



an  egis company

بروجاكس للتدريب والتطوير
Projacs Training and Development

HVAC - District Cooling Plant

Design, Operations and Maintenance

تقنيات محطات تبريد المناطق – التصميم، التشغيل والصيانة

29 September – 03 October 2019

Dubai

A Member of:



PROJACS ACADEMY



ProjacsAcademy.com



Introduction

Heating, ventilation, and air conditioning (HVAC) is the technology of indoor and vehicular environmental comfort. Its goal is to provide thermal comfort and acceptable indoor air quality.

HVAC is an important part of residential structures such as single homes, apartment buildings, hotels and senior living facilities, medium to large industrial and office buildings such as skyscrapers and hospitals, vehicles such as cars, trains, airplanes, ships and submarines, and in marine environments, where safe and healthy building conditions are regulated with respect to temperature and humidity, using fresh air from outdoors.

Need & Benefit

The goal of this course is to introduce the engineers & technicians working in the field of HVAC to the basic & advanced topics of the subject. Also to illustrate the steps to establish a new HVAC project will be displayed and discussed in details. The strategy of selecting different HVAC equipment and the basics of the design of the utilities such as pumps & fans will be explained. The most important causes of failures and troubleshooting in either operation or design will be displayed.

Objectives

To supply the participants with the basic and advanced tools and techniques in the HVAC systems looking at the operation, maintenance as well as the trouble shootings.

Who Should Attend?

Mechanical and electrical engineers, maintenance engineers and qualified technicians.

Course Outline

DAY 1:

1- Psychrometric & psychrometric processes

- Moist air
- Thermodynamic of moist air
- Properties of moist air
- Psychrometric chart

- Processes of moist air.

2- Air Distribution Systems.

- Air Flow in Ducts
- Types of Air Ducts
- Duct sizing Method
- Air diffusion units
- Air distribution methods- selection of outlets.

DAY 2:

Zones

- What is a Zone?
- Zoning Design
- Controlling the Zone

Single Zone Air Handlers and Unitary Equipment

- Examples of Buildings with Single-Zone Package
- Air-Handling Unit Components
- The Refrigeration Cycle
- System Performance Requirements
- Rooftop Units
- Split Systems

Multiple Zone Air Systems

- Single-Duct, Zoned-Reheat, Constant-Volume Systems
- Single-Duct, Variable-Air-Volume Systems (VAV)
- Bypass Box Systems
- Constant-Volume, Dual-Duct, All-Air Systems
- Multizone Systems

Three-Deck Multizone Systems

- Dual-Duct, Variable-Air-Volume Systems
- Dual-Path Outside-Air Systems

DAY 3:

1- Pumps and fans

- Flow in pipes

- Fluid static & motion
- Centrifugal pumps
- Characteristic curves of pumps
- Propeller fans and axial flow fans
- Centrifugal fans
- Characteristic curves of Centrifugal fans
- Selection of fans
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2- Piping Design

- pipe sizes for water heating
- pipe sizes for low pressure steam heating
- pipe sizes for high pressure steam

DAY 4:

1- Air Conditioning systems

- a. All air systems
- b. Air - water systems
- c. All water systems

2- Air Conditioning Equipment

- Water Chillers
- Air handling units
- Fan coil Units
- Direct Expansion Air conditioning units
- Selection of Air Conditioning Units

DAY 5:

1- Typical Air Conditioning Project.

Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a binder containing a copy of the presentation

- slides and handouts
- Post-assessment

Program Support

This program is supported by interactive discussions, role-play, and case studies and highlight the techniques available to the participants.

Schedule

The course agenda will be as follows:

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|---------------------|------------------|
| • Technical Session | 08.30-10.00 am |
| • Coffee Break | 10.00-10.15 am |
| • Technical Session | 10.15-12.15 noon |
| • Coffee Break | 12.15-12.45 pm |
| • Technical Session | 12.45-02.30 pm |
| • Course Ends | 02.30 pm |

Course Fees*

- **2,950USD**
**VAT is Excluded If Applicable*