TE - 20180829

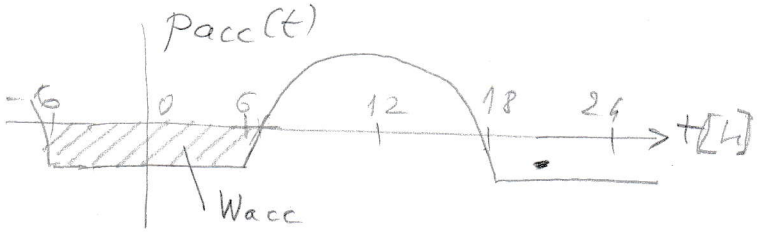
1

$$p(t) = 500 \cdot \sin\left[\frac{2\pi}{24}(t-6)\right]$$

$$p_o(t) = 0{,}9 \cdot 500 \cdot \sin\left[\frac{2\pi}{24}(t-6)\right] = 450 \cdot \sin\left[\frac{2\pi}{24}(t-6)\right]$$

$$W_o = \int_6^{18} p_o(t)\,dt = \frac{2}{\pi} 12 \cdot 450 = \underline{3{,}44\,[kWh]}$$

$$P_L = \frac{W_o}{24} = \frac{3440}{24} = \underline{143\,[W]}$$

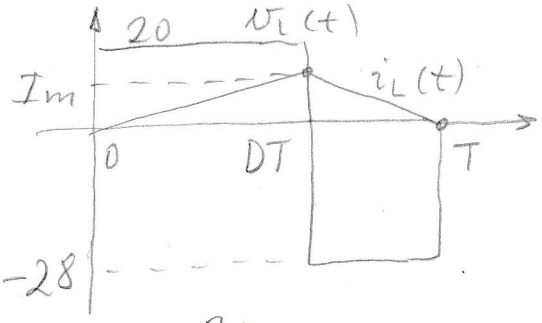


$$W_{acc} \approx 12 \cdot 143 = 1{,}72\,[kWh]$$

$$Q = \frac{W_{acc}}{U} = \frac{1716}{24} = \underline{71{,}5\,[Ah]}$$

2

$$U_B = \frac{D}{1-D} V_p \Rightarrow U_B(1-D) = D \cdot V_p \Rightarrow 28(1-D) = 20D \;;\; \underline{D = 58{,}3\%}$$

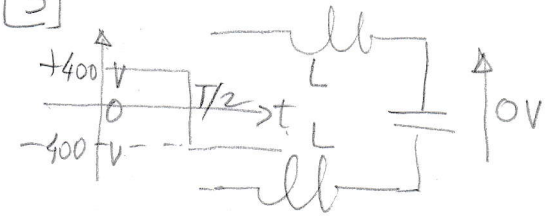


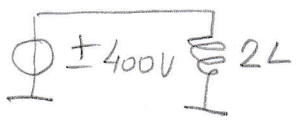
$$I_p = I_m D/2 \Rightarrow I_m = \frac{2}{D} I_p = \frac{2}{0{,}583} \cdot 7 = \underline{24\,[A]}$$

$$v_L(t) = L\frac{di_L}{dt} \Rightarrow L = \frac{v_L}{di_L/dt}$$

$$L = \frac{20}{24/(0{,}583 \cdot 20\mu s)} = \underline{9{,}7\,[\mu H]}$$

3





$$\Delta I_L = \frac{V_m \cdot \frac{1}{2}T}{2L} = \frac{\pm 400 \cdot}{4fL} \Rightarrow L = \frac{400}{4f\Delta I_L} =$$

$$= \frac{400}{4 \cdot 20 \cdot 10^3 \cdot 1} = \underline{5\,[mH]}$$