Case Studies

Acoustics, Ventilation and Overheating Guide launch and workshop – 30.1.20

Nick Conlan – Apex Acoustics

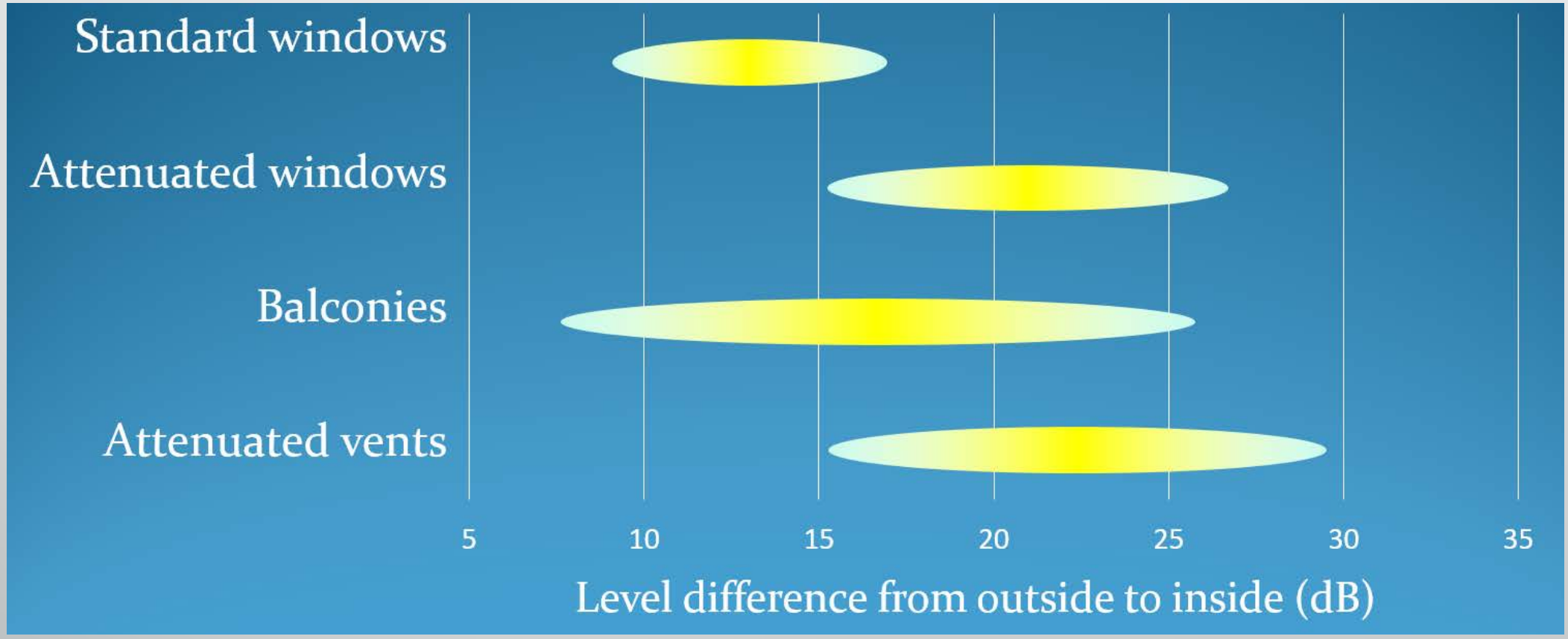
Evidence of current strategies

- 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

