

Calculate required power to heat a water stream to a temperature

$$\text{kJ} \equiv 1000 \cdot \text{J}$$

$$c_{\text{p.water}} := 4186 \frac{\text{J}}{\text{kg} \cdot \text{K}}$$

$$\dot{m}_{\text{dot}} := 0.1 \frac{\text{kg}}{\text{s}}$$

$$T_{\text{init}} := 20^{\circ}\text{C}$$

$$T_{\text{final}} := 37^{\circ}\text{C}$$

$$\Delta T := T_{\text{final}} - T_{\text{init}} = 17^{\circ}\text{C}$$

$$\text{Power} := c_{\text{p.water}} \cdot \dot{m}_{\text{dot}} \cdot \Delta T$$

$$\text{Power} = 7.116 \times 10^3 \text{ W}$$