



*Training Course:  
Advanced Performance Analysis and  
Troubleshooting for Power Plants*

*4 - 8 August 2024  
Istanbul (Turkey)  
DoubleTree by Hilton Istanbul Esentepe*

## Training Course: Advanced Performance Analysis and Troubleshooting for Power Plants

Training Course code: EN6064 From: 4 - 8 August 2024 Venue: Istanbul (Turkey) - DoubleTree by Hilton Istanbul Esentepe  
Training Course Fees: 6300 € Euro

### Introduction

KNOWLEDGE and EXPERIENCE is needed to develop and implement an effective heat rate monitoring and improvement program. The Technical Services will provide the fundamental knowledge. Then, with this knowledge, experience can be applied more effectively as you're better prepared for the tasks at hand.

- Are high fuel costs having an impact upon your plant's bottom line? Improved efficiency can help survive these costs.
- Do long-term fuel contracts have you down? Improved efficiency can help lift you back up.
- Are you evaluating the competitive positioning of your plant? Improved efficiency will certainly improve your market positioning.
- Are you new to this position and/or just been given these responsibilities? If yes, this Seminar gives you a significant head-start over the OJT approach.

The Seminar is designed to provide combined cycle power plant personnel with the fundamental knowledge to be able to begin the development, or to implement an effective heat rate improvement program. Design and operating theories of combined cycle plant equipment are presented. Thermodynamics and heat transfer are reviewed and practically applied to operation. Calculations are performed, using actual test data, to determine steam and gas turbine efficiency, condenser cleanliness, turbine cycle heat rate, corrections, HRSG efficiency, and feedwater heater performance.

### Course Objectives of Analysis and Troubleshooting for Power Plants

At the end of this course, students should be able to:

- Troubleshoot capacity and efficiency shortfalls of all major power plant components
- Identify where thermal losses are occurring
- Determine if problems are due to equipment or operational issues
- Act to effectively improve heat rate
- Monitor improvements and continually reassess

### Course Content of Analysis and Troubleshooting for Power Plants

- Boilers and Air Heaters
- Feed water Heaters
- HRSGs
- Steam Turbines
- Gas Turbines
- Pumps

- Condensers and Auxiliaries
- Combined Cycle

## Course Outlines of Analysis and Troubleshooting for Power Plants

### 1. Day 1:

1. Introductions
2. **Gas Turbines:** Thermodynamic Cycles for Gas Turbines, Component Construction, Gas Turbine Generators, Gas Turbine Systems, Operation and Maintenance Considerations
3. **ASME Performance Test Codes Applicable to Gas Turbines**

### 2. Day 2:

1. **Combustion Turbine Performance:** Design Point Performance, Off-Design Performance, Transient Performance, Correction Curves, Performance Testing, Performance Trending and Evaluation
2. **Efficiency Monitoring Program:** Establish Needs for Program, Establish Level of Detail from Needs Analysis, Identify Baseline Data, Determine Frequency of Testing and Monitoring, Performance Calculations, Performance Monitoring and Trending

### 3. Day3:

1. **Steam Turbine Cycle:** Thermodynamics, Turbine Theory, Types and Designs, Turbine Efficiency Determinations, Factors Influencing Efficiency, Practical Aspects for Turbine Testing, Diagnosis of Turbine Problems, Examples of Testing Programs

### 4. Day 5:

1. **Heat Recovery Steam Generator:** Thermodynamics, Theory and Principles, HRSG Flowpaths, Major Components, Factors Influencing Efficiency, Performance Calculations, Performance Monitoring and Trending
2. **Heat Exchanger:** Thermodynamics, Heat Transfer Relationships, Condensers, Theory & Components, Condenser Testing, Factors Affecting Performance, Feedwater Heaters, Deaerators
3. **Cooling Tower Performance:** Thermodynamics, Function/Principles, Flowpaths/Components, Controls/Operations, Performance Monitoring
4. **Measuring Instruments**

### 5. Day 5:

1. **Combined Cycle Power Operation:** CC Theory and Operation, Cycle Parameters Impact on Performance, Benefits of the Combined Cycle, Fuels for Combined Cycle Plants

## Registration form on the Training Course: Advanced Performance Analysis and Troubleshooting for Power Plants

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

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### Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
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