

Last Week's Assignment - #1

- Number these parts of a report in the proper order that they occur
 - 1 = first, 2, 3, 4 = last
- 1. Letter of transmittal
- 2. Abstract or executive summary
- 3. Conclusions
- 4. References

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Last Week's Assignment - #2

- In one sentence, explain why engineers would like to use carbon dioxide in refrigeration systems
 - Your sentence will be marked based on
 - ◆ Grammar and syntax
 - ◆ The reason given is correct
- Recycling waste carbon dioxide as refrigerant is environmentally friendly.

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This Week's Tutorial (Week 5)

- Paragraph 2 is a **proposal**
 - You must **sell** your idea
- The test bench will be unique in Canada
 - Main selling point
- Make the easy correction
 - 3rd person
 - Spelling
- Think of each sentence like a main bullet point in an outline
 - Why is the test bench important?
 - What type of tests will be done
 - What will be measured
 - How will the results be used
 - Ultimate goal?

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CO₂ Laboratory Test Bench

- Our interests are thus directed to this advanced and promising environmentally-friendly field, and it needs a laboratory test bench to be built based on the transcritical CO₂ cycle. The proposed test bench for the transcritical CO₂ refrigeration system is a first one of its kind in Canada. With the proposed test bench, investigations will be conducted on the heat transfer and pressure loss of gas cooler in the transcritical CO₂ refrigeration cycle. The effects of thermo-physical property variations at the CO₂ side on gas cooler performance, such as temperature, pressure, geometric configuration, mass flow rate, and Reynolds number of the CO₂ fluid will be revealed. All the experimental results and evaluations will be used in computer modeling and simulation and the ways to improve the heat transfer coefficient will be formulated to optimize the overall heat transfer rate toward designing efficient transcritical CO₂ refrigeration system for modern automotive vehicle industries.

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Combine Sentences 1 & 2

- Our interests are thus directed to this advanced and **promising environmentally-friendly** filed, and it needs a **laboratory test bench** to be built based on the transcritical CO₂ cycle. The proposed test bench for the transcritical CO₂ refrigeration system is a **first one of its kind in Canada**.
 - Why is the test bench important?

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Combine Sentences 1 & 2

- **ORIGINAL**
 - Our interests are thus directed to this advanced and **promising environmentally-friendly** filed, and it needs a **laboratory test bench** to be built based on the transcritical CO₂ cycle.
 - The proposed test bench for the transcritical CO₂ refrigeration system is a **first one of its kind in Canada**.
- **REWRITE**
 - Further advances in the use of this **promising, environmentally-friendly** technology depend on the construction of a **laboratory-scale test bench, the first of its kind in Canada**.

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Rewrite Sentence 3

- With the **proposed test bench**, **investigations will be conducted** on the **heat transfer and pressure loss of gas cooler** in the transcritical CO₂ refrigeration cycle.
 - What type of tests will be done?

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Rewrite Sentence 3

- **ORIGINAL**
 - With the **proposed test bench**, **investigations will be conducted** on the **heat transfer and pressure loss of gas cooler** in the transcritical CO₂ refrigeration cycle.
- **REWRITE**
 - **Experiments** with the **proposed test bench** will determine the **heat transfer and pressure loss associated with the gas cooler**.

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Rewrite Sentence 4

- The effects of **thermo-physical property variations** at the CO₂ side on **gas cooler performance**, such as **temperature, pressure, geometric configuration, mass flow rate, and Reynolds number of the CO₂ fluid** will be revealed.
 - Subject and verb are too far apart
 - ◆ Property variations..... will be revealed.
 - Long list of variables
 - What will be measured?

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Rewrite Sentence 4

- **ORIGINAL**
- The effects of **thermo-physical property variations** at the CO₂ side on **gas cooler performance**, such as **temperature, pressure, geometric configuration, mass flow rate, and Reynolds number of the CO₂ fluid** will be revealed.
- **REWRITE**
- The effect of **thermo-physical property variations** on **gas cooler performance** will be measured; these property variations include **temperature, pressure, geometric configuration, mass flow rate, and Reynolds number of the CO₂ fluid**.

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Split Sentence 5

- All the **experimental results** and evaluations will be used in **computer modeling and simulation** and the ways to **improve the heat transfer coefficient** will be formulated to **optimize the overall heat transfer rate** toward designing efficient transcritical CO₂ refrigeration system for modern automotive vehicle industries.
 - How will the results be used?
 - Ultimate goal?

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Split Sentence 5

- **ORIGINAL**
- All the **experimental results** and evaluations will be used in **computer modeling and simulation** and the ways to **improve the heat transfer coefficient** will be formulated to **optimize the overall heat transfer rate** toward designing efficient transcritical CO₂ refrigeration system for modern automotive vehicle industries.
- **REWRITE**
- **Experimental results** and evaluations will be incorporated into **computer models and simulation** to **improve the heat transfer coefficient**.
- The model will **optimize the overall heat transfer rate** with the goal of designing an efficient transcritical CO₂ refrigeration system for the automotive industry.

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Complete Rewrite

- Further advances in the use of this promising, environmentally-friendly technology depend on the construction of a laboratory-scale test bench, the first of its kind in Canada. Experiments with the proposed test bench will determine the heat transfer and pressure loss associated with the gas cooler. The effect of thermo-physical property variations on cooler performance will be measured; these property variations include temperature, pressure, geometric configuration, mass flow rate, and Reynolds number of the CO₂ fluid. Experimental results and evaluations will be incorporated into computer models and simulations to improve the heat transfer coefficient. The model will optimize the overall heat transfer rate with the goal of designing an efficient transcritical CO₂ refrigeration system for the automotive industry.

Assignment for Tutorial #6

- A page of information with a data set will be posted on the course website next week
- You will convert that information into 3 PowerPoint slides
 - Choose a proper slide design
 - Slide 1 - create a title page
 - Slide 2 - explain experiment in a text slide
 - Slide 3 - create a graph of data