

Training Title

**GAS TURBINES TECHNOLOGY (Operations, Troubleshooting, Inspection and Maintenance)**

Training Duration

5 days

Training Venue and Dates

REF ME038	Gas Turbine Technology	5	31 August - 4 September 2020	\$ 6,250	Madrid, Spain
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In any of the 5 star hotels. The exact venue will be intimated upon finalizing.

Training Fees

US\$6,250 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING INTRODUCTION

The gas Turbine is a power plant that has found increasing service in past 40 years as a power generation plant and as a mechanical drives for other turbomachinery like pumps and compressors. Its compactness, low weight, and multiple fuel application make it a natural power plant for offshore platforms. The last 20 years has seen a large growth in Gas Turbine Technology, new coatings and new cooling schemes. This with the conjunction of increase in compressor pressure ratio has increased the gas turbine thermal efficiency from about 15% to over 45%.

The utilization of gas turbine exhausts gases, for steam generation or for heating applications, advances the gas turbine application and increases the combined cycle power plant efficiency up to 60%, making it as the obvious choice in comparison with other power plant options.

Pushing the gas turbine power plant to the limits, high compression ratio, and high firing temperature make it more susceptible to failures and required a very effective monitoring system plus a very effective and complicated control and protection systems.

Understanding the performance characteristics, steady and transient operation of GT is a must to achieve more availability and reliability of the plant. It requires deeper knowledge and understanding of the function of different components of the gas turbine plant, plus

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the auxiliary systems which responsible for lubrication, seals, and cooling to enable troubleshooting the GT better and preventing failures of gas turbines.

### WHO SHOULD ATTEND ?

Technicians, senior technicians, engineers and senior staff who are directly and indirectly involved in the operation, inspection and maintenance and they requiring knowledge of gas turbines.

### TRAINING OBJECTIVES

At the end of the course, the delegates will be able to:

1. Describe the different gas turbine cycles and their features
2. Identify the types of gas turbines based on its technology
3. Describe the most important factors affecting the gas turbine performance
4. Identify gas turbine configurations
5. identify major components/assembly and their function
6. differentiate between single-shaft and two-shaft gas turbines
7. describe key parameters affecting gas turbine performance
8. describe basic control and protection systems used in gas turbines
9. perform troubleshooting and suggest solution for common problems in gas turbines
10. list typical maintenance procedures and inspection techniques

### TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course. Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

in forms of short presentation by the delegates will be arranged.

### TRAINING OUTCOME

Delegates will gain a lot of information and knowledge out of the course. This will reflect positively on their performance concerning the gas turbine operation and maintenance.

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**DAILY OUTLINE**

**Day 1**

**Gas Turbine Overview**  
**Gas Turbine Applications**  
**Gas Turbine Cycles**  
**Gas Turbine Power Augmentation Techniques**  
**Gas Turbine Emission Reduction**  
**Gas Turbine Configurations**  
**Gas Turbine Operation Envelop**

**Day 2**

**Gas Turbine Mechanical Components**  
**Axial-Flow Turbo-compressors**  
**Combustors**  
**Gas Turbines**  
**Auxiliary Systems**  
**Loop oil System**  
**Bearings**  
**Seals**  
**Fuel Systems**

**Day 3**

**Gas Turbine Control Systems**  
**Normal Operation**  
**Load and Frequency Fluctuations**  
**Start-up Sequencing**  
**Shutdown Sequencing**  
**Gas Turbine Protection System**

**Day 4**

**Gas Turbine Monitoring System**  
**Instrumentation and Measurements**  
**Scheduled Inspection**  
**Borescope Inspection**  
**Maintenance Strategies**

**Day 5**

**Gas Turbine Troubleshooting**  
**Performance Deterioration**

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**High Temperature Effects**  
**Fouling Problems**  
**Fatigue Problem**  
**Vibration Problems**

**NOTE:**

**Pre & Post Tests will be conducted**

**Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.**



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