



EuroMaTech

Training Seminars & Conferences

An Intensive 5-Day Training Seminar On

Principles, Applications and Performance of Pumps, Compressors and Turbines

22 - 26 Dec 2019, Dubai
02 - 06 Feb 2020, Dubai
21 - 25 Jun 2020, Dubai
20 - 24 Dec 2020, Dubai

www.euromatech.com



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An ISO 9001:2015
and ISO 29990:2010
Certified Company

Principles, Applications and Performance of Pumps, Compressors and Turbines

INTRODUCTION

This EuroMaTech Principles, Applications and Performance of Pumps, Compressors and Turbines training course will focus on the importance of rotating machinery such as pumps, compressors and turbines of various designs and applications, which are encountered throughout process industry, petrochemical and oil and gas industries. This EuroMaTech training course will start with an introduction to liquid and gas systems including pressure and head, capacity and flow, friction head losses & operational dynamics. Centrifugal and positive-displacement pumps, compressors and turbines, will all be introduced, together with their main construction and parts. The application of the different types of pumps, compressors and turbines will be discussed along with their suitability for different operational duties. Operation, troubleshooting and maintenance will also be dealt with.

The key highlights of this EuroMaTech training course are:

- Solid knowledge of basic principles of fluid flow
- Optimisation of the operation and maintenance of different types of pumps, compressors and turbines
- Confidence to troubleshoot problems related to pumps compressors and turbines, thereby avoiding repetitive failures
- Allow tighter control of maintenance budgets by the avoidance of unplanned equipment failures in service

WHO SHOULD ATTEND?

- Technicians and Operators
- Graduate Engineers
- Mechanical and Process Engineers
- Plant Engineers responsible for operations, maintenance and troubleshooting
- Maintenance and Instrumentation Professionals
- Technologists and Facility Operators
- Supervisors, Team and Project Leaders

This EuroMaTech Principles, Applications and Performance of Pumps, Compressors and Turbines training course will also be of benefit to anyone who wishes to update themselves on pump, compressor and turbine technology, judge the suitability of different types of pumps, compressors and turbines for their needs, and learn how to operate and maintain them for the benefit of their organisations.

PROGRAMME OBJECTIVES

- Have an understanding of relevant fluid laws and the different types of pumps and their associated terminology
- Have an understanding of Centrifugal and positive displacement pumps and compressors, and their related components
- Know how to calculate and use pump performance curves and pumping system requirements and have an understanding of different parameters affecting their operation.
- Be able to operate pumps and compressors as close as possible to the design efficiency
- Know the different types and major components of turbines
- Understand the working principles and characteristics of turbines and know the major components
- Have the ability to perform troubleshooting of systems involving pumps, compressors and turbines
- Have learnt about selection, operation and maintenance strategies

TRAINING METHODOLOGY

This EuroMaTech Principles, Applications and Performance of Pumps, Compressors and Turbines training course will be conducted along workshop principles with formal lectures, computer simulation, relevant videos, case studies and interactive worked examples. Relevant case studies will be provided to illustrate the application of each tool in an operations environment. Each learning point will be re-enforced with practical exercises. There will be ample opportunities for discussion and sharing experiences. Hard and soft copies of the programme manual will be presented to each delegate.



PROGRAMME SUMMARY

The knowledge gained in this EuroMaTech training course will provide better understanding of pumps, compressors and turbines in complex operating conditions. The delegates will be able to develop a proactive maintenance system which will allow better inspection, control and monitoring with the goal of avoiding unplanned equipment failures and maximising compressor and turbine availability and reliability.

This EuroMaTech training course will give the delegate the required level of technical knowledge and skill to achieve that personal satisfaction.

- Understanding of reciprocating and rotating equipment operating and maintenance techniques
- Ability to put in place measures to quantify equipment condition
- Interface with pump, compressor and turbine equipment providers
- Identify and specify new and replacement pumps, compressors and turbines
- Ability to operate and troubleshoot rotating equipment

IN-HOUSE TRAINING

EuroMaTech is capable of conducting this training programme exclusively for your delegates. Please e-mail us on inhouse@euromatech.ae for further information and/or to receive a comprehensive proposal.

QUALITY CERTIFICATIONS & ACCREDITATIONS



The PMI® Registered Education Provider logo is a registered mark of the Project Management Institute, Inc.



EuroMaTech is recognized by the Society for Maintenance & Reliability Professionals (SMRP) as an Approved Provider. The SMRP Approved Provider status allows EuroMaTech to host a number of maintenance & reliability related continuing education trainings.

