

$$13.1 \quad t = 150' \quad I = 1,2 \text{ A}$$

$$C = 1,118 \frac{\text{mg}}{\text{As}}$$

$$m = C \cdot I \cdot t = 1,118 \frac{\text{mg}}{\text{As}} \cdot 150 \cdot 60'' \cdot 1,2 \text{ A} =$$
$$= 12 \text{ g}$$

$$13.2 \quad m = 200 \text{ g}$$

$$I = 120 \text{ A}$$

$$\eta = 15\%$$

$$C = 0,323 \frac{\text{g}}{\text{Ah}}$$

$$I_2 = I \cdot \eta = 120 \cdot 0,15 = 18 \text{ A}$$

$$t = \frac{m}{C \cdot I_2} = \frac{200}{0,323 \cdot 18} = 34,4 \text{ h}$$
$$= 34 \text{ h } 24'$$

$$13.3 \quad t = 40' \quad m = 320g$$

$$c = 1,186 \frac{g}{Ah}$$

$$\eta = 70\%$$

$$I_2 = \frac{m}{c \cdot t} = \frac{320}{1,186 \cdot \frac{40}{60}} = 404,5 A$$

$$I = \frac{I_2}{\eta} = \frac{404,5}{0,7} = 577,89 A$$

$$13.4 \quad d = 1,5 \mu\text{m} \quad A = 40 \text{ dm}^2$$

$$S = 15 \frac{\text{A}}{\text{dm}^2} \quad \eta = 15\%$$

$$\rho = 7,19 \frac{\text{g}}{\text{cm}^3} \quad C = 0,647 \frac{\text{g}}{\text{Ah}}$$

$$S = \frac{I}{A} \Rightarrow I = S \cdot A = \\ = 15 \frac{\text{A}}{\text{dm}^2} \cdot 40 \text{ dm}^2 = 600 \text{ A}$$

$$I_2 = I_1 \cdot \eta = 600 \cdot 0,15 = 90 \text{ A}$$

$$A = 40 \text{ dm}^2 = 4000 \text{ cm}^2$$

$$d = 1,5 \mu\text{m} = 0,00015 \text{ cm}$$

$$V = A \cdot d = 4000 \cdot 0,00015 = 0,6 \text{ cm}^3$$

$$m = V \cdot \rho = 0,6 \text{ cm}^3 \cdot 7,19 \frac{\text{g}}{\text{cm}^3} = 4,3 \text{ g}$$

$$t = \frac{m}{C \cdot I_2} = \frac{4,3 \text{ g}}{0,647 \frac{\text{g}}{\text{Ah}} \cdot 90 \text{ A}} = 0,07 \text{ h} \\ = 4,4' \\ = 4' 26''$$

$$13.5 \quad d_i = 20 \text{ mm} \quad d_a = 35 \text{ mm}$$

$$n = 500 \quad a = 2 \text{ mm}$$

$$c = 1,0 \text{ PS} \frac{g}{\text{Ah}} \quad \eta = 0,97$$

$$g = 8,85 \frac{\text{kg}}{\text{dm}^3} \quad I = 300 \text{ A}$$

$$A_i = \frac{d_i^2 \cdot \pi}{4} = \frac{20^2 \cdot \pi}{4} = 314,2 \text{ mm}^2$$

$$A_a = \frac{d_a^2 \cdot \pi}{4} = \frac{35^2 \cdot \pi}{4} = 962,1 \text{ mm}^2$$

$$U_i = d_i \cdot \pi = 20 \cdot \pi = 62,83 \text{ mm}$$

$$A_{iR} = U_i \cdot a = 62,83 \cdot 2 = 125,6 \text{ mm}^2$$

$$U_a = d_a \cdot \pi = 35 \cdot \pi = 109,96 \text{ mm}$$

$$A_{aR} = U_a \cdot a = 110 \cdot 2 = 220 \text{ mm}^2$$

$$A^2 = (A_a - A_i) + A_{aR} + A_{iR} =$$

$$= (962,1 - 314,2) + 125,6 + 220 =$$

$$= 1641 \text{ mm}^2$$

$$\begin{aligned}
 A_g &= n \cdot A = 500 \cdot 1641 = 820.500 \text{ mm}^2 \\
 &= 8205 \text{ cm}^2 \\
 &= 82 \text{ dm}^2
 \end{aligned}$$

$$\begin{aligned}
 d &= 10 \mu\text{m} = 0,01 \text{ mm} \\
 &= 0,0001 \text{ dm}
 \end{aligned}$$

$$\begin{aligned}
 V &= A_g \cdot d = 82,05 \cdot 0,0001 \text{ dm} \\
 &= 0,0082 \cdot \text{dm}^3
 \end{aligned}$$

$$\begin{aligned}
 m &= V \cdot \rho = 0,0082 \cdot 8,85 = 0,0726 \text{ kg} \\
 &= 72,6 \text{ g}
 \end{aligned}$$

$$I_2 = I \cdot \eta = 300 \cdot 0,97 = 291 \text{ A}$$

$$\begin{aligned}
 t &= \frac{m}{c \cdot I_2} = \frac{72,6}{1,095 \cdot 291} = 0,228 \text{ h} \\
 &= 13'
 \end{aligned}$$

$$S = \frac{I}{A} = \frac{300 \text{ A}}{82 \text{ dm}^2} = 3,66 \frac{\text{A}}{\text{dm}^2}$$

$$13.6 \quad d = 25 \mu\text{m} \quad A = 80 \text{ dm}^2$$

$$S = 1,6 \frac{\text{A}}{\text{dm}^2} \quad U = 18 \text{ V}$$

$$k = 0,13 \frac{\text{€}}{\text{kWh}} \quad c = 200 \frac{\text{As}}{\mu\text{m} \cdot \text{dm}^2}$$

$$I = S \cdot A = 1,6 \frac{\text{A}}{\text{dm}^2} \cdot 80 \text{ dm}^2 = 128 \text{ A}$$

$$P = U \cdot I = 18 \cdot 128 = 2304 \text{ W}$$

$$Q = A \cdot d \cdot c =$$

$$= 80 \cancel{\text{ dm}^2} \cdot 25 \cancel{\mu\text{m}} \cdot 200 \frac{\text{As}}{\cancel{\mu\text{m}} \cdot \cancel{\text{dm}^2}} =$$

$$= 400.000 \text{ As}$$

$$t = \frac{Q}{I} = \frac{400.000}{128} = 3125''$$

$$W = P \cdot t = 2304 \cdot \frac{3125}{3600} = 52' 5'' = 2 \text{ kWh}$$

$$K = W \cdot k = 0,13 \cdot 2 = 0,26 \text{ €}$$