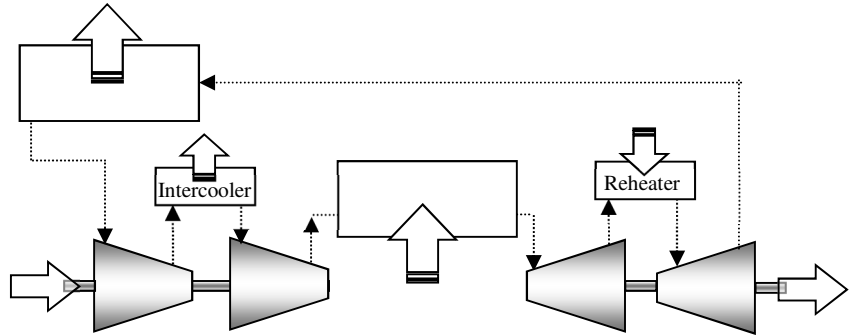

EXAMPLE: Careful with those modifications!

Let's look at that **air-standard** Brayton cycle again. The following conditions still apply: compressor inlet: 100 kPa, 300 K; turbine inlet: 1 MPa, 1300 K. Now add an ideal intercooler and an ideal regenerator. (I.e., $T_B = T_1$ and $T_E = T_3$.)

- (a) Sketch the T - s diagram.
- (b) Find the power (per unit mass flow rate) to the two compressors and the heat transfer rate (per unit mass flow rate) from the intercooler.
- (c) Find the power (per unit mass flow rate) from the two turbines and the heat transfer rate (per unit mass flow rate) to the reheater.
- (d) Find the cycle efficiency. What the heck?



EXAMPLE: Ah-hah! Now we fixed it!

OK, so the efficiency went down. Well, now add an ideal regenerator to the system and let's see what happens!

- (a) Sketch the T - s diagram.
- (b) Calculate the new heat transfer rate (per unit mass flow rate) into the high-pressure heat exchanger and the new efficiency. Holy cow!

