# **HVAC** Lab Report Outline and Responsibilities

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# 1. Introduction

- 1.1. Introductory Information Taylor
- 1.2. Experimental Overview Taylor

## 2. Background

### 2.1. HVAC Systems Overview - Taylor

• Deliverable 1 - A description of the system and processes that occur.

### 2.2. Ideal Vapor-Compression Cycle - Taylor

• Deliverable 1 - A description of the system and processes that occur.

# 2.3. Practical HVAC Drying Unit - Cameron

- Deliverable 1 A description of the system and processes that occur.
- Deliverable 2 An evaluation of the major theoretical assumptions in the analysis, as well as any experimental assumptions that were made.

## 2.4. Moist Air Analysis - Keaton

- Deliverable 1 A description of the system and processes that occur.
- Deliverable 2 An evaluation of the major theoretical assumptions in the analysis, as well as any experimental assumptions that were made.

## 3. Methods

# 3.1. Experimental Methods - Taylor

• Deliverable 2 - An evaluation of the major theoretical assumptions in the analysis, as well as any experimental assumptions that were made.

## 3.2. Analytical Methods

#### 3.2.1. R22 Refrigeration Cycle - Chris

• Deliverable 3 - Using data from 2 of the 3 days' collected data for the system, calculate the coefficient of cooling performance and efficiencies of the compressor (power and isentropic), evaporator, and condenser.

## 3.2.2. Moist Air Analysis - Cam

• Deliverable 3 - Using data from 2 of the 3 days' collected data for the system, calculate the coefficient of cooling performance and efficiencies of the compressor (power and isentropic), evaporator, and condenser.

## 3.2.3. Heat Transfer Efficiencies - Keaton

• Deliverable 3 - Using data from 2 of the 3 days' collected data for the system, calculate the coefficient of cooling performance and efficiencies of the compressor (power and isentropic), evaporator, and condenser.

#### 3.3. Statistical Methods

### 3.3.1. Perturbation Method - Cameron

• Deliverable 4 - An uncertainty analysis using the perturbation method on all of the calculations for one day.

## 3.3.2. Measurements to Obtain Confidence Interval - Keaton

• Deliverable S1 - Assuming 95% certainty, calculate the number of measurements required to obtain a confidence interval that is  $\pm 0.5$  (in respective units) for one set of data from three representative (different) types of sensors.

# 3.4. System Design Methods - Cam

• Deliverable 5 - Design a system that meets the requirements as described in Section 14.5.2.

#### 4. Results

#### 4.1. Analytical Results - Keaton

• Deliverable 3 - Using data from 2 of the 3 days' collected data for the system, calculate the coefficient of cooling performance and efficiencies of the compressor (power and isentropic), evaporator, and condenser.

#### 4.2. Statistical Results

#### 4.2.1. Perturbation Method - Cameron

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• Deliverable S1 - Assuming 95% certainty, calculate the number of measurements required to obtain a confidence interval that is  $\pm 0.5$  (in respective units) for one set of data from three representative (different) types of sensors.

#### 4.3. System Design Results - Chris

Deliverable 5 - Design a system that meets the requirements as described in Section 14.5.2.

# 5. Discussion

### 5.1. Efficiency Implications - Chris

- Deliverable 1 A description of the system and processes that occur.
- Deliverable 3 Using data from 2 of the 3 days' collected data for the system, calculate the coefficient of cooling performance and efficiencies of the compressor (power and isentropic), evaporator, and condenser.

#### 5.2. HVAC Drying Cycle System Design - Cam

• Deliverable 5 - Design a system that meets the requirements as described in Section 14.5.2.

# 6. Conclusion

#### 6.1. Conclusion - Keaton