



Arabian Institute For Training

Chiller Design, Installation, Maintenance & Troubleshooting

INTRODUCTION

- Chilled water plants have been widely used in Air Conditioning and Refrigeration industry. The proper design of these facilities includes not only selection of adequate equipment, but also their optimization from the point of view of production, distribution, storage as well as the utilization for the given cooling load and minimization of operating and maintenance costs. Mastering fundamentals, sizing, operation, & troubleshooting is a must for designers & operators of refrigeration systems & water chillers.
- Chiller Design, Installation, Maintenance & Troubleshooting training course will enable participants to become familiar with the main phases in the design, installation, commissioning, operation, and maintenance of the chilled water plants. This course covers fundamentals of refrigeration systems starting from the vapour compression cycle, refrigeration systems & water chillers main components (types, selection & capacity control), accessories & system level control, piping sizing & installation, refrigerants, oils, & safety, systems & component measurements, refrigeration systems diagnostics, servicing & troubleshooting, commercial & industrial water chillers, chillers operation & maintenance, systems & water chillers energy conservation & peak efficiency.

Participants on Chiller Design, Installation, Maintenance & Troubleshooting training course will develop the following competencies:

- Best practices and procedures for installation, start-up and commissioning of chilled water systems
 - Methods of efficiency optimisation in operation and maintenance
 - Minimisation of overall costs
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PROGRAMME OBJECTIVES

Attendance to Chiller Design, Installation, Maintenance & Troubleshooting training course will enable delegates to:

- Apply key fundamentals in the design, sizing and operation of refrigeration systems and water chillers
- Apply and use systematic diagnostics and troubleshooting procedures to identify and resolve sizing and operation problems
- Select the most suitable chilled water unit for your application
- Acquire up to date techniques for pumping and distribution of chilled water
- Review the advantages and disadvantages of chilled water storage system
- Gain an understanding of how to balance variable flows in system
- Familiarize with instrumentation and control of chilled water plants
- Choose the right approach to troubleshooting problems by analysing root cause
- Improve the profitability of operation by increasing reliability and efficiency

WHO SHOULD ATTEND?

Chiller Design, Installation, Maintenance & Troubleshooting training course is suitable for:

- Design & Project Engineers & Technologists
- Plant & Facility Engineers
- Consultants
- Mechanical Engineers & Technologists
- Maintenance & Operation Personnel
- Technical Personnel

TRAINING METHODOLOGY

- Chiller Design, Installation, Maintenance & Troubleshooting training course will be conducted along the workshop principles, consisting of formal lectures and interactive worked examples that will be part of workshops. Real life examples and case studies will be selected to illustrate the design and operating procedures. This will result in active contribution of all participants during the team work.

PROGRAMME SUMMARY

- It is imperative that water-cooling system(s) operates at maximum efficiency. Chiller Design, Installation, Maintenance & Troubleshooting training course will explain the best practices and procedures for installation, start-up and commissioning of chilled water systems. It will discuss methods of efficiency optimisation in operation and maintenance, as well as the minimisation of overall costs. Participants will also receive critical information needed to increase system's reliability.
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PROGRAM OUTLINE

Chilled Water Plants: Types and Plant Heat Loads

- Introduction to Chilled Water Plants
- Selection of Chillers: VCR and VAR
- Determination of Required Plant Load
- Chilled Water Plant Configuration & Location
- Condensers
- Cooling Towers

Operation, Instrumentation & Control

- Evaporators
- Pumping Systems & Low DT Syndrome
- Piping Systems Options
- Chilled Water Storage
- Instrumentation and Control
- Chiller Procurement

Efficiency Optimization & Maintenance & Problem Solving

- Installation, Start Up and Commissioning
- Common Problems in Operation and Troubleshooting
- Best Practices for Maintenance of Plant Equipment
- Efficiency Assessment and Continuous Improvement
- Optimization of Chilled Water Plants

High-Pressure Centrifugal Chillers

- Theory of Operation
- Chiller Design and Component Functionality
- Seasonal Start-up
- Maintenance
- Troubleshooting

Rotary Screw Liquid Chillers

- Screw Chiller Basics
 - Operation and Sequencing
 - Installation
 - Commissioning
 - Maintenance
 - Troubleshooting
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