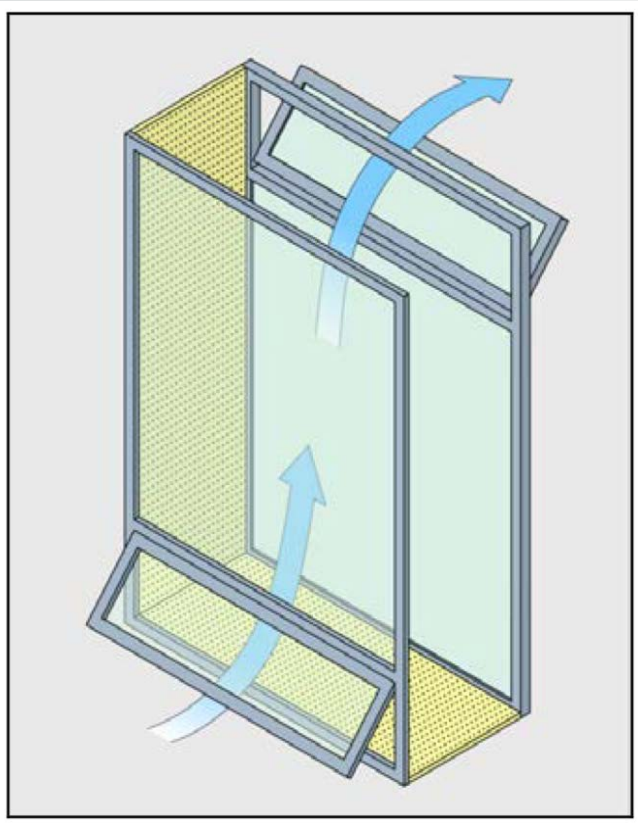
Mechanical options

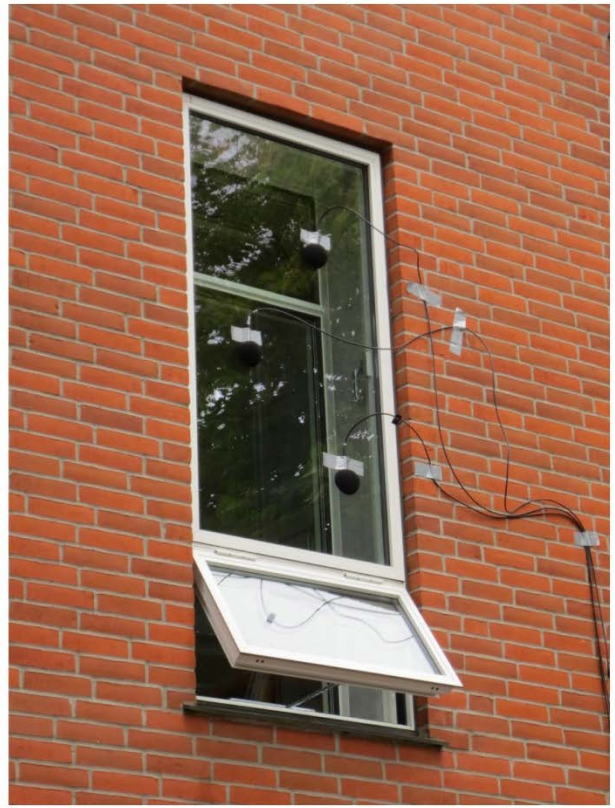
- MVHR is usually **NOT** a solution
- Ventilation rates vary, but MVHR typically sized for 0.5 air changes per hour
- Overheating ventilation typically 2 to 6 air changes per hour

