



Loughborough
University

Ventilation in Retrofitting

School of Architecture, Building and Civil Engineering:

*Delivering a sustainable built environment through
research, innovation and education*

Malcolm Cook

Co-I, Future Urban Ventilation Network



Existing Stock: the challenges



Existing Stock: the challenges



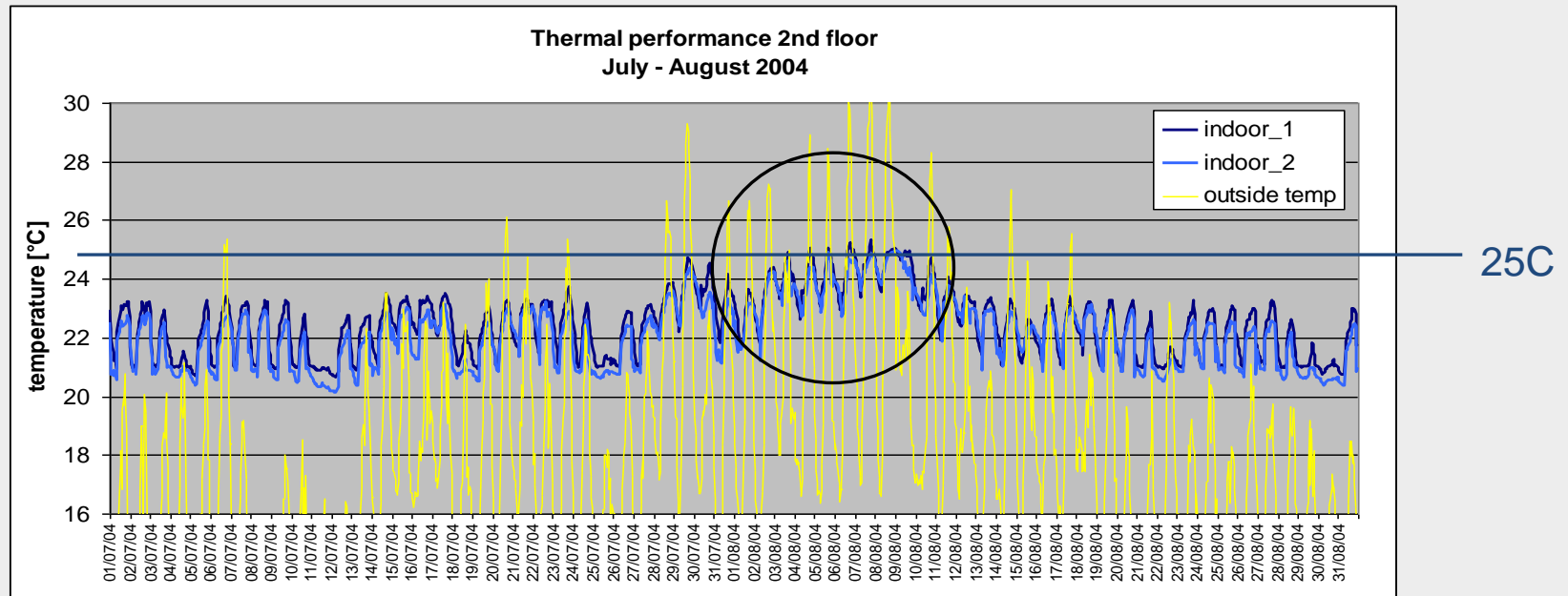
Existing Stock: the challenges



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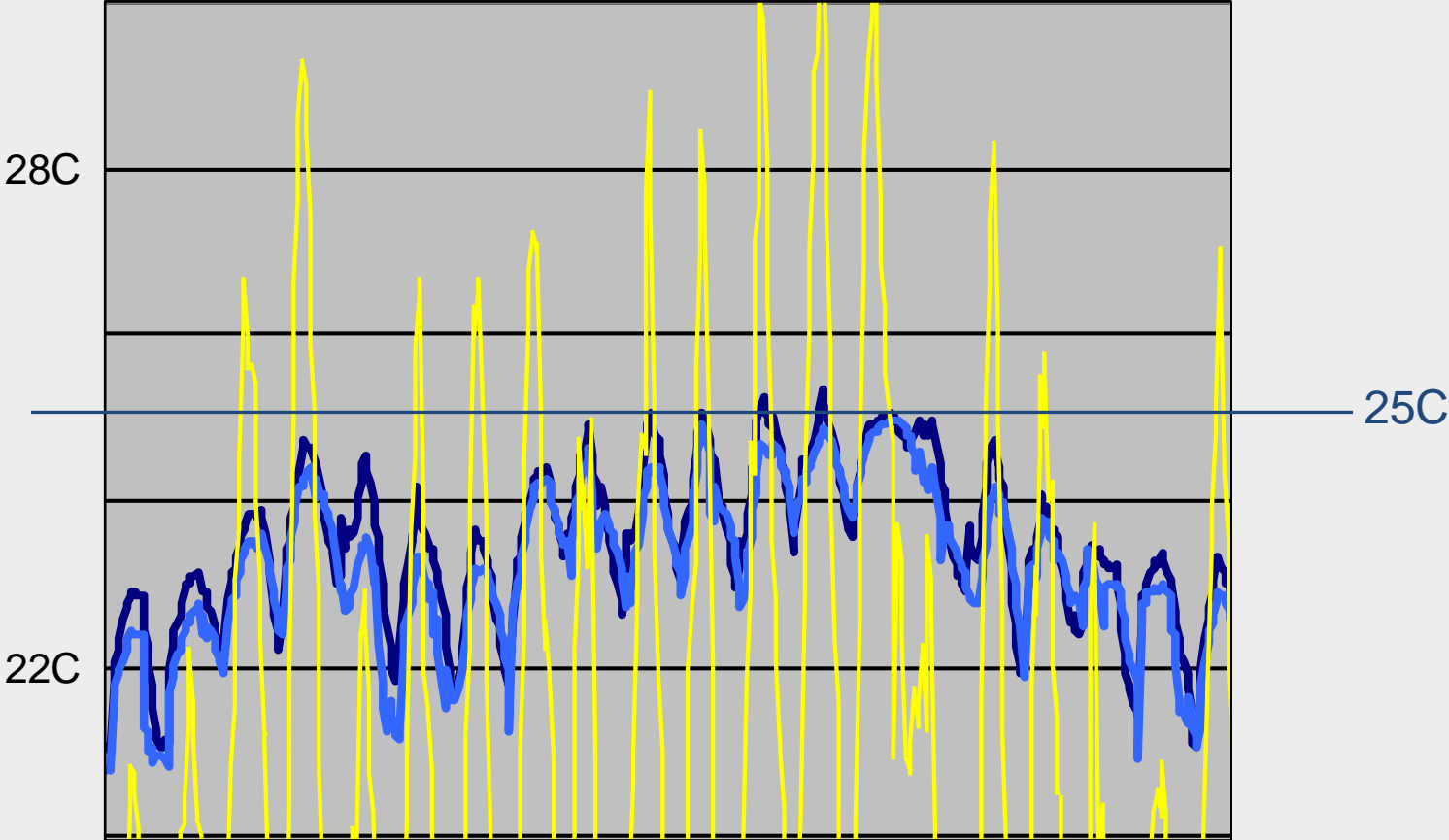


Thermal mass



In 2004: *25°C was exceeded < 1% of the hours of use*
28°C was never exceeded

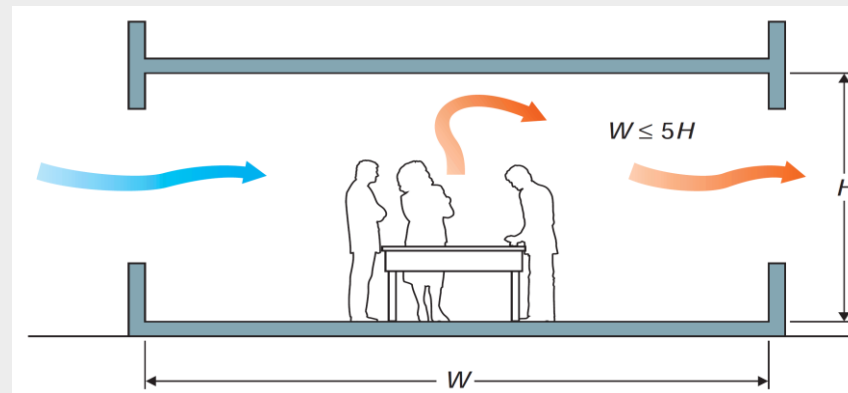
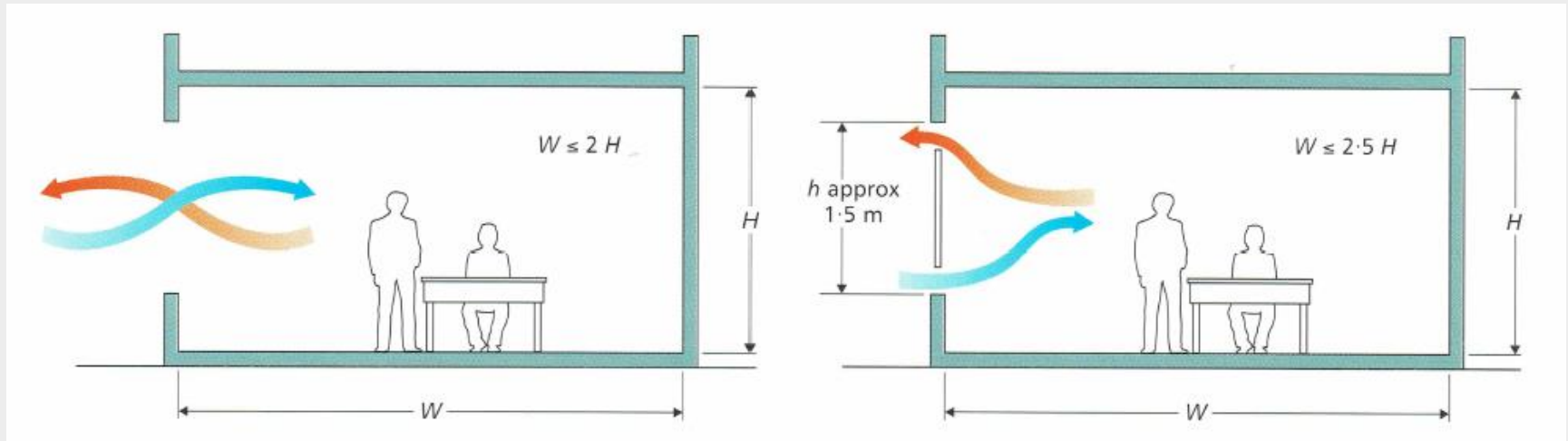
Thermal mass



Solar shading



Cross Ventilation (CIBSE AM10)



The Three Cs

- Client expectations
- Control
- Commissioning

