**Problem based component 3 – Alex Bartella 400308868**

A power plant uses cooled air from a heat exchanger as the low temperature reservoir and 1000C air as the high temperature reservoir. In the heat exchanger, ambient air is cooled with water from a nearby lake. Air (cp=1.005 kJ/kg\*C) enters the heat exchanger at 100 kPa and 23C at a rate of 2.5 kg/s. The water enters at 5C and 200 kPa, and 0.5 kg/s, and exits at 20C.

1. What is the temperature of the air exiting the heat exchanger?
2. What is the maximum thermal efficiency of the power plant?
3. If the specific power rejected to the environment is 1000 kJ/kg, what is the specific power produced by the turbine generating the electricity?