

# **GAS TURBINE TECHNOLOGY**



**MUE107  
Mechanical &  
Utility  
Engineering**

**COURSE TITLE**

**GAS TURBINE TECHNOLOGY**

**COURSE DATE/VENUE**

21 - 25 June, 2021

London, UK

**COURSE REFERENCE**

MUE107

**COURSE DURATION**

05 Days

**DISCIPLINE**

Mechanical & Utility Engineering

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

### **COURSE OBJECTIVