Ventilative Cooling in Standards and Regulations
Country Report from Austria

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National Code B 8110-3 (2012)
Thermal protection in building construction
Part 3: Prevention of summerly overheating
Background and Area of Application

• Part of the OENORM B 8110 series „Thermal protection in building construction”
• Revised and relaunched in March 2012
• Valid for all types of rooms with constant human occupancy, without technical cooling
Criteria

• Max. 27°C op. Temperature in each room
• Max. 25°C op. Temp. in sleeping rooms at night
General Methodology

Dynamic Heat Balance according to EN ISO 13791

• Climate
• Geometry
• Thermal Properties
• Solar properties, including shading
• Internal load profiles
• Ventilation
General Methodology

Dynamic Heat Balance according to EN ISO 13791

- **Climate**
  - Site sensitive, hourly climate data, defined as a constantly repeated mid summer design day (obligatory)
  - To be taken from OENORM B 8110-5 by mean day temp of 15. July plus defined day/night swing ±7K

- **Geometry**

- **Thermal Properties**
  - Further Referring to
    - EN 13791 (sky temp.)
    - EN ISO 13370 (ground temp.)

- **Solar properties, including shading**

- **Internal load profiles**

- **Ventilation**
General Methodology

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Referring to

- EN 13786 (usable thermal mass)
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Default values plus referring to
- EN 13363 (shading properties)
- EN 13561 and EN 13659 and EN 13791 (wind resistance)
- EN 13791 (fixed obstacles)
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Mandatory lists of hourly internal load profiles and hygienic ventilation rates for residential, office, schools and hospitals,

\[ \text{[W/m}^2\text{], [W/workplace], [m}^3\text{/h,pers]} \]
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- Window ventilation by formula,
  \[ V [m^3/h] = f(A_{\text{window}}, H_{\text{window}}, dT) \]
- Mechanical ventilation up to 1.5 ach in occupied rooms
  up to 2.5 ach in unoccupied rooms including thermal load from vents
Ventilative Cooling by Window Opening

\[ \dot{V} = 0.7 \cdot C_{\text{ref}} \cdot A \cdot \sqrt{H} \cdot \sqrt{\Delta T} \]
Ventilative Cooling by Window Opening

\[ \dot{V} = 0.7 \cdot C_{\text{ref}} \cdot A \cdot \sqrt{H} \cdot \sqrt{\Delta T} \]

\( W = 40 \text{ cm} \)
\( H = 120 \text{ cm} \)
Learnings
Thank you