

Training Title

**GAS TURBINES MAINTENANCE**

Training Duration

5 days

Training Venue and Dates

REF RM049	Gas Turbine Maintenance	5	20 - 24 May 2024	\$6,000	Turkey, Istanbul
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In any of the 5-star hotels. The exact venue will be intimated upon finalizing.

Training Fees

\$6,000 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments, and a 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 the past 40 years as a power generation plant and as a mechanical drive for other turbomachinery like pumps and compressors. Its compactness, low weight, and multiple fuel applications make it a natural power plant for offshore platforms. The last 20 years have seen a large growth in Gas Turbine Technology, new coatings, and new cooling schemes. This in conjunction with an increase in compressor pressure ratio has increased the gas turbine thermal efficiency from about 15% to over 45%. The utilization of gas turbine exhaust gases, for steam generation or heating applications, advances the gas turbine application and increases the combined cycle power plant efficiency up to 60%, making it 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 require a very effective monitoring system plus very effective and complicated control and protection systems.

Understanding the performance characteristics, and 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 the auxiliary systems which responsible for lubrication, seals, and cooling to enable troubleshooting the GT better and preventing failures 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 their technology
3. Describe the most important factors affecting the gas turbine performance
4. Identify gas turbine configurations

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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 solutions for common problems in gas turbines
10. List typical maintenance procedures and inspection techniques

#### **WHO SHOULD ATTEND THE COURSE?**

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

#### **TRAINING METHODOLOGY**

A highly interactive combination of lecture and discussion sessions will be managed to maximize the amount and quality of information, knowledge, and experience transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. The attendants will also be encouraged to raise more of their questions and to share developing the right answers using their analysis and experience.

All attendees receive a course manual as a reference.

This interactive training workshop includes the following training methodologies

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

#### **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.

#### **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

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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  
High-Temperature Effects  
    Fouling Problems  
    Fatigue Problem  
    Vibration Problems

**NOTE:**

Pre & Post Tests will be conducted  
Case Studies, Group Exercises, Group Discussions, Last Day Reviews and assessments will be carried out.

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P.O BOX 45304  
ABU DHABI, U.A.E

T +971 2 6264455  
F +971 2 6275344

[www.definettraining.com](http://www.definettraining.com)