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EMPTY BIN TREATMENTS

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THERMAL REMEDICATION

FROM **TEMPAIR®**



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Heat Loss Calculations

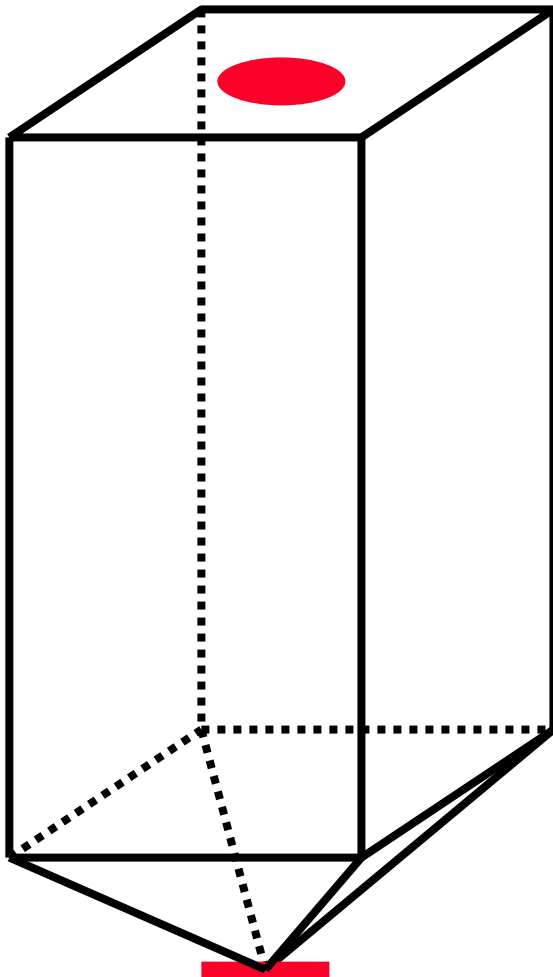
- ❖ **Required BTU**
 - **Surface Area**
 - **Wall Composition**
 - **Delta Temperature**
- ❖ **Natural Infiltration**
- ❖ **Ventilation Load**



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Rectangular Shape



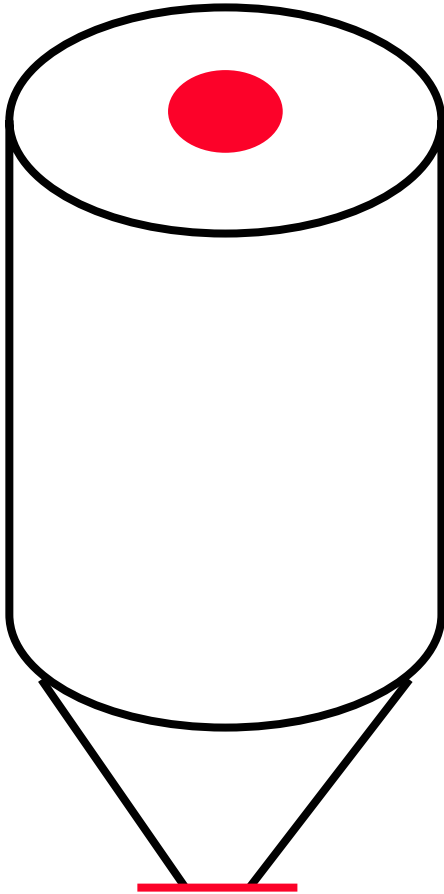
- **Walls**
 - $2 \times \text{Height} \times \text{Width}$ (Width)
 - $2 \times \text{Height} \times \text{Length}$ (Length)
- **Roof**
 - $\text{Width} \times \text{Length}$
- **Floor**
 - $\text{Width} \times \text{Length}$



