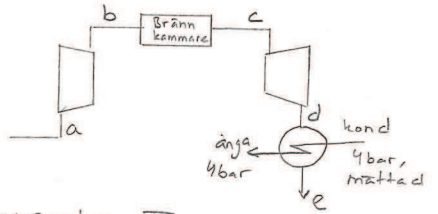


BE-7 Tryckförhållande 15, In: 20°C, 1 bar, $\eta_{kump, is} = 0,85$ $\eta_{turb, is} = 0,90$.
 $c_p = 1,1 \text{ kJ/kg}\cdot\text{K}$, $K = 1,4$, $\dot{m}_v = 2,0 \text{ kg/s}$



	T [K]	P [bar]
a	293	1
b'	635	15
b	696	15
c	1150	15
d'	530	1
d	592	1

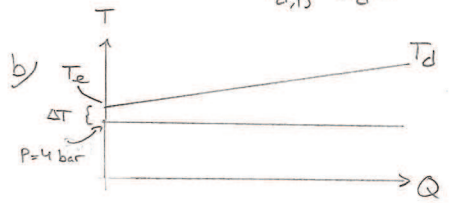
- a) Bestäm T_d
- b) $\Delta T_{min} = 10^\circ\text{C}$ i pannan, bestäm hur mycket 4 bar ånga som kan produceras

a) Kompressor $\eta_{k, is} = \frac{T_{b, is} - T_a}{T_b - T_a} \Rightarrow T_b = T_a + \frac{(T_{b, is} - T_a)}{\eta_{k, is}}$

$\frac{T_a}{T_{b, is}} = \left(\frac{P_a}{P_b}\right)^{\frac{K-1}{K}} \Rightarrow T_{b, is} = 635 \text{ K} \Rightarrow T_b = 696 \text{ K}$

Brännkammare $\dot{Q}_{Bk} = \dot{m} c_p (T_c - T_b) \Rightarrow T_c = 1150 \text{ K}$

Turbin $\frac{T_c}{T_{d, is}} = \left(\frac{P_c}{P_d}\right)^{\frac{K-1}{K}} \Rightarrow T_{d, is} = 530 \text{ K} \Rightarrow T_d = 592 \text{ K} = 319^\circ\text{C}$



$Q = \dot{m}_{avg} \cdot c_p (T_d - T_e)$, $T_e = T'(4 \text{ bar}) + 10 \text{ K} = 153^\circ\text{C}$

$Q = \dot{m}_d \cdot \Delta H_{vap} (4 \text{ bar})$

$\Rightarrow \dot{m}_d = \frac{\dot{m}_{avg} \cdot c_p (T_d - T_e)}{\Delta H_{vap}} = \frac{2 \cdot 1100 (592 - 153)}{\Delta H_{vap, 4 \text{ bar}}} = 0,17 \text{ kg/s}$