ESF II project of the University of West Bohemia in Pilsen

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# Examples to practice - 4

## KEE/TTE

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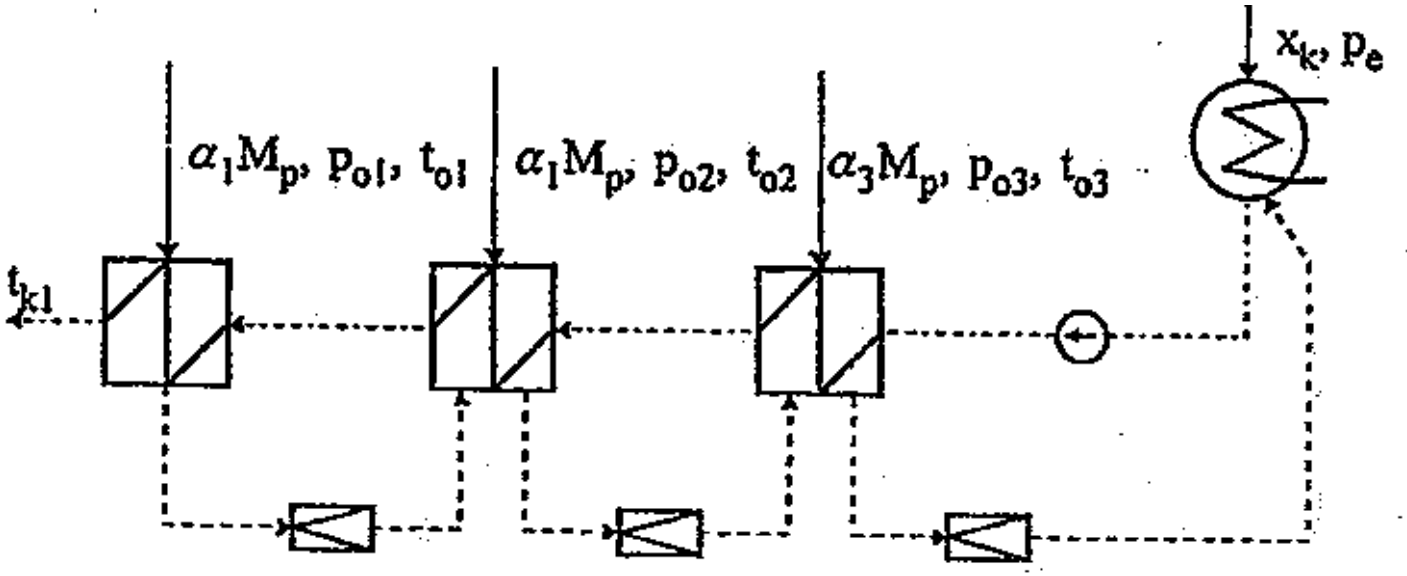
# Example 1

Design the optimal steam intake pressures for three-stage regenerative heating of feed water according to the figure, assuming that the condensing block has the following parameters:

Admission steam: pressure 9 MPa and temperature 480 ° C

Emission steam at the turbine outlet: pressure 5 kPa, dryness x = 0.916

Feedwater temperature $t_{k1} = t_{nv} = 153$ ° C




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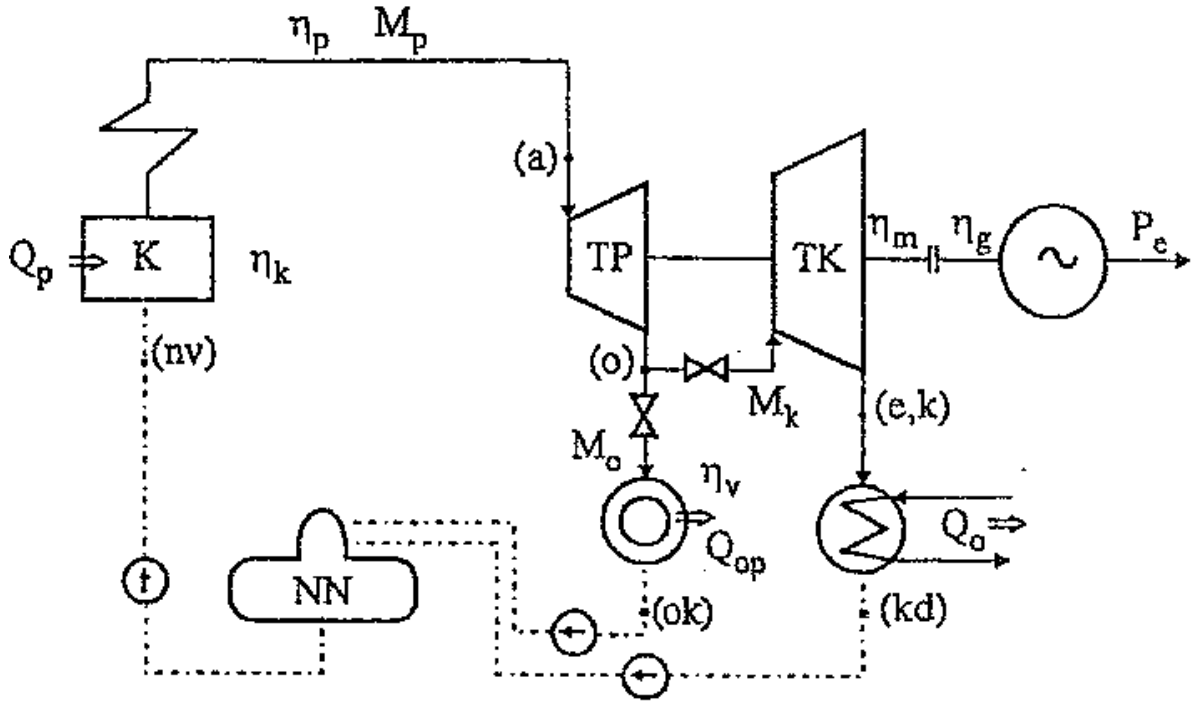
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# Example 2

Solve the thermal circulation of the turbine with regulated steam consumption according to the diagram in the picture. Calculate the mass flow of steam through the back pressure and condensing part of the turbine, the heat output of the exchanger (condensing water-steam), the temperature of the feed water and the thermal efficiency of the circulation, if entered:

- Admission steam: 9 MPa and 500 ° C
- Emission steam at the outlet of the condensing section T (TK): $p_e$ = 4 kPa
- Thermodynamic efficiency: 0.76
- Amount of steam taken: $M_o$ = 40 t / h
- Steam pressure: $p_o$ = 0.5 Mpa
- Electrical power at the generator terminals: $P_e$ = 15 MW
- Mechanical efficiency of the turbine: 0.96 (-)
- Generator efficiency: 0.97 (-)

- **Calculate**: $M_p, M_k, Q_o, t_{nv}, \eta_{te}, \eta_{tt}, \eta_{tc}$




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# Used and recommended literature


- Dvorsky, Emil; Hejtmankova, Pavla; Kocmich, Martin. Elektrarny : zaklady vyroby elektricke energie : priklady. 1. vyd. Pilsen : UWB, 1994. ISBN 80-7082-133-7.
- Dvorsky, Emil; Hejtmankova, Pavla. Elektrarny : zvysovani ucinnosti premen energie v tepelnych elektrarnach : priklady. 1. vyd. Pilsen : UWB, 1999. ISBN 80-7082-523-5.


- …… and other literature listed in the course syllabus on the website Portal of the UWB in Pilsen


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