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Cylindrical Shape



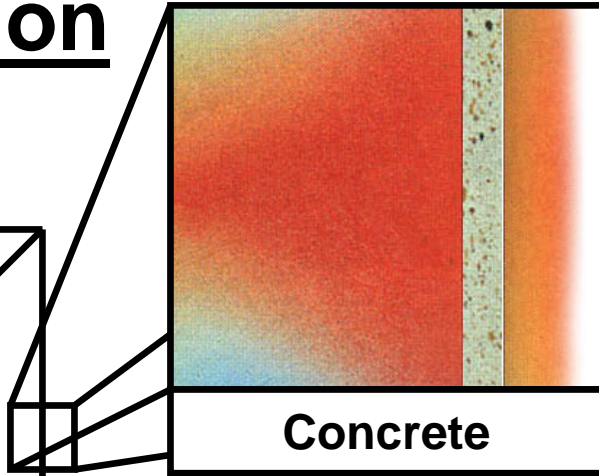
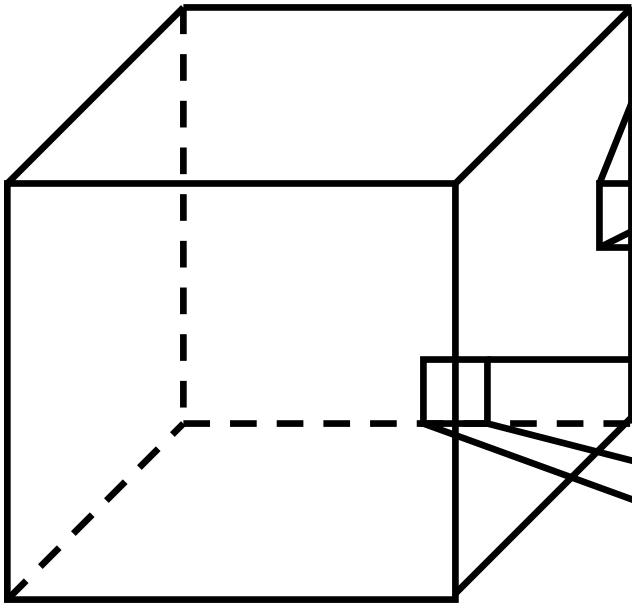
- **Cylinder**
 - $R \times H \times 2 \times \pi$
- **Top Plate**
 - $R^2 \times \pi$
- **Bottom Plate**
 - $R^2 \times \pi$



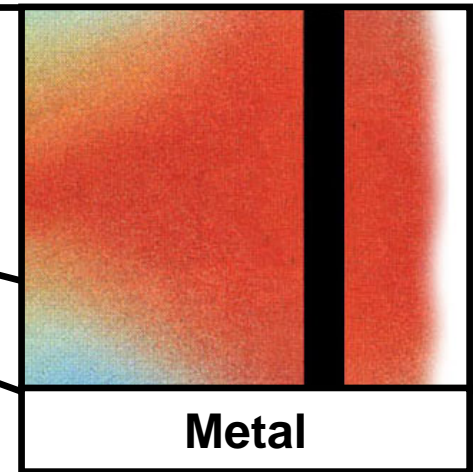
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Wall Composition



Different construction material have different “U Values”.



