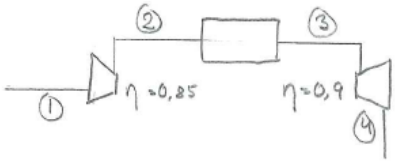
BE-6



	P[bar]	T[K]
1	1	288
2'	15	624
2	15	708
3	15	1473
4'	1	679
4	1	799

$k = 1{,}4$

$c_p = 1100\ J/kg \cdot K$

Kompressor: $\frac{T_1}{T_{2,is}} = \left(\frac{P_1}{P_2}\right)^{\frac{k-1}{k}} \Rightarrow T_{2,is} = \frac{T_1}{\left(\frac{P_1}{P_2}\right)^{\frac{k-1}{k}}} = 624\ K$

$\Rightarrow T_2 = T_1 + \frac{T_{2,is} - T_1}{\eta_k} = 708\ K$

Turbin: $\frac{T_3}{T_{2,is}} = \left(\frac{P_3}{P_4}\right)^{\frac{k-1}{k}} \Rightarrow T_{4,is} = \frac{T_3}{\left(\frac{P_3}{P_4}\right)^{\frac{k-1}{k}}} = 679\ K$

$\Rightarrow T_4 = T_3 - \eta_t (T_3 - T_{4,is}) = 799\ K$

$$\eta_t = \frac{-W_{s,net}}{Q}$$

$W_{s,turbin} = \dot{m} c_p (T_4 - T_3)$, $W_{s,komp} = \dot{m} c_p (T_2 - T_1)$, $Q = \dot{m} c_p (T_3 - T_2)$

$$\Rightarrow \eta_t = \frac{-(T_4 - T_3 + T_2 - T_1)}{T_3 - T_2} = 0{,}33$$

Svar: $\eta_t = 33\%$