Options for attenuated natural ventilation

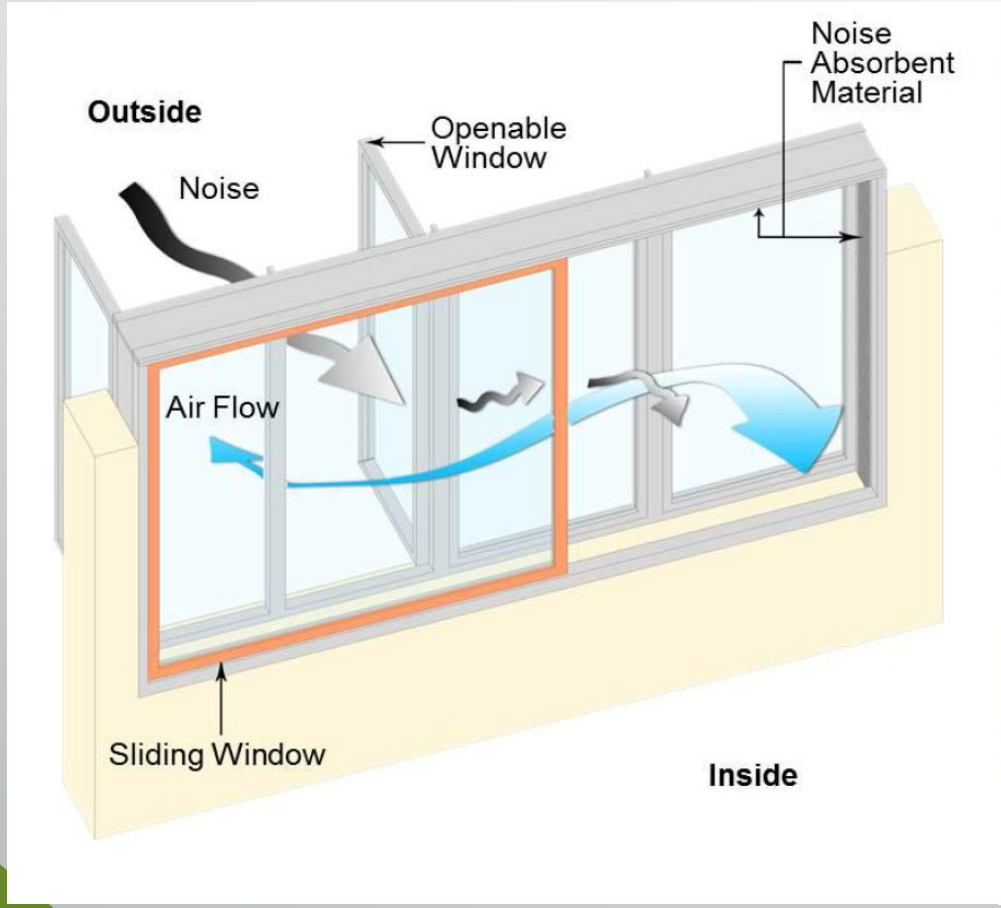


Attenuated windows

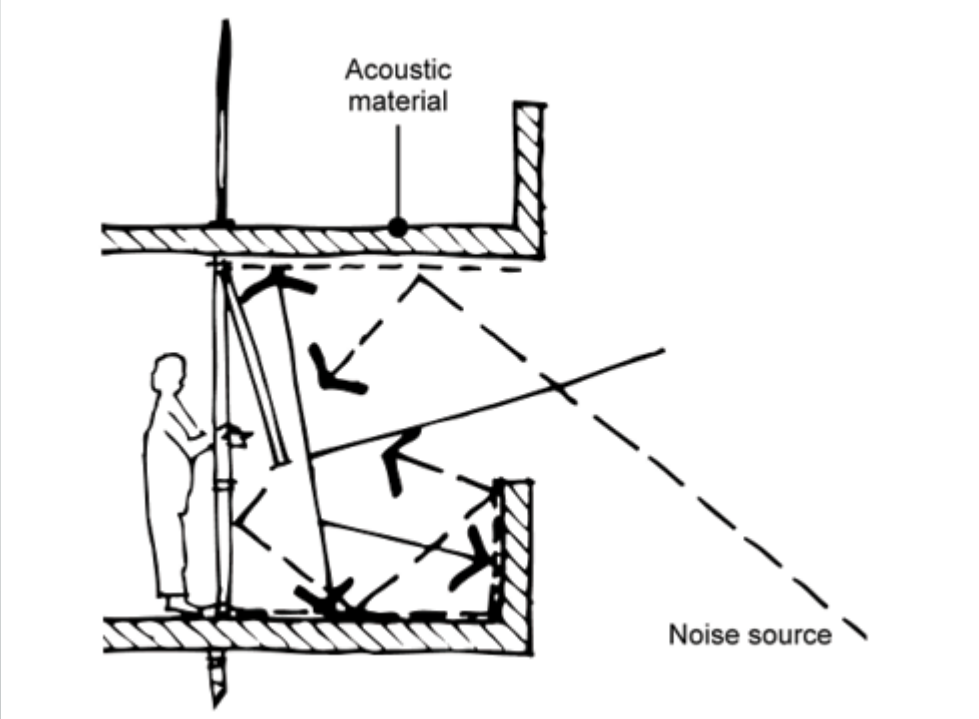


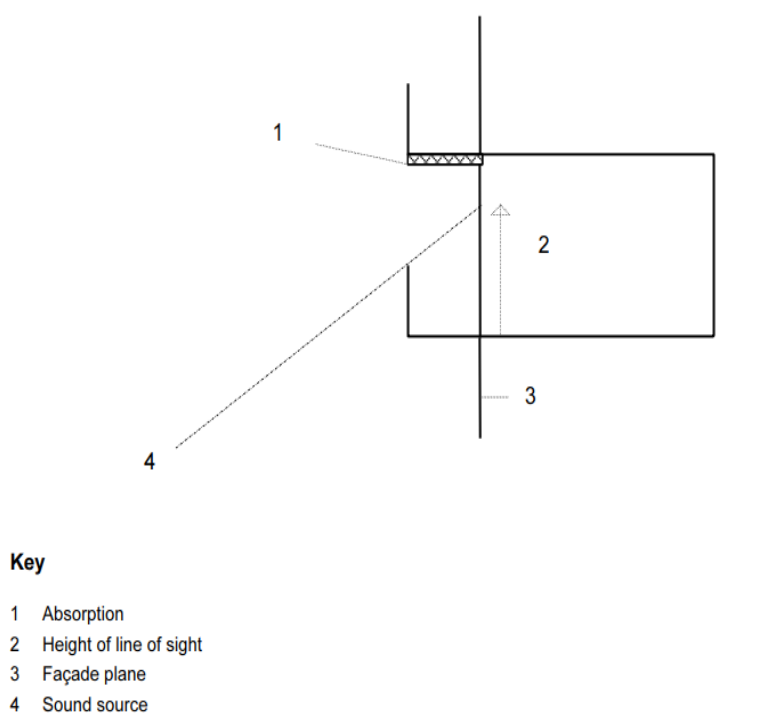


Attenuated windows