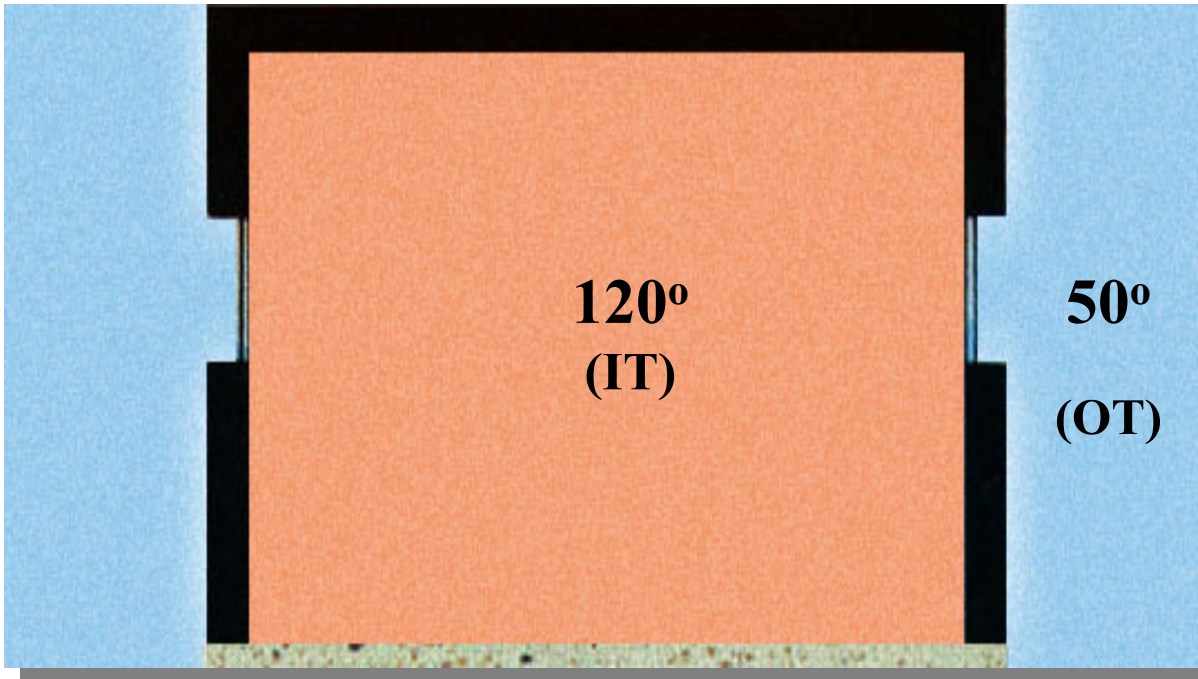
U Value: Transmission heat loss, expressed in BTU’s-per-square-foot of exposed surface.



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Temperature Difference



$$\Delta T = IT - OT = TD$$

$$\Delta T = 120^{\circ} - 50^{\circ} = 70^{\circ}$$

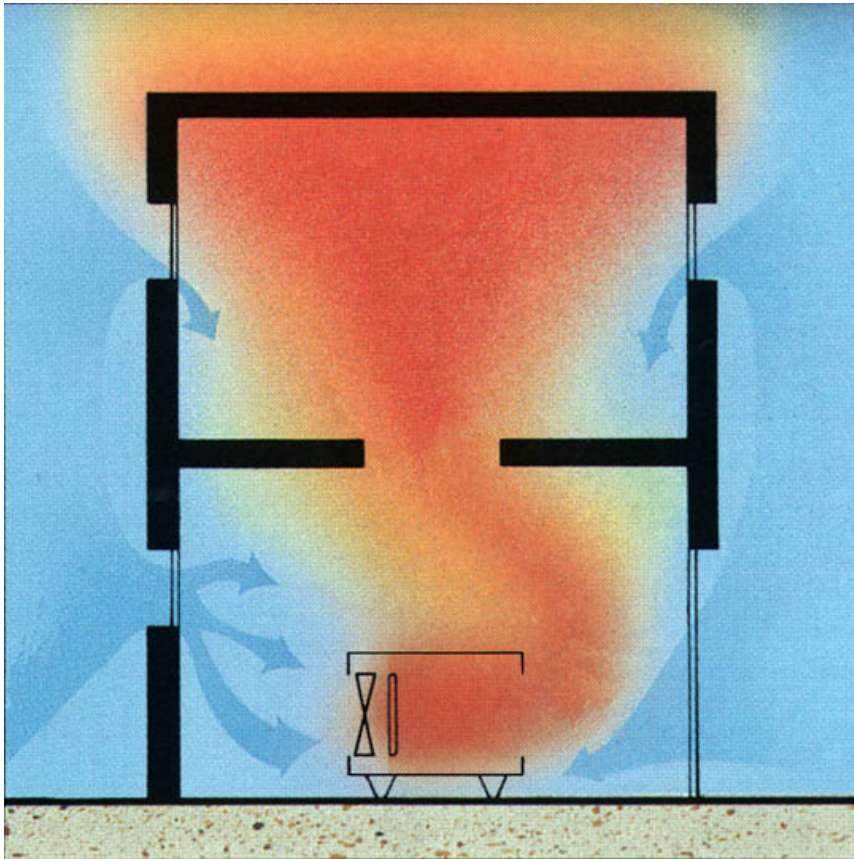
ΔT : The difference in the outside design temperature (OT) and the inside design temperature (IT).



