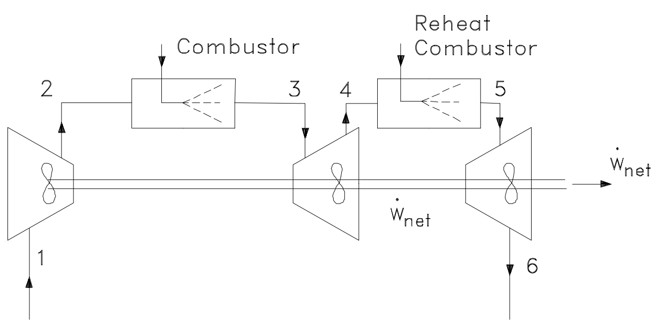
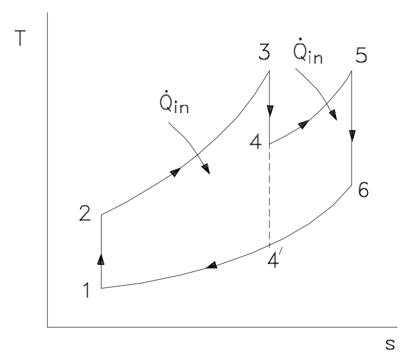
Week 8: Lecture 2

Brayton Cycle with Reheat

- the maximum temperature at T_3 entering the turbine is limited due to metallurgical constraints
- excess air is extracted and fed into a second stage combustor and turbine
- total work is increased
- but additional heat input is required
- net efficiency may or may not increase
- turbine outlet temperature is increased with reheat, therefore potential for regeneration is enhanced





Week 8: Lecture 2

Compression with Intercooling

- the work required to compress in a steady flow device can be reduced by compressing in stages
- cooling the gas reduces the specific volume and in turn the work required for compression
- by itself compression with intercooling does not provide a significant increase in efficiency
- the lower temperature at the compressor exit enhances the potential for regeneration