



*Training Course:  
Steam Turbines, Gas Turbines & Combined Power  
Plants*

*25 - 29 August 2024  
Cairo (Egypt)  
InterContinental Citystars Cairo*

## Training Course: Steam Turbines, Gas Turbines & Combined Power Plants

Training Course code: EN6068 From: 25 - 29 August 2024 Venue: Cairo (Egypt) - InterContinental Citystars Cairo Training Course Fees: 3900 € Euro

### Introduction

This programme provides a detailed understanding of steam power plants, gas turbines and combined cycle plants. Each of the components such as compressors, gas and steam turbines, heat recovery steam generators, deaerators, condensers, lubricating systems, instrumentation, control systems, transformers, and generators are covered. The design, selection considerations, operation, maintenance, and economics of turbines as well as emission limits, reliability, monitoring and governing systems will also be covered. The significant improvements that were made to power plants during the last two decades will also be explained.

### Course Objectives of Steam Turbines, Gas Turbines & Combined Power Plants

- **Learn** about components and subsystems of the various types of gas turbines, steam power plants, and combined cycle plants
- **Examine** the advantages, applications, performance and economics of combined cycle plants
- **Learn** about various equipment including compressors, turbines, governing systems, combustors, deaerators, feed water heaters, transformers, generators and auxiliaries
- **Discover** the maintenance required for gas turbines, steam power plants, combined cycles and generators to minimize their operating cost and maximize their efficiency, reliability, and longevity
- **Learn** about the monitoring and control of environmental emissions
- **Discover** instrumentation and control systems of gas turbines and combined cycles
- **Increase** your knowledge of predictive and preventive maintenance, reliability and testing
- **Gain** a thorough understanding of the selection considerations and applications of steam power plants and combined-cycle plants

### TRAINING METHODOLOGY

The instructor relies on a highly interactive training method to enhance the learning process. This method ensures that all the delegates gain a complete understanding of all the topics covered. The training environment is highly stimulating, challenging, and effective. The participants will learn by case studies. They will be able to apply all the concepts to their own organization.

### Course Summary

This programme provides an in-depth understanding of all the equipment and systems used in steam power plants, gas turbines, and combined cycle plants. Computer simulation, design, selection considerations, operation, testing, maintenance and economics of all these power generating plants as well as emission limits, monitoring and governing systems will also be covered thoroughly.

This programme examines the advantages and disadvantages of each type of power generating plants. The reliability, life cycle cost, profitability, refurbishment, and life extension methods of each type of power generating plants are also covered in detail.

### Course Outlines of Steam Turbines, Gas Turbines & Combined Power Plants

#### DAY 1 - Steam Power Plants

- Review of Thermodynamics Principles
- Steam Power Plants
- The Fire-Tube Boiler
- The Water-Tube Boiler
- The Steam Drum
- Superheaters and Reheaters
- Steam Turbines
- Reheaters
- Condensers
- Feedwater Heaters
- Efficiency and Heat Rate
- Supercritical Plants
- Economics of Steam Power Plants

#### DAY 2 - Steam Turbines and Auxiliaries

- Turbine Types
- Compound Turbines
- Turbine Control Systems
- Steam Turbine Maintenance
- Steam Generators, Heat Exchangers, and Condensers
- Power Station Performance Monitoring
- The Turbine Governing Systems
- Steam Chests and Valves
- Turbine Protective Devices
- Turbine Instrumentation
- Lubrication Systems
- Gland Sealing System
- Frequently Asked Questions about Turbine-Generator Balancing, Vibration, Analysis and Maintenance
- Features Enhancing The Reliability and Maintainability of Steam Turbines

#### DAY 3 - Gas Turbines & Compressors

- Gas Turbine Fundamentals
- Overview of Gas Turbines
- Gas Turbine Design
- Gas Turbine Calculations
- Gas Turbine Compressors
- Compressors Auxiliaries, Off-Design Performance, Stall, and Surge
- Centrifugal Compressors - Components, Performance Characteristics, Balancing, Surge Prevention Systems, and Testing
- Dynamic Compressors Performance
- Compressor Seal Systems
- Dry Seals, Advanced Sealing Mechanisms, and Magnetic Bearings

#### DAY 4 - Combined Cycle Power Plants

- Combined Cycle vs Simple Cycle Power Plants
- Combined Cycle's Technology Overview
- Single-Shaft Combined Cycle Power Generating Plants

- Economic and Technical Considerations for Combined Cycle Performance & Enhancement Options
- Combined Cycle Operation and Maintenance
- Latest improvements in Combined Cycle Technology

#### DAY 5 - Transformers & Generators

- Fundamentals of Electric Systems
- Introduction to Machinery Principles
- Transformers
- Transformers Components and Maintenance
- AC Machine Fundamentals
- Synchronous Generators
- Generator Components, Auxiliaries, and Excitation
- Generator Testing, Inspection, and Maintenance

## Registration form on the Training Course: Steam Turbines, Gas Turbines & Combined Power Plants

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**Cairo Training Course Fees:** 3900 € Euro

Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

### Delegate Information

Full Name (Mr / Ms / Dr / Eng): .....  
Position: .....  
Telephone / Mobile: .....  
Personal E-Mail: .....  
Official E-Mail: .....

### Company Information

Company Name: .....  
Address: .....  
City / Country: .....

### Person Responsible for Training and Development

Full Name (Mr / Ms / Dr / Eng): .....  
Position: .....  
Telephone / Mobile: .....  
Personal E-Mail: .....  
Official E-Mail: .....

### Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
- ☐ Please invoice me
- ☐ Please invoice my company

### Easy Ways To Register

Telephone:  
+201095004484 to  
provisionally reserve your  
place.

Fax your completed  
registration  
form to: +20233379764

E-mail to us :  
info@gh4t.com  
or training@gh4t.com

Complete & return the  
booking form with cheque  
to: Global Horizon  
3 Oudai street, Aldouki,  
Giza, Giza Governorate,  
Egypt.