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Natural Infiltration



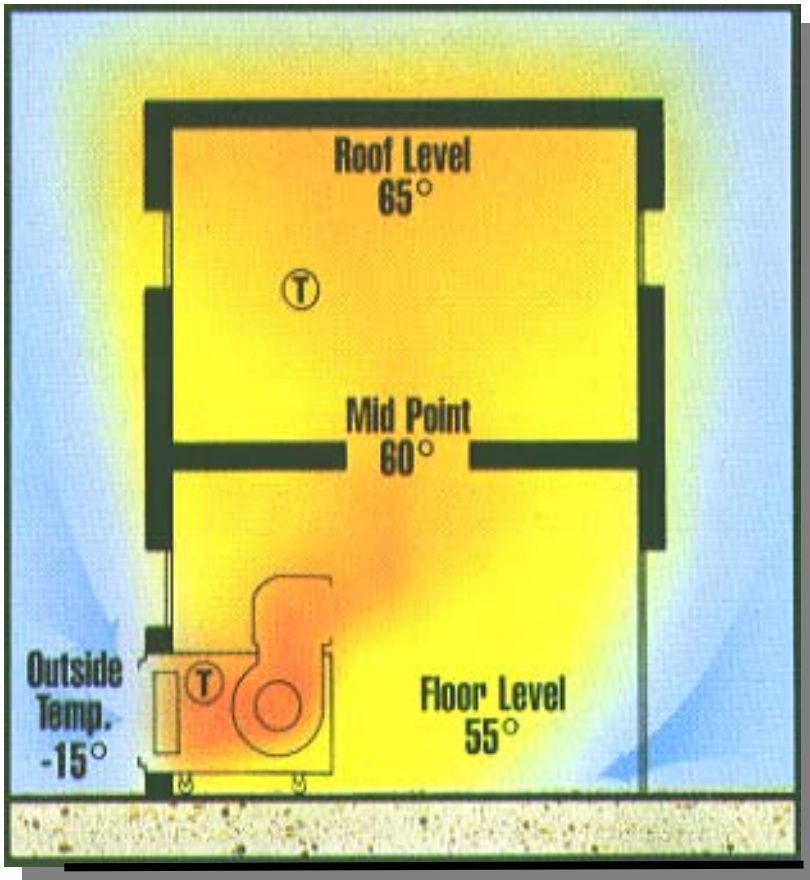
Air is drawn into a facility because of the pressure imbalance caused by the imbalance in temperature



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Ventilation Load



The amount of CFH, or Air Flow, needed to heat-up the area to the target temperature and displace or control the natural infiltration in an hours' time.



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Other Factors to Consider

Air Changes

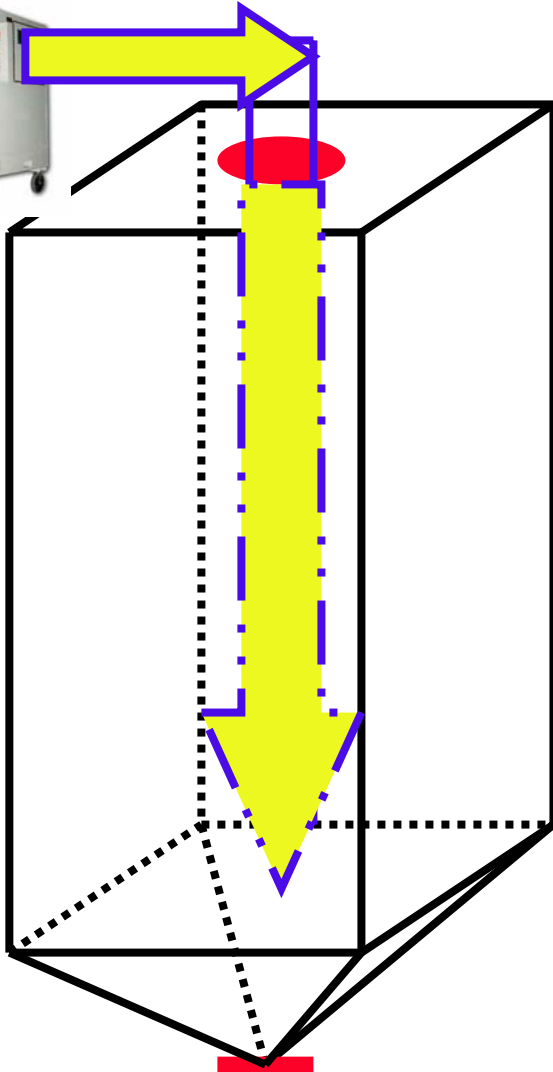
- **The amount of fresh air that circulates within a facility**
 - **Ideal air changes are 4 - 6 per hour**

