

4.11.

Výpočet účinnosti

28/5 U

$$P_0 = 30 \text{ kW} = 30\,000 \text{ W}$$

$$\eta = 80\% = 0,8$$

$$t = 1 \text{ min} = 60 \text{ s}$$

$$W = ? \quad P = \frac{W}{t}$$

$$W = P \cdot t$$

$$W = 24\,000 \cdot 60$$

$$\underline{W = 1\,440\,000 \text{ J}}$$

výděl : $P = ?$

$$\eta = \frac{P}{P_0}$$

$$P = \eta \cdot P_0$$

$$P = 0,8 \cdot 30\,000$$

$$P = 24\,000 \text{ W}$$

Elektromotor vykoná práci 1,44 MJ.

28/6 U

$$m = 3 \text{ t} = 3000 \text{ kg} \quad F = 30\,000 \text{ N}$$

$$s = 18 \text{ m}$$

$$t = 30 \text{ s}$$

$$\eta = 75\% = 0,75$$

$$P_0 = ?$$

$$\eta = \frac{P}{P_0}$$

$$P_0 = \frac{P}{\eta}$$

$$P_0 = \frac{18\,000}{0,75}$$

$$\underline{P_0 = 24\,000 \text{ W}}$$

výděl : $P = ?$

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

$$P = \frac{540\,000}{30}$$

$$P = 18\,000 \text{ W}$$

$$W = ?$$

$$W = F \cdot s$$

$$W = 30\,000 \cdot 18$$

$$W = 540\,000 \text{ J}$$

Výkon motoru vytahuje je 24 kW.

28/7 U

$$P = 6 \text{ kW} = 6000 \text{ W}$$

$$t = 1 \text{ s}$$

$$s = 0,5 \text{ m}$$

$$m = ?$$

$$\underline{m = 1200 \text{ kg}}$$

$$F = ?$$

$$F = \frac{W}{s}$$

$$F = \frac{6000}{0,5}$$

$$F = 12\,000 \text{ N}$$

$$W = ? \quad P = \frac{W}{t}$$

$$W = P \cdot t$$

$$W = 6000 \cdot 1$$

$$W = 6000 \text{ J}$$

Těleso má maximální hmotnost 1,2 t.