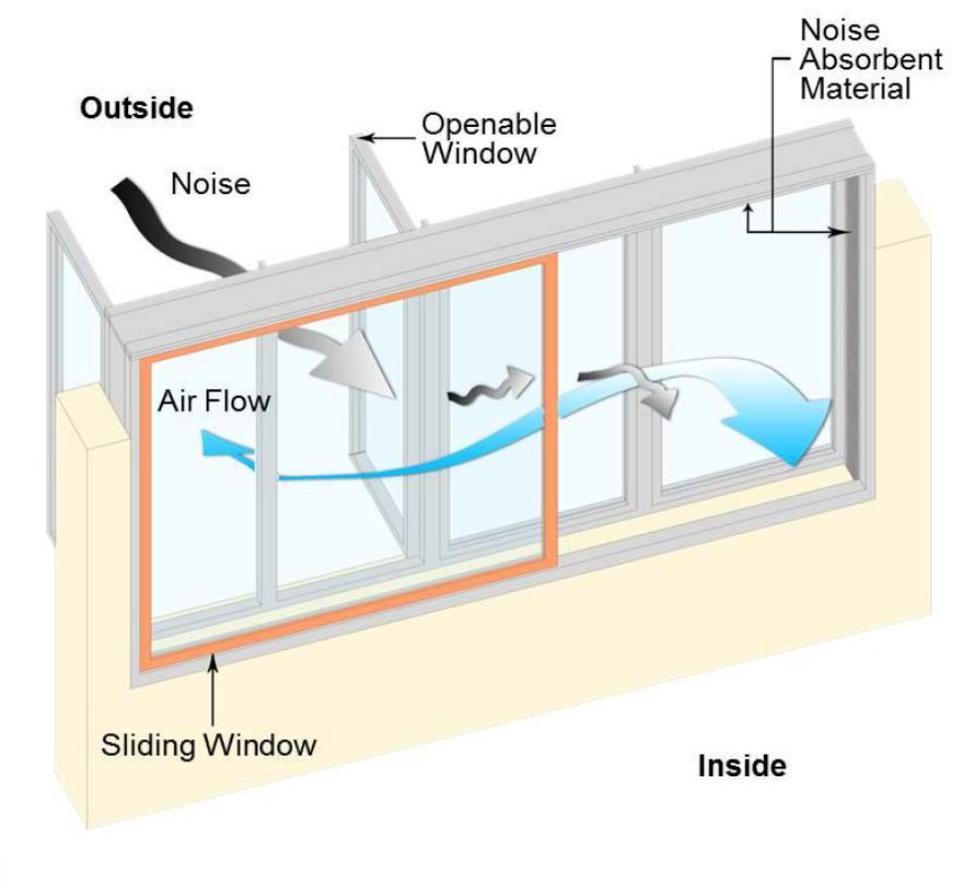
Options for attenuated natural ventilation