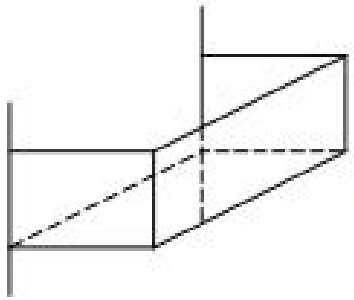
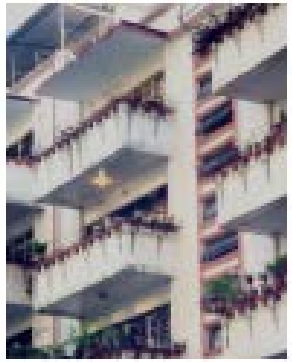
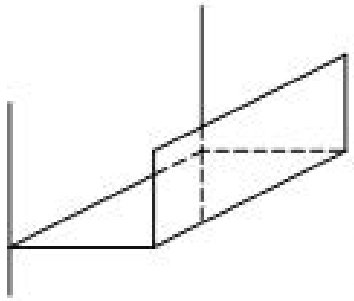
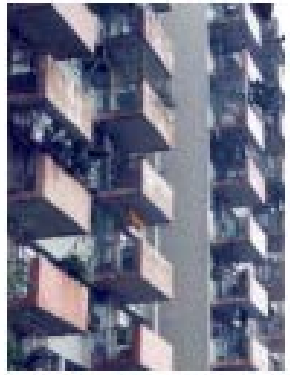
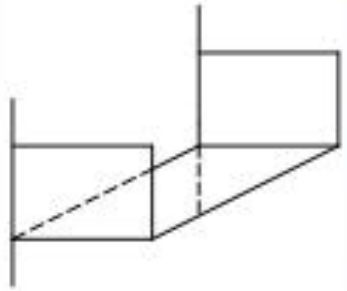
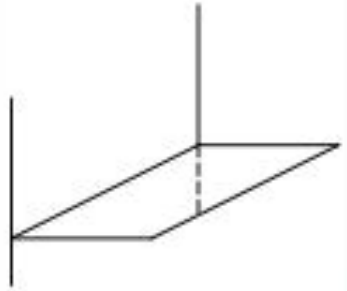


