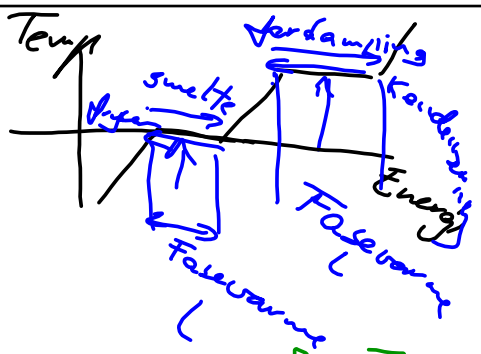
7.18

Fasevarme



$Q = L \cdot m \left[\frac{kJ}{kg} \cdot kg\right]$

L finnes i tabell $L_{SA} = 397 \left[\frac{kJ}{kg}\right]$

Må finne massen:

$m = 1 \text{ tonn} = 1000 \text{ kg}$

$Q = L \cdot m = 397 \cdot 1000 \left[\frac{kJ}{kg} \cdot kg\right] = 397 [MJ]$

Fra J til kWh

$[J] = [W \cdot s]$

$Q = E = P \cdot t$

$1 \text{ kWh} = 10^3 \text{ Wh} = 10^3 \text{ W} \cdot 3600 \text{ s}$

$1 \text{ kWh} = 3{,}6 \cdot 10^6 \text{ Ws} = 3{,}6 \cdot 10^6 \text{ J}$

$J = \frac{1 \text{ kWh}}{3{,}6 \cdot 10^6}$

$Q = 397 \text{ MJ} = 397 \cdot 10^6 \cdot \frac{\text{kWh}}{3{,}6 \cdot 10^6}$

$= \frac{397}{3{,}6} \text{ kWh} = 110 \text{ kWh}$

7.20

$P = 80\,W \quad t = 9{,}5\,min - 3{,}5\,m = 60\,min$

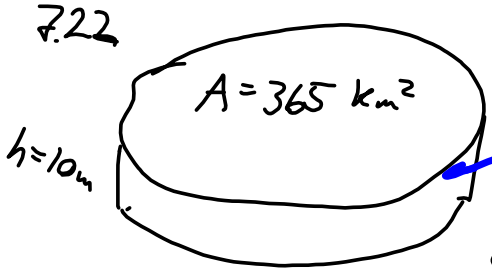
$= 6{,}0 \cdot 60\,s = 360\,s$

$Q = P \cdot t = 80\,[W] \cdot 360\,[s] = 28{,}8\,[kJ]$

$Q = L \cdot m$

$L = \frac{Q}{m} = \frac{28{,}8\,[kJ]}{0{,}200\,[kg]} = 144\left[\frac{kJ}{kg}\right]$

7.22



$\Delta T = 10\ K$

Q ?

$c_v = 4{,}2\left[\frac{kJ}{kg \cdot K}\right]$ ← fra tabell

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

$m = A \cdot h$

massen ↓

m^2 m

$m^3 \rightarrow 1000\ kg$

$1\ km = 1000\ m$

$A = 1\ km^2 = 10^6\ m^2$

$1\ km = 1000\ m$

fra tabell

$m = 365 \cdot 10^6\left[\frac{kg}{m^2}\right] \cdot 10[m] = 3650 \cdot 10^6[m^3] \cdot 10^3\left[\frac{kg}{m^3}\right]$

$= 3{,}65 \cdot 10^{12}[kg]$

$Q = 4{,}2\left[\frac{kJ}{kg \cdot K}\right] \cdot 3{,}65 \cdot 10^{12}[kg] \cdot 10[K]$

$= 153{,}3 \cdot 10^{12}\ [kJ]$