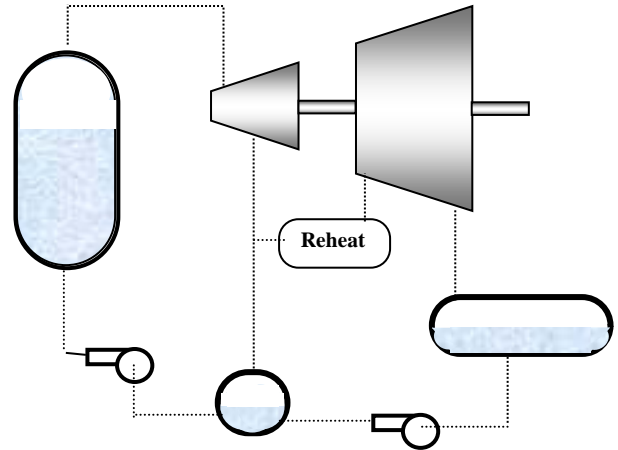


EXAMPLE: (Almost) ideal Rankine cycle with bells and whistles

An (almost) ideal Rankine cycle is modified to include reheat and regeneration using an open feedwater heater. The mass flow rate of steam through the boiler is 1.25 kg/s. The boiler operates at 10 MPa, the open feedwater heater operates at 6 MPa, and the condenser operates at 10 kPa. The water enters both pumps as a saturated liquid. The temperature of the steam entering both turbines is 700°C.



- Sketch the cycle on a T - s diagram.
- Find the power or heat transfer rate in/out of each device.
(Hint: Start with an analysis of the open feedwater heater.)
- Find the cycle efficiency. (Hint: Careful with W_{dot} and Q_{dot} vs. w_{dot} and q_{dot} .)

