

ESTUDIO PREVIO DE CLIMATIZACIÓN DEL SALON DE ACTOS.

- Superficie: $26.5 \times 12\text{m} = 318 \text{ m}^2$.
- Ocupación: 208 personas.
- Nivel de ventilación según su uso: IDA 2 = 12.5 l/s-pers.
- Carga sensible máxima del local de refrigeración: $100\text{W}/\text{m}^2$.
- Carga latente por ocupantes: $50\text{W}/\text{persona}$.
- Condiciones interiores: $25 \text{ }^\circ\text{C}$ y 50% humedad relativa.
- Condiciones exteriores: $45 \text{ }^\circ\text{C}$ y 30% humedad relativa.
- Temperatura de impulsión: $18 \text{ }^\circ\text{C}$.

$$w_{AE} = 18.183 \text{ g/Kg a.s.}$$

$$w_{AL} = 9.882 \text{ g/Kg a.s.}$$

$$Q_{LOC}^{SEN} = 100 \frac{\text{W}}{\text{m}^2} \times 318 \text{ m}^2 = 31.8 \text{ KW}$$

$$Q_{LOC}^{SEN} = \frac{0.288}{860} \times V_{AI} \times (T_{AL} - T_{AI}); \quad 31.8 = \frac{0.288}{860} \times V_{AI} \times (25 - 18);$$

$$V_{AI} = 13565 \frac{\text{m}^3}{\text{h}}$$

$$V_{AE} = 12.5 \times 208 \times 3.6 = 9360 \frac{\text{m}^3}{\text{h}}$$

$$V_{AR} = 4205 \frac{\text{m}^3}{\text{h}}$$

$$\text{➤ } T_{AM} \cdot V_{AM} = T_{AE} \cdot V_{AE} + T_{AR} \cdot V_{AR}; \quad T_{AM} \cdot 13565 = 45 \cdot 9360 + 25 \cdot 4205; \quad T_{AM} = 38.8 \text{ }^\circ\text{C.}$$

$$\text{➤ } w_{AM} \cdot V_{AM} = w_{AE} \cdot V_{AE} + w_{AR} \cdot V_{AR}; \quad w_{AM} \cdot 13565 = 18.183 \cdot 9360 + 9.882 \cdot 4205; \\ w_{AM} = 15.609 \text{ g/Kg a.s.}$$

$$Q_{AE}^{SEN} = \frac{0.288}{860} \times V_{AE} \times (T_{AE} - T_{AL}) = \frac{0.288}{860} \times 9360 \times (45 - 25) = 62.69 \text{ KW};$$

$$Q_{B.F.}^{SEN} = Q_{LOC}^{SEN} + Q_{AE}^{SEN} = 31.8 + 62.69 = 94.49 \text{ KW}$$

$$Q_{LOC}^{LAT} = 50 \frac{\text{W}}{\text{pers.}} \times 208 \text{ personas} = 10.4 \text{ KW}$$

$$Q_{LOC}^{LAT} = \frac{0.716}{860} \times V_{AI} \times (w_{AL} - w_{AI}); \quad 10.4 = \frac{0.716}{860} \times 13565 \times (9.882 - w_{AI});$$

$$w_{AI} = 8.961 \text{ g/Kg a.s.}$$

$$Q_{B.F.}^{LAT} = \frac{0.716}{860} \times V_{AI} \times (w_{EB} - w_{SB}) = \frac{0.716}{860} \times 13565 \times (15.609 - 8.961) = 75.08 \text{ KW}$$

$$Q_{B.F.}^{TOT} = Q_{B.F.}^{SEN} + Q_{B.F.}^{LAT} = 94.49 + 75.08 = 169.57 \text{ KW.}$$