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MODULE 10L1

Airside, Water, and Control System Troubleshooting

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System troubleshooting during system commissioning is a crucial phase in ensuring the proper operation of various systems, such as HVAC, plumbing, and control systems. This process involves systematically identifying issues, understanding their sources, and implementing corrective measures.

Learning Objectives

- Document Observations & Interpret Basic Terminal Unit Trends.
- Airside, water, and control system troubleshooting
- Required O&M paperwork and training Preventive maintenancetems
- Retro-commissioning
- Commissioning professional certification & its importance.
- Point-to-point calibrate MEP & sensor systems.
- Green building rating systems & commissioning
- Summary and Resources
- CxCT Practice Exam: Test Your Knowledge!

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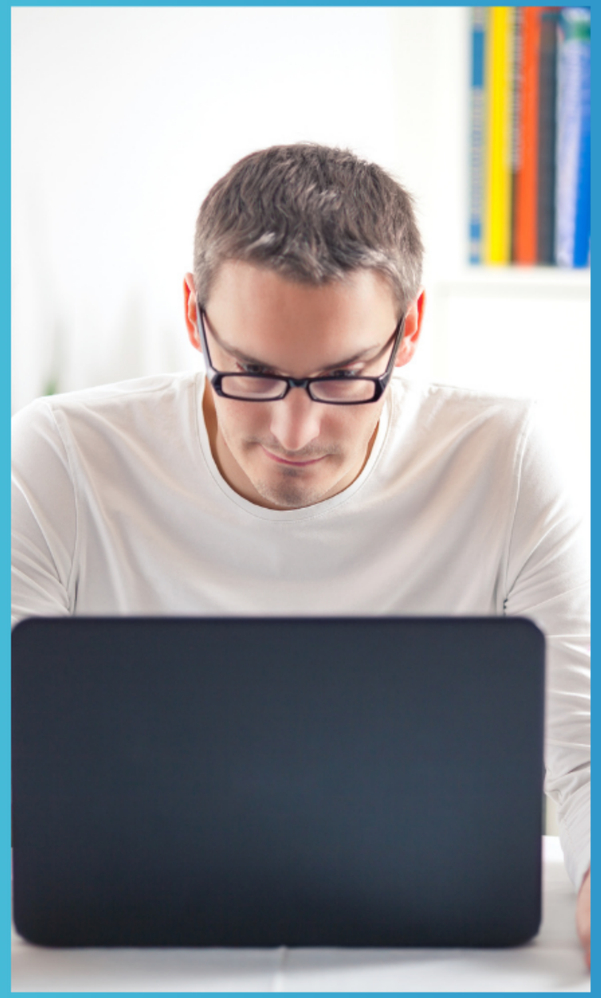
INTRODUCTION

Understanding the Thought Process

- Troubleshooting is a structured approach to problem-solving that follows a logical progression.

- Steps include identifying the problem, defining the scope, gathering data, analyzing the data, determining the root cause, implementing a solution, verifying the solution, and documenting the process.

AIRSIDE TESTING AND TROUBLESHOOTING



- In HVAC systems, the airside involves airflow measurement, pressure testing, and temperature differential.
- In hydronic systems, the waterside includes pumps, valves, piping, and heat exchangers.
- Troubleshooting involves examining these elements to ensure efficient fluid movement and heat transfer.

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Control System Troubleshooting

- Control systems in HVAC, plumbing, and other systems are critical for automation and performance optimization.
- Troubleshooting these systems involves examining sensors, controllers, and communication interfaces.
- System calibration, control logic verification, and communication checks are crucial steps in troubleshooting.

KNOWS GENERAL TROUBLESHOOTING/THINKING

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KNOWS GENERAL TROUBLESHOOTING/THINKING

Troubleshooting during commissioning is a systematic process that involves identifying and rectifying issues that arise during initial operation. This process involves analyzing symptoms, determining the source of the problem, and addressing any underlying root causes. The first step in troubleshooting is problem identification, which involves recognizing that a system or component is not performing as expected. This can be done using observational techniques and diagnostic tools.

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TROUBLESHOOTING PROCEDURES DURING COMMISSIONING

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Step 1: Problem Identification

- Identifying a system or component that is not performing as expected.
- Utilizing observational techniques and diagnostic tools.

Example: A HVAC system failing to maintain desired temperature.

Step 2: Analyzing the Symptoms

- Gathering quantitative and qualitative data to understand the extent and characteristics of the problem.

Example: Checking thermostat settings, inspecting air filters for blockages, and measuring airflow at various vents.

TROUBLESHOOTING PROCEDURES DURING COMMISSIONING +

Step 3: Determining the Source of the Problem

- Tracing the malfunction back through the system's components and processes.

Example: Dirty HVAC system's air filters could be the source of inadequate airflow.

Step 4: Root Cause Analysis

- Understanding why the problem occurred in the first place.

Example: In HVAC scenario, replacing air filters and developing a maintenance schedule and training program for personnel responsible for system upkeep.

Step 5: Implementing Solutions

- Addressing both the immediate issue and the underlying factors contributing to the problem.

Example: In HVAC scenario, replacing the air filters and developing a maintenance schedule and training program for personnel responsible for system upkeep.

Step 6: Verification and Documentation

- Confirming that the problem has been resolved and that the system operates as intended.

Example: A technician monitoring the HVAC system post-maintenance to ensure it maintains the desired temperature levels.

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