HVAC Fundamentals

Energy Milestones Corporation

Advancing Professionals to the next level

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HVAC Fundamentals

Overview

This course is designed for engineers and technicians from a wide range of abilities and backgrounds, and will provide an excellent introduction to the fundamentals of Heating, Ventilation, and Air Conditioning. It commences with a review of psychometric charts and then examines the factors that influence design choices, indoor air quality, load calculations and heating/ventilation and air-conditioning systems. Numerous tips and tricks throughout the program make it very practical and topical to your applications.

Course Objectives

- Maintain and troubleshoot HVAC systems
- Understand and apply the psychometric chart
- Design for good air quality
- Perform basic load calculations
- Initiate an effective inspection and maintenance program
- Minimise forced outages and prevent serious damage to HVAC equipment
- Provide an overview of the legislative requirements, plus the essential steps and responsibilities for the maintenance and repair of HVAC Systems
- Outline the technologies available for efficient energy management using HVAC systems

Course Content

- HVAC Design, Maintenance and Troubleshooting
- Chilled water pump selection.
- Building Management System and Control System
- DX system piping sizing.
- Typical piping connections "DX units, chillers, pumps, AHUs and FCUs".
- Insulation thickness & the criteria for condensation prevention.
- Maintain and troubleshoot & Cold stores design
- The behaviour of the fruit/vegetable after harvesting.

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Course Content

- How cold stores can extend the life of the products.
- How to decide the cold room dimensions
- The heat load of the cold room. (Chilling, frozen products, Potato and Onions)
- Selection of the refrigeration system components.
- The insulation panels and doors.
- The docks, "Levellers, shelters and doors".
- Heat load of a room.
- Heat load of a multi-room complex.
- The cooling capacity.
- The airflow rate.
- The fresh air requirements.
- The DX systems.
- Duct sizing
- Air filtration.
- Cold store design
- Pre-cooling. "Wet cooling".
- Ventilation for potatoes and onions.
- Reference data and tables.
- Operation and Maintenance
- Documentation
- As built, hand over the package documentation after completion of the installation
- Records and bookkeeping
- PMR forms "Preventive maintenance routines"
- Case studies
- The chilled water system. Chilled water flow rates & piping sizing.
- HVAC Design

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Targeted Audience

This course is intended for maintenance engineers, staff plant engineers, mechanical engineers, design engineers, electrical engineers, consulting engineers, inspection and repair managers, supervisors, operation, maintenance and technicians.

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be employed before and during the course, as applicable. These methods are aimed at enhancing individual and group interaction while maximising learning. Some of these methods are:

- Online Pre-post Test
- Colourful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games