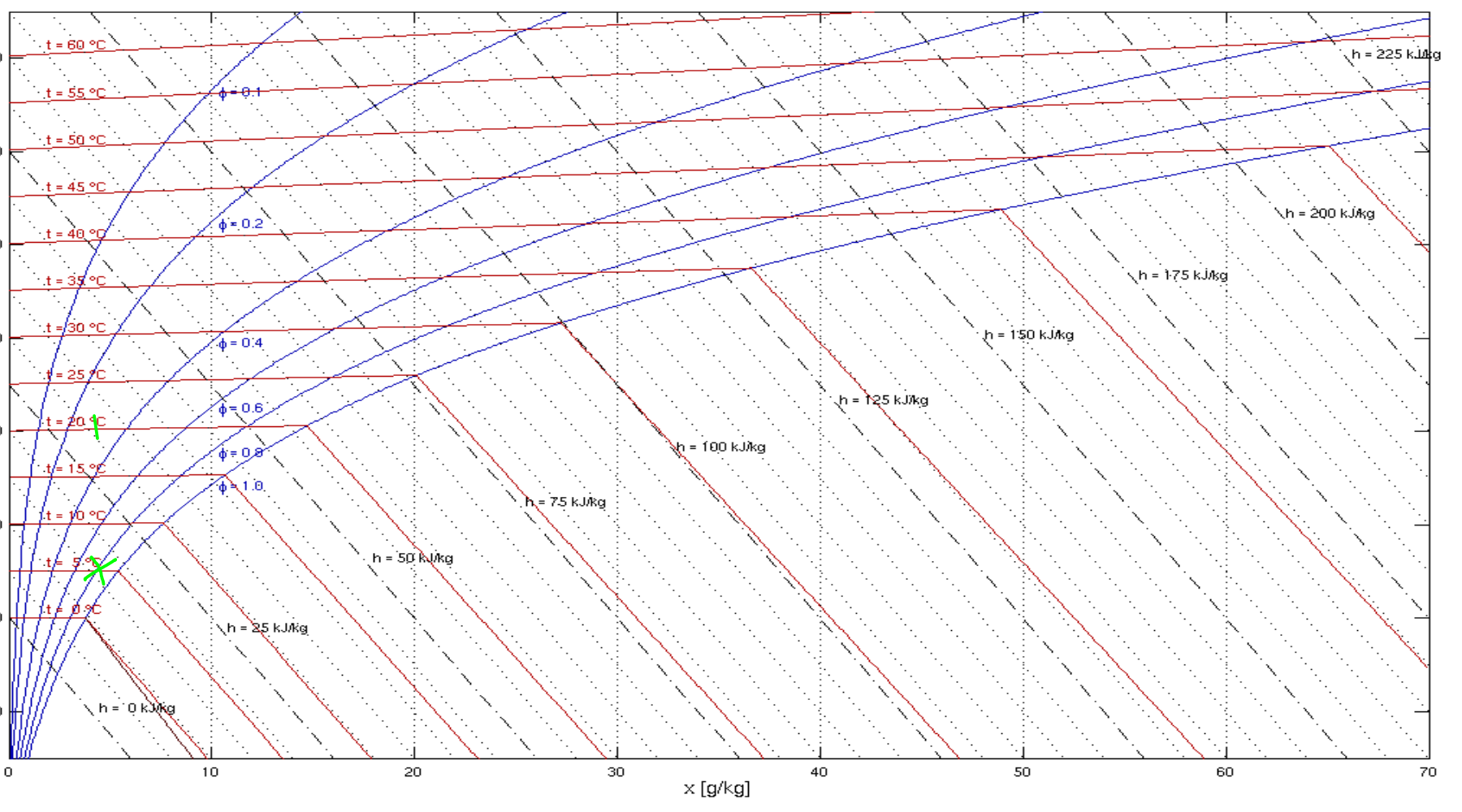
t = 60 °C
t = 55 °C
t = 50 °C
t = 45 °C
t = 40 °C
t = 35 °C
t = 30 °C
t = 25 °C
t = 20 °C
t = 15 °C
t = 10 °C
t = 5 °C
t = 0 °C
ϕ = 0.1
ϕ = 0.2
ϕ = 0.4
ϕ = 0.6
ϕ = 0.8
ϕ = 1.0
h = 225 kJ/kg
h = 200 kJ/kg
h = 175 kJ/kg
h = 150 kJ/kg
h = 125 kJ/kg
h = 100 kJ/kg
h = 75 kJ/kg
h = 50 kJ/kg
h = 25 kJ/kg
h = 0 kJ/kg
0
10
20
30
40
50
60
70
x [g/kg]

Aufgabe 4

- $\dot{m}_L = 7{,}23 \frac{kg}{s}$, $\varphi_1 = 0{,}80$, $p = p_0$, $t_1 = 5°C$ $\xrightarrow{\text{isobar}}$ $t_2 = 20°C$
- φ_2, h_{1+x}, η_2, $\dot{Q}_{12}$
- Ablesen: $\varphi_2 = 0{,}30$ $\quad h_{1+x,1} = 16 \frac{kJ}{kg}$, $h_{1+x,2} = 31 \frac{kJ}{kg}$

  $\dot{Q}_{12} = \dot{m}_L (h_{1+x,2} - h_{1+x,1}) = 108{,}5\ kW$
- Rechnen:

  $x_1 = \frac{M_W}{M_L} \frac{\varphi_1 p_s(t_1)}{p - \varphi_1 p_s(t_1)} = 4{,}32 \frac{g}{kg}$ mit $p_s(5°C) = 0{,}00873\ bar$

  $x_2 = x_1$

  $\varphi_2 = \frac{p}{p_s(t_2)} \frac{x_2}{x_2 + M_W/M_L} = 0{,}298$ $\qquad p_s(20°C) = 0{,}0234\ bar$
- keine Sättigung, also $h_{1+x} = c_{p,L} t + x (r_{0°C} + c_{p,D} t)$

  $\Rightarrow h_{1+x,1} = 15{,}85 \frac{kJ}{kg}$, $h_{1+x,2} = 31{.}03 \frac{kJ}{kg}$

  $\Rightarrow \dot{Q}_{12} = 109{,}8\ kW$