Balconies

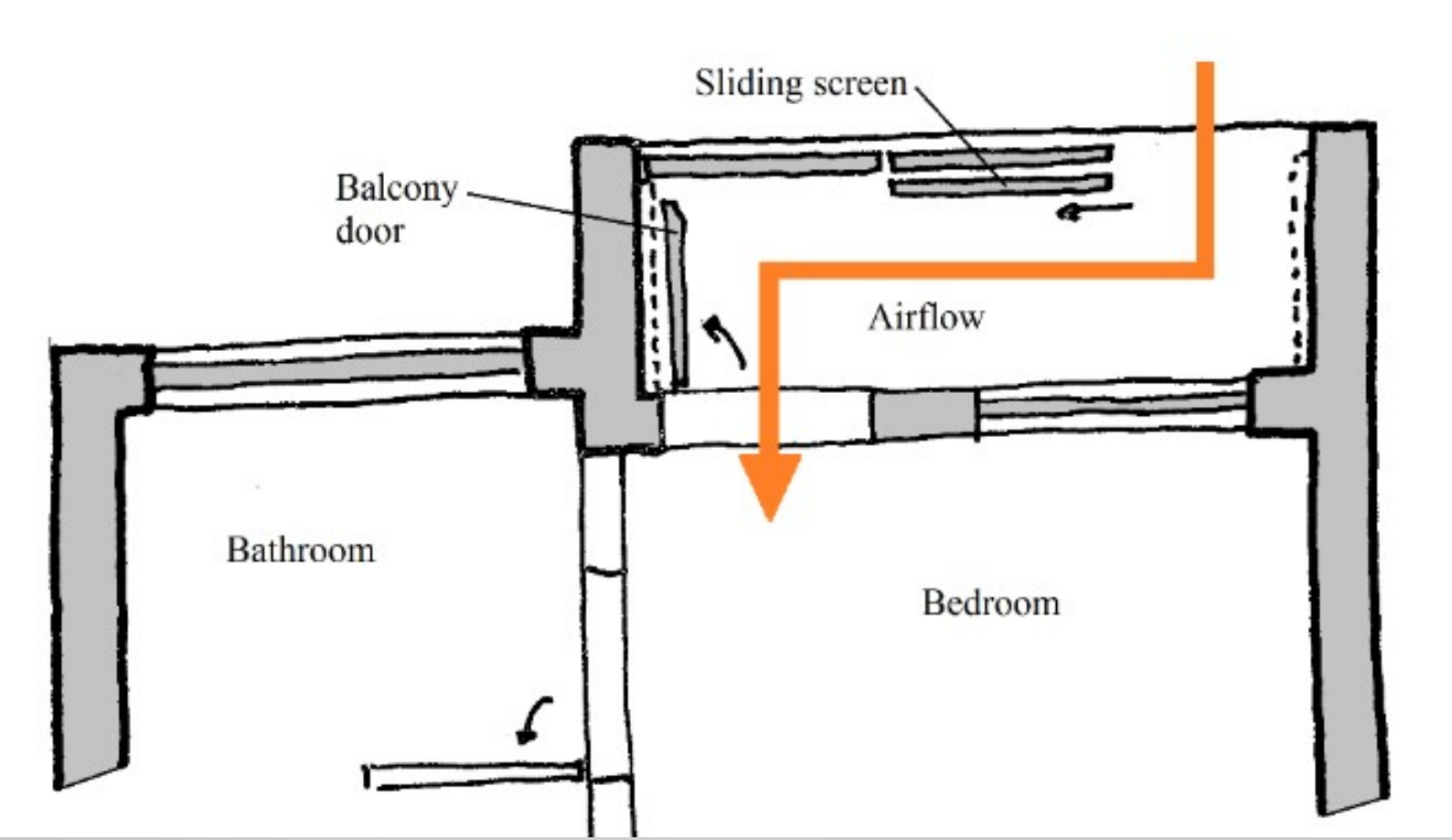

Acoustic material
Noise source


1
2
3
4
Key
1 Absorption
2 Height of line of sight
3 Façade plane
4 Sound source

Balconies

Balcony Form	Model Schematics	Real-life Example
'Closed'		
'Front-Bottom'		
'Side-Bottom'		
'Bottom'		