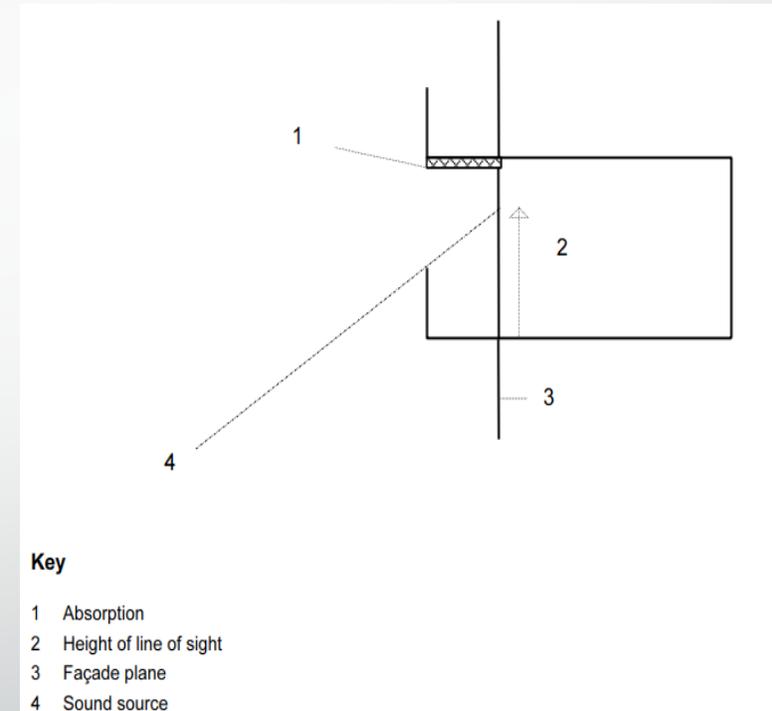
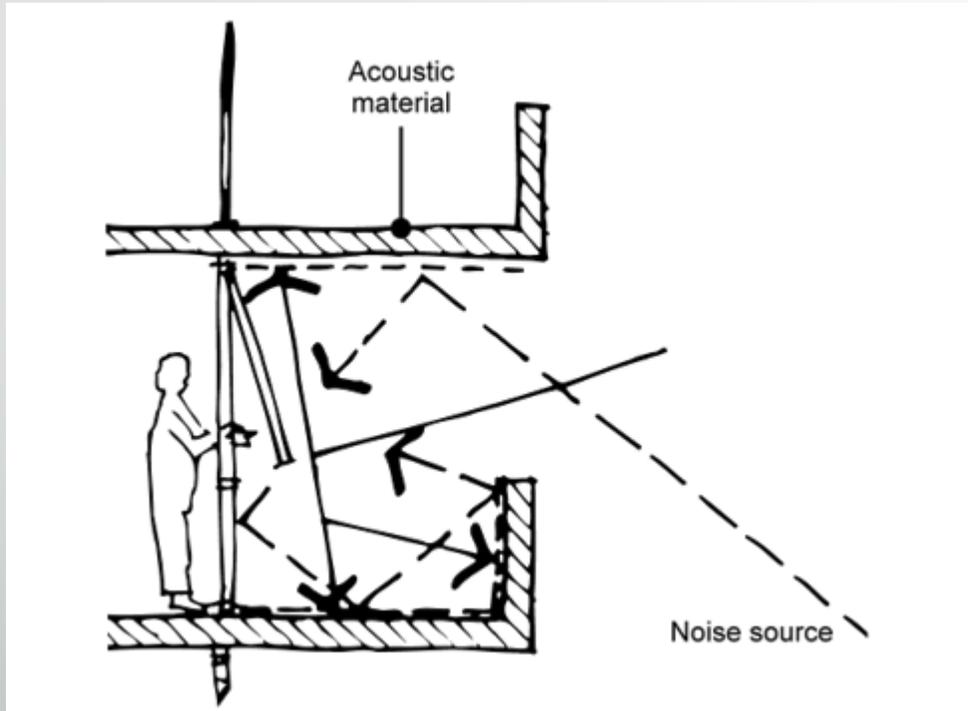
Attenuated windows



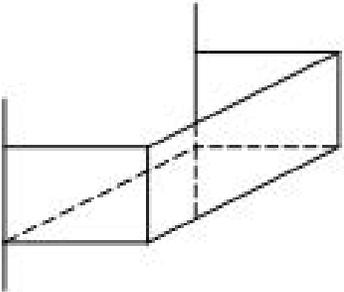
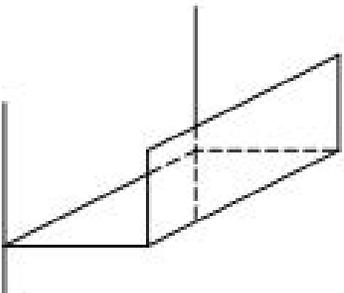
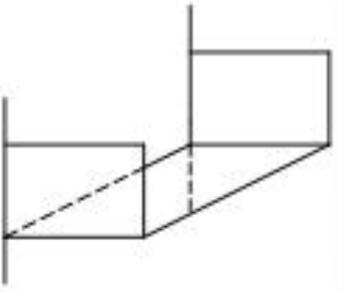
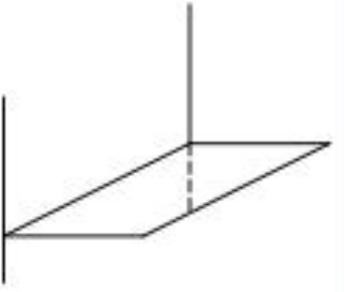
Attenuated windows



