

$$11.1 \quad P_{zu} = 2,85 \text{ kW}$$

$$P_{ab} = 2,35 \text{ kW}$$

$$\eta = \frac{P_{ab}}{P_{zu}} = \frac{2,35 \text{ k}}{2,85 \text{ k}} = 0,824 \\ = 82,4 \%$$

$$11.2 \quad P_{zu} = 220 \text{ kW} \quad P_{ab} = 185 \text{ kW}$$

$$P_v = P_{zu} - P_{ab} = 220 \text{ k} - 185 \text{ k} = \\ = 35 \text{ kW}$$

$$\eta = \frac{P_{ab}}{P_{zu}} = \frac{185 \text{ k}}{220 \text{ k}} = 0,84 \\ = 84 \%$$

$$11.3 \quad U = 12V \quad I = 4,4A$$

$$\eta_{\text{Motor}} = 0,75$$

$$\eta_{\text{Gedicht}} = 0,5$$

$$\begin{aligned} \eta_{\text{ges}} &= \eta_M \cdot \eta_G = 0,75 \cdot 0,5 = \\ &= 0,375 = 37,5\% \end{aligned}$$

$$P_{\text{zu}} = U \cdot I = 12 \cdot 4,4 = 52,8W$$

$$\begin{aligned} P_{\text{ab}} &= P_{\text{zu}} \cdot \eta_G = 52,8 \cdot 0,375 = \\ &= 19,8W \end{aligned}$$

$$11.8 \quad P_{zu} = 12,5 \text{ kW}$$

$$U_{Ab} = 30 \text{ V} \quad I_{Ab} = 240 \text{ A}$$

$$P_{ab} = U \cdot I = 30 \cdot 240 = 7200 \text{ W}$$

$$\eta = \frac{P_{ab}}{P_{zu}} = \frac{7,2 \text{ k}}{12,5 \text{ k}} = 0,576 \\ = 57,6 \%$$

$$11.9 \quad P_{ab} = 2,2 \text{ kW} \quad \eta = 0,84$$

$$k = 0,13 \frac{\text{€}}{\text{kWh}} \quad t = 1 \text{ h}$$

$$P_{zu} = \frac{P_{ab}}{\eta} = \frac{2,2 \text{ k}}{0,84} = 2,61 \text{ kW}$$

$$W = P \cdot t = 2,61 \text{ k} \cdot 1 = 2,61 \text{ kWh}$$

$$K = W \cdot k = 2,61 \text{ kWh} \cdot 0,13 \frac{\text{€}}{\text{kWh}} = \\ = 0,34 \text{ €}$$

$$11.10 \quad \eta_{\text{Motor}} = 80\%$$

$$\eta_{\text{Leitung}} = 97\%$$

$$\eta = \eta_M \cdot \eta_L = 0,8 \cdot 0,97 = 0,776 \\ = 77,6\%$$