

Passivhaus 101

Ventilation Losses

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Heat Balance

Heating Degree Hours = heating season as 67kKh/a (67,000 degree hours per year) for Birr or 60kKh/a for Dublin – How many hours will the area require heating

Ventilation Losses:

Ventilation Loss = Ventilated Volume x Effective Air Change Rate x Heat Capacity of Air x Heating Degree Hours (G_T)

Ventilation Loss = $V_v \times 0.06 \text{ h}^{-1} \times 0.33 \text{ Wh/m}^3\text{K} \times 60$ (G_T)

Heat Balance

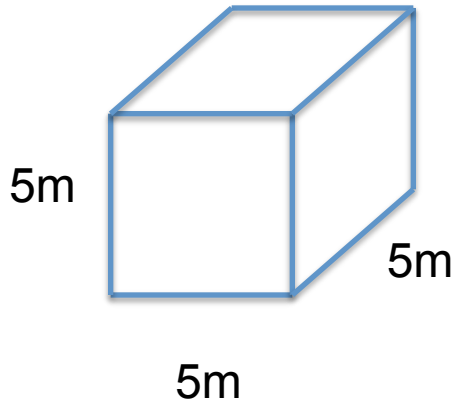
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$$Q_v = V_v \times n_{\text{equiv1}} \times C_p P \times G_T$$



Now work through your previous example:

Heat Balance

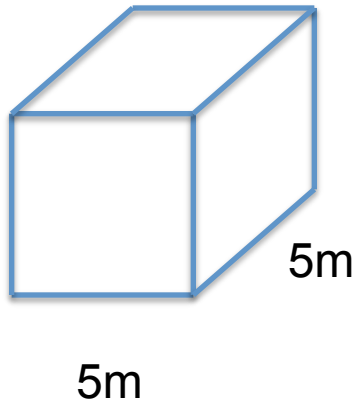
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Ventilated Volume = 5m x 5m x 5m

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Heat Balance

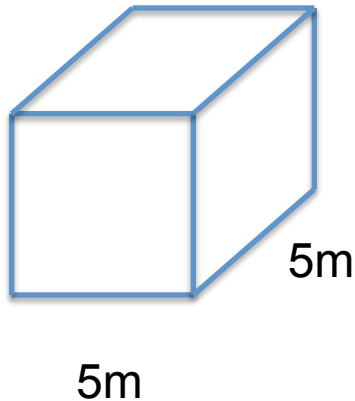
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$$\begin{aligned} \text{Ventilated Volume} &= 5\text{m} \times 5\text{m} \times 5\text{m} \\ &= 125\text{m}^3 \end{aligned}$$

Now work through your previous example:

Heat Balance

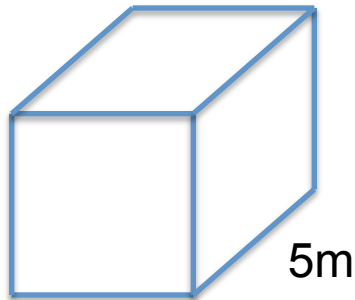
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5m

Ventilated Volume = $5\text{m} \times 5\text{m} \times 5\text{m}$

= 125m^3

Ventilated Volume = $125\text{m}^3 \times 0.06 \text{ h}^{-1} \times 0.33 \text{ Wh/m}^3\text{K} \times 60$

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Heat Balance

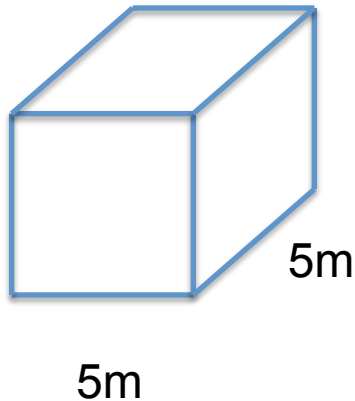
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Ventilated Volume = $5\text{m} \times 5\text{m} \times 5\text{m}$

= 125m^3

Ventilated Volume = $125\text{m}^3 \times 0.06 \text{ h}^{-1} \times 0.33 \text{ Wh/m}^3\text{K} \times 60$

= 148.5 KWh/a

Now work through your previous example:

Heat Balance

How do you think we can work out the Ventilated Volume in our own project?

Heat Balance

Ventilation Losses:

Ventilated Volume = Treated Floor Area x Floor to ceiling height

Heat Balance

Ventilation Losses:

Effective Air Change Rate:

The Effective Air Change Rate = Loss through the fabric + Loss through the MHVR

Heat Balance

Ventilation Losses:

Now work through your own project...