

Merjenje specifične toplote vode

Električni potopni grelec, $P = 1000 \text{ W}$

voda, $m = 1,5 \text{ kg}$

$$T_2 = 17,2^\circ\text{C}$$

$$T_k = 42,7^\circ\text{C}$$

$$t = 160 \text{ s}$$

$$\begin{array}{r} 42,7 \\ -17,2 \\ \hline 25,5 \end{array}$$

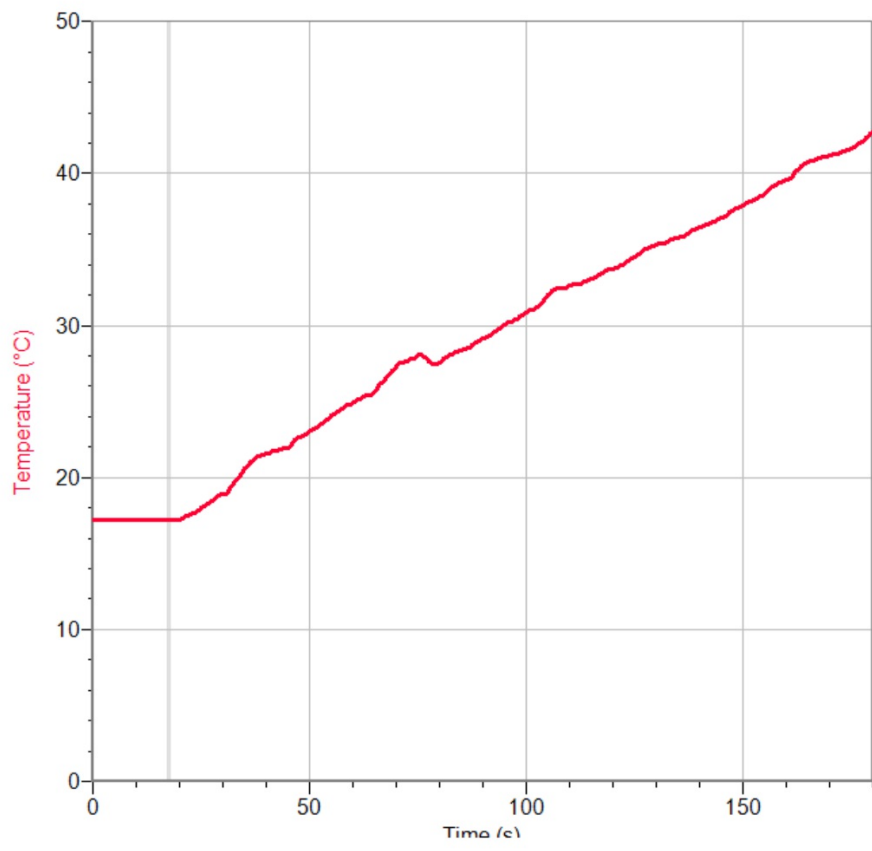
$$P = \frac{Q}{t}$$

$$Q = m \cdot c \cdot \Delta T$$

$$c = \frac{Q}{m \cdot \Delta T}$$

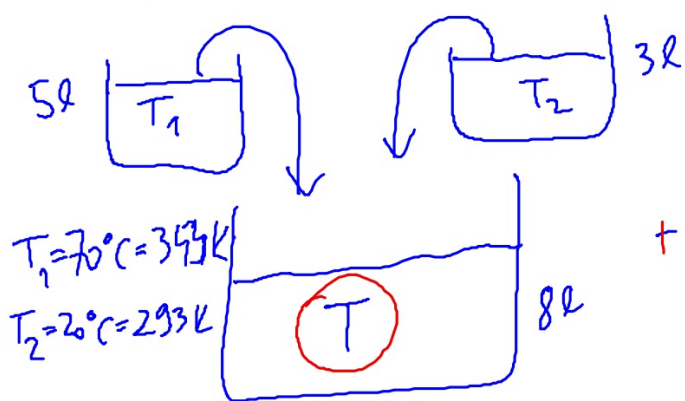
$$c = \frac{P \cdot t}{m \cdot (T_k - T_2)}$$

$$c = \frac{1000 \text{ W} \cdot 160 \text{ s}}{1,5 \text{ kg} \cdot 25,5 \text{ K}} = 4183 \frac{\text{J}}{\text{kg K}}$$
$$\approx 4200 \frac{\text{J}}{\text{kg K}}$$



• **Reānmanjē zmesne temperatūra**

Izmēsamā 5 l ūdeņš ar temperatūru 70°C un 3 l ūdeņš ar temperatūru 20°C. Kādi būs temperatūra "mēsainice"?



$$Q_1 = Q_2$$

$$m_1 \cdot \Delta T_1 = m_2 \cdot \Delta T_2$$

$$m_1 (T_1 - T) = m_2 (T - T_2)$$

$$m_1 T_1 - m_1 T = m_2 T - m_2 T_2$$

$$+ m_1 T + m_2 T = + m_2 T_2 + m_1 T_1 \quad \text{(1)}$$

$$T (m_1 + m_2) = m_1 T_1 + m_2 T_2$$

$$T = \frac{m_1 T_1 + m_2 T_2}{m_1 + m_2}$$

$$T = \frac{5\text{kg} \cdot 343\text{K} + 3\text{kg} \cdot 293\text{K}}{8\text{kg}} = 324\text{K}$$

$$= 51^\circ\text{C}$$

Koliko litara vode s temperaturom 20°C
moramo dodati 2 l vode s temperaturom 60°C ,
da bi konačna temperatura 50°C ?

$$T = 50^{\circ}\text{C} = 323\text{K}$$

$$m_1 = 2\text{kg}$$

$$T_1 = 60^{\circ}\text{C} = 333\text{K}$$

$$T_2 = 20^{\circ}\text{C} = 293\text{K}$$

$$m_2 = ?$$

$$m_1 T + m_2 T = m_1 T_1 + m_2 T_2$$

$$m_2 T - m_2 T_2 = m_1 T_1 - m_1 T$$

$$m_2 (T - T_2) = m_1 T_1 - m_1 T$$

$$m_2 = \frac{m_1 T_1 - m_1 T}{T - T_2}$$