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

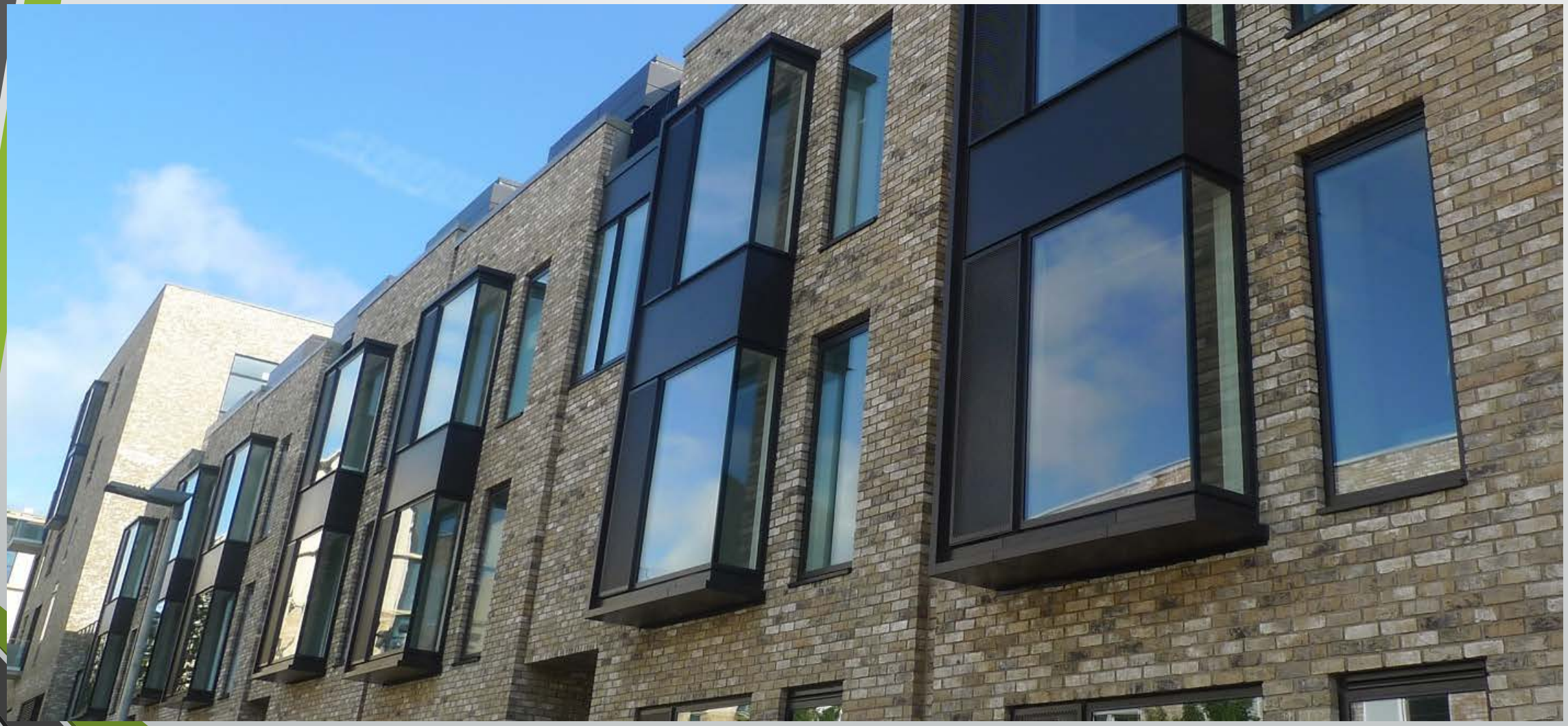
Attenuated Vents

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

ANC | ACOUSTICS & NOISE CONSULTANTS

Thank you