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MET350

Thermal Applications Test Reflection 1

1) **How and why the test demonstrates your work toward one, or more, of the course learning objectives. Be specific on the course objectives you decide to mention.**
    a. This test demonstrates my work towards:
        i. **Apply thermodynamics laws to gas turbines Engines using ideal cycles, reheating regeneration, and inter-cooling cycles.**
            1. This was the first question on the test and it involved a cycle with reheating, regeneration, and intercooling.
        ii. **Apply thermodynamics laws to Jet Propulsion Engines using ideal cycles.**
            1. This was a question on the test which I attempted to answer and thus worked towards. I have tried to understand it before the test as well.
            2.
2) **How your test compares against the available solution. State the mistakes you made and what you will do next time to avoid making same mistakes. Please point out exactly where you made the mistake, say why you made the mistake, and how you should have done it. If you were taking this test again, what advice would you give yourself to ensure that you had a successful test?**
    a. My test is like the solution until it comes time to remove the heat exchanger, which I had not known to do. With that knowledge I could easily solve the problem correctly and completely. For the jet propulsion cycle, I had difficulties with efficiency and getting ha and hs. I struggle in this area and do not really understand it, so I cannot give myself advice. I also had issues with cp and cv to where I could not use the variable ones.
    b.
3) **What your grade should be. Base it on the writing rubric provided in the test and the correctness of your solution. What are the strengths and weaknesses of your test?**
    a. The rubric says I should get around a 65, but should I have known to remove the heat exchanger, I would have done a better job. My strengths come in the diagrams and getting the states, where my weaknesses come to the accuracy of my results and my lack of information on the heat exchanger and inexperience with the jet cycle.

- Purpose **0.5**/10.0
- Drawings **1.0**/10.0
- Sources **1.0**/10.0
- Design considerations **1.0**/10.0
- Data and variables **0.5**/10.0
- Procedure **2.0**/10.0
- Calculations **2.0**/10.0
- Summary **0.**5/10.0

- Materials **0.5**/10.0
- Analysis **1.0**/10.0
- **TOTAL** **10.0/10.0**
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- PROBLEM 1)
- P-v and T-s diagrams **2**/11
- HX effectiveness for previous problem **1**/11
- State calculations (with regeneration) **1**/11
- Realize that regeneration hurts **1**/11
- State calculations (without regeneration) **1**/11
- Power **0**/11
- Final results **1**/11
- **TOTAL** **7/11**
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- PROBLEM 2)
- P-v and T-s diagrams **2**/8
- State calculations 3/8
- Use wc_act = wt_act
- Use efficiencies to get states
- Cp & Cv variable
- P5
- Propulsion efficiency (before and after) 0/8
- Final results 0/8
- **TOTAL** **5/8**

❖

4) **Discuss the following:**
   a) **What issues did you encounter in completing the test? How did you troubleshoot them?**
      a. I had many issues with the test, including variable cp and cv, the efficiencies of the turbines and compressors, finding the actual enthalpies, and more. I did not overcome some of these problems and I wish that I understood these concepts more.
   b) **What steps did you take to complete the whole test? Would you change something?**
      a. I drew the diagrams and found the states, after which I attempted to answer the questions, which was the procedure taught in class.
   c) **What new concepts have you learned?**
      a. The Brayton cycle with and without reheating, intercooling and regeneration.
   d) **Where you think engineers use those concepts (provide specific examples)?**
      a. Engineers use this in the design of power cycles and the evaluation of efficiency of a thermal cycle.
   e) **Where do you think you will be using everything you learned?**

a. Fluid mechanics is more of my thing, but I could use it in some sort of job as an engineer working in heating and cooling systems or power generation.

f) Do you think what you learn is important for your professional career?

a. I know it is but at the same time I wish to avoid using this as I have lost my confidence in my ability to apply Thermal Application's content correctly.

g) How, when, where and why you might use this information or skill in the future?

a. I could use it if I ever work at a power plant or other cycle based industry.

h) Have you been able to apply concepts you have learned in the course to what you do at work or in other courses?

a. No.

i) What areas did you feel you were most successful, or improved the most?

a. I'm extremely confident in my ability to navigate the tables and obtain the states, as well as draw the correct diagrams for P-V and T-s.

j) How do you see this course's content intersecting with your field or career?

a. To be honest, thermodynamics 2 has not been the most fun for me. I do completely understand it but honestly wish to avoid applying the content in the course, as unlikely as that may be. I do not feel confident that I will be able to apply it correctly.

k) How much time did you spend on the test? How was the time organized? What would you do differently? Why?

a. I spent roughly six hours. The time was spaced over a week. I would work on it more, but I did have a lot of other outside responsibilities and so it wouldn't really mesh well.