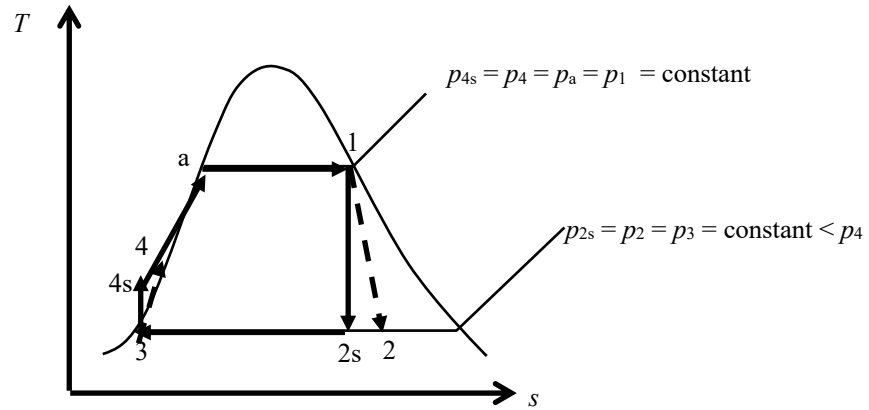




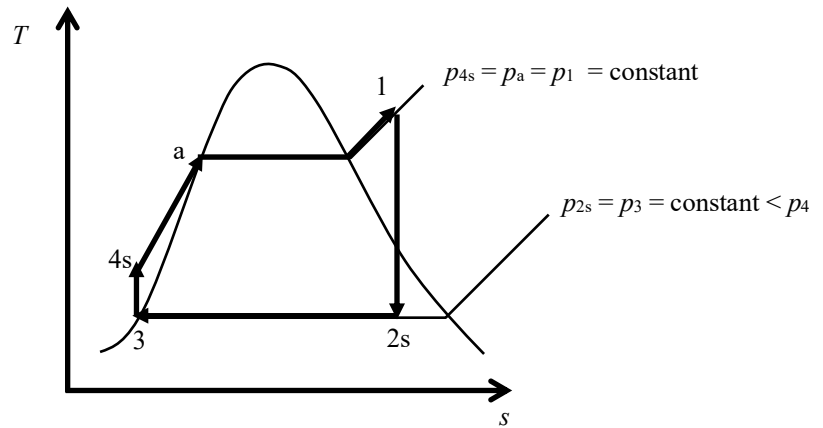
<https://www.youtube.com/watch?v=2IKECt4Y3RI>

The Rankine Cycle Improvements

Rankine Cycle



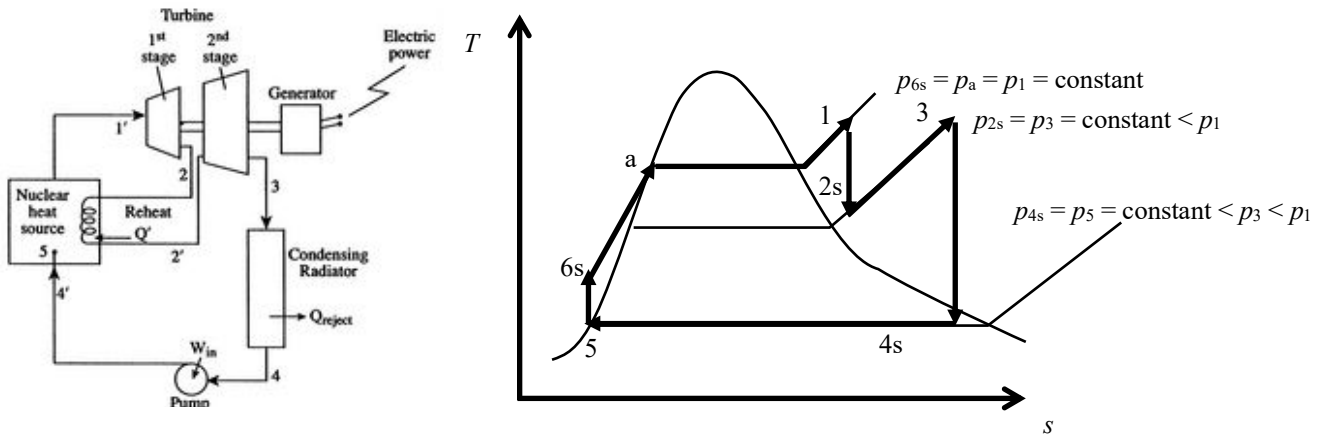
Rankine Cycle with Superheat



Notes

1. The larger average temperature at which heat is added in a Superheat Rankine cycle results in a larger efficiency as compared to an ordinary Rankine cycle.

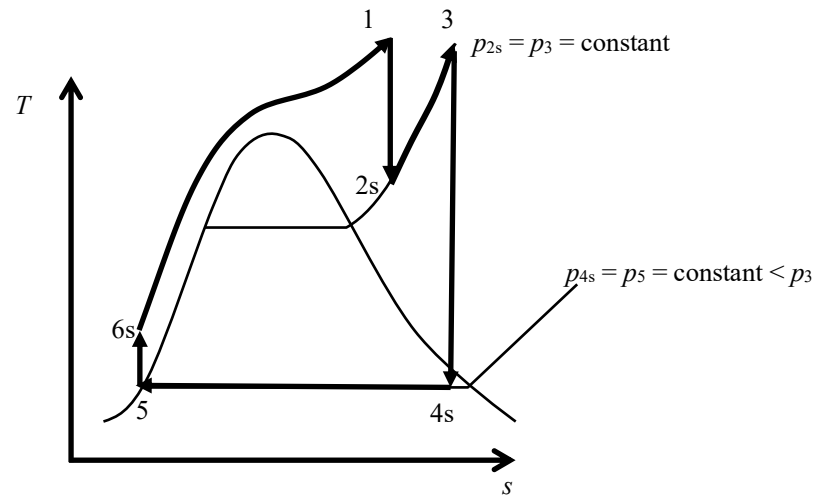
Rankine Cycle with Reheat



Notes

1. The larger average temperature at which heat is added in a Reheat Rankine cycle results in a larger efficiency as compared to an ordinary Rankine cycle.
2. The 1st stage turbine typically exits in the SHV phase (State 2). In addition, the quality at the exit of the 2nd stage turbine (State 4) is larger than that in an ordinary Rankine cycle.

Rankine Cycle with Supercritical Reheat



Notes

1. The larger average temperature at which heat is added in a Supercritical Rankine cycle results in a larger efficiency as compared to an ordinary Rankine cycle.
2. The 1st stage turbine typically exits in the SHV phase (State 2). In addition, the quality at the exit of the 2nd stage turbine (State 4) is larger than that in an ordinary Rankine cycle.
3. The large pressures and temperatures in a Supercritical Rankine cycle requires the use of high pressure piping and steam generator, and turbine materials that can withstand high temperatures.
4. Efficiencies up to 47% can be achieved in a Supercritical Rankine cycle power plant.