Ductwork Length

- **Ductwork creates static pressure in distributing the heat**
 - **This draws on the CFM or Air Flow of the heat**
 - **Negatively affects required CFM and heat discharge**



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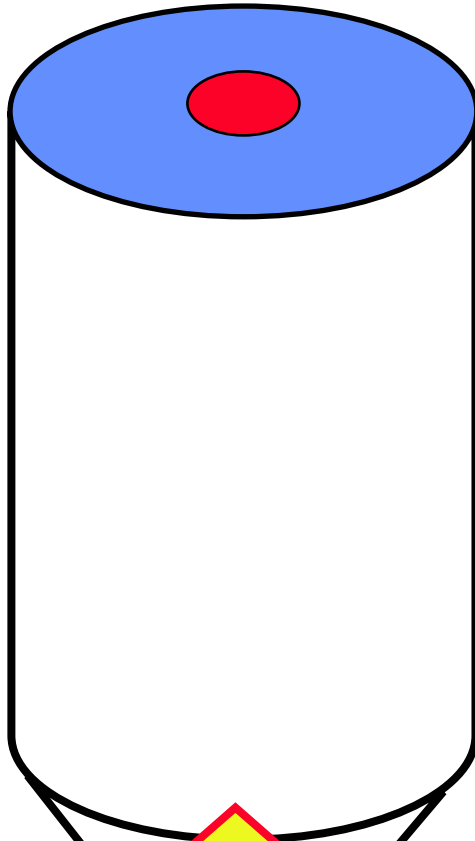


Using Top Opening

Use ductwork with holes inside the bin for better heat distribution



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Using Bottom Opening

No need for ductwork inside the bin

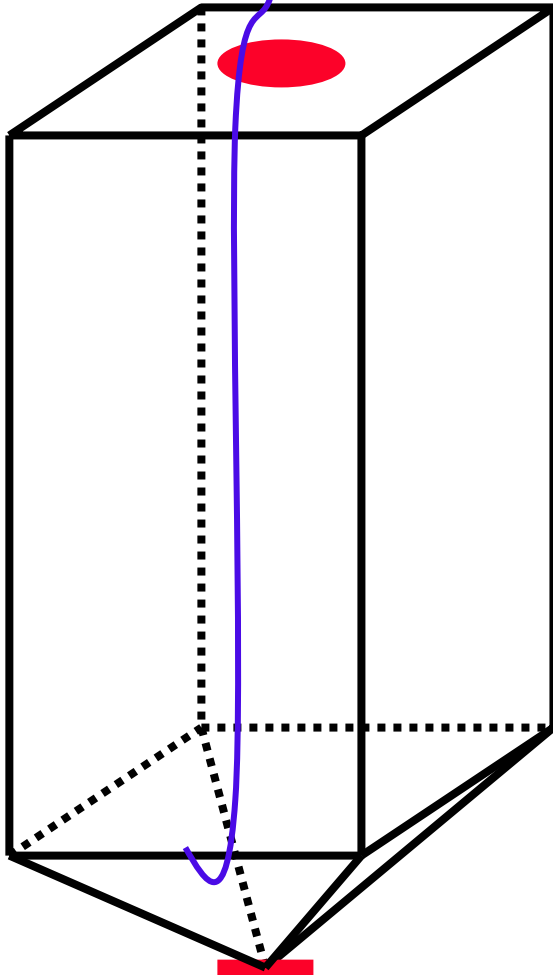




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130°



Temperature Monitoring

Thermocouple

Use same length as the depth of the bin



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Any Questions?