This training course is approved by SMRP to issue 25 Continuing Education Course Hours (CECHs) towards recertification of CMRP, CMRT or CAMA credentials.

PROGRAM OUTLINE

DAY 01

Introduction and Fluid Laws

- Introduction to basic types and principles of, Pumps, Compressors and Turbines
- Basic liquid and gas Laws
- Understanding Head
- Types of flow and losses
- Net Positive Suction Head (*NPSH*)

DAY 02

Pumping Systems, Pump Performance And Pump Type Construction

- Pump type and Performance (*Centrifugal and Positive Displacement*)
- Pump characteristics. Head, Capacity, Power, Efficiency and Net Positive Suction Head (*NPSH*)
- Pump Curves and System Curves.
- Positive Displacement Pumps, Reciprocating and Rotary
- Dynamic Pumps Types, Centrifugal, Axial, Mixed, Multistage, etc.
- Sealing Systems. Conventional Packing Glands and Mechanical Seals

DAY 03

Compressor Construction, Types, Characteristics and Performance

- Positive displacement compressors, reciprocating compressors, reciprocating compressors, diaphragm compressors.
- Rotary compressors, rotary screw compressor, lobe type air compressor, sliding vane compressors, liquid ring compressors
- Dynamic compressors, centrifugal compressors, axial compressors
- Principle of operation and performance curves
- Surging and choking problems

DAY 04

Turbine Types, Construction and Performance

- Turbine Types
 - » Gas Turbines
 - » Steam turbines
- Turbine Operation
- Main components
 - » Nozzles
 - » Stator and Rotor Blades (Vanes) Configuration and Flow
 - » Aerofoil and Twisted Contours
- Working cycle of a gas turbine, representation of the Pressure-Volume diagram (indicator card)
- Stages

DAY 05

Troubleshooting & Maintenance

- Potential Failure Analysis
- Troubleshooting
 - » Review of common faults
 - » Developing a Preventive Maintenance Plan
- Vibration causes, forcing frequency causes, unbalance, misalignment, mechanical looseness, bearing defects, gear defects, oil whirl, blade or vane problems
- Cavitation
- Water Hammer
 - » What causes water hammer?
 - » Solutions for water hammer
- Review of the Week & Wrap-Up

Principles, Applications and Performance of Pumps, Compressors and Turbines

✓	Date	Venue	Fee(\$)
	22 - 26 Dec 2019	Dubai	US\$4,950
	02 - 06 Feb 2020	Dubai	US\$4,950
	21 - 25 Jun 2020	Dubai	US\$4,950
	20 - 24 Dec 2020	Dubai	US\$4,950

*This fee is inclusive of instruction materials, documentation, lunch, coffee/tea breaks & snack. All Fees are subject to 5% Value Added Tax (VAT).**

Your Details

Name (Mr/Ms):.....

Position:..... Organisation:.....

Address:.....

.....

.....

City / Country:

Telephone / Fax:

Mode Of Payment

Please find enclosed a cheque made payable to EuroMaTech

Please invoice me

Please invoice my company as follows:

Contact Name:

Company Name:

Address:.....



Training Seminars & Conferences

Documentation

High Quality material has been prepared by the Seminar Leader for distribution to delegates. In addition, a special note pad to facilitate note taking will be provided.

Certificates

A Certificate of Completion will be issued to those who attend & successfully complete the programme.

Schedule

Our Course timings commences at 08:30 and concludes at 14:00, followed by lunch on a daily basis.

Hotel Accommodation

EuroMaTech has negotiated special rates for a limited number of rooms in the hotel. Early registration will help to secure a room at the reduced rate.

Registration & Payment

Please complete the registration form on this page & return it to us indicating your preferred mode of payment. For Further Information, Contact Your Nearest EuroMaTech Office.

Cancellation Policy

Request for seminar cancellation must be made in writing & received at EuroMaTech three weeks prior to the seminar date. A U.S.\$250/- processing fee will be charged per delegate for each cancellation. Thereafter, we regret that we are unable to refund any fees due, although in such cases we would be happy to welcome a colleague who would substitute for you.

Disclaimer

EuroMaTech reserves the right to alter the content, location of the Seminar, or the identity of the speakers in case of events beyond our control.

***VAT Announcement:** The Government of UAE have introduced Value Added Tax (VAT) on goods and services from 01-January-2018. In compliance with the legislation issued by the UAE Government, we will be applying a 5% VAT on the fees for all our programs and services offered from January 2018 as applicable and stipulated in the FTA circulars.

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