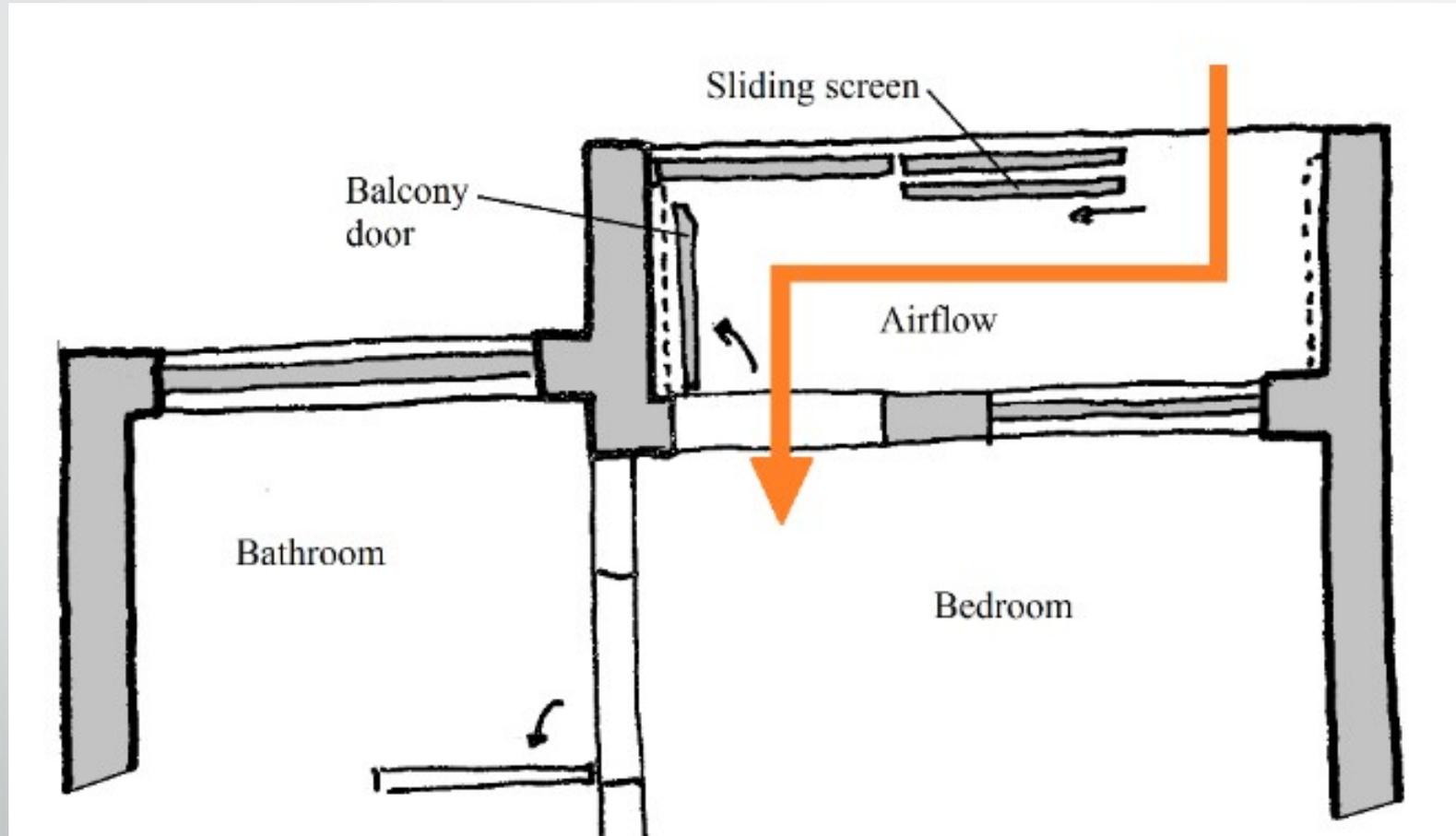
Balconies



Balconies

Balcony Form	Model Schematics	Real-life Example
'Closed'	 A 3D schematic diagram of a closed balcony. It shows a rectangular volume extending from a wall, with a vertical line representing the railing and a dashed line indicating the depth of the balcony.	 A photograph of a multi-story apartment building with several balconies. The balconies are enclosed with glass or solid panels, representing a 'closed' balcony form.
'Front-Bottom'	 A 3D schematic diagram of a front-bottom balcony. It shows a rectangular volume extending from a wall, with a vertical line representing the railing and a dashed line indicating the depth of the balcony.	 A photograph of a multi-story apartment building with balconies that are cantilevered out from the front of the building, representing a 'front-bottom' balcony form.
'Side-Bottom'	 A 3D schematic diagram of a side-bottom balcony. It shows a rectangular volume extending from a wall, with a vertical line representing the railing and a dashed line indicating the depth of the balcony.	 A photograph of a multi-story apartment building with balconies that are cantilevered out from the side of the building, representing a 'side-bottom' balcony form.
'Bottom'	 A 3D schematic diagram of a bottom balcony. It shows a rectangular volume extending from a wall, with a vertical line representing the railing and a dashed line indicating the depth of the balcony.	 A photograph of a multi-story apartment building with balconies that are cantilevered out from the bottom of the building, representing a 'bottom' balcony form.

Balconies



Attenuated Vents

- Completely natural ventilation solutions might not work for all scenarios
- Advantages:
 - They reduce the need to open windows
 - Can have mechanical assistance – hybrid system
 - Provide a connection to outside / occupant control

Attenuated Vents



Level difference - 27 dB
Free area - 0.4 m²

Attenuated Vents



Level difference - 37 dB
Free area - 0.12 m²
Fan Boost – 90 l/s



Attenuated Vents



Attenuated Vents



Summary

- MVHR alone is not usually suitable for controlling overheating
- 100% passive solutions may not be practical due to the size of the vents required
- Attenuated vents can reduce the need to open windows and can have mechanical assistance for peak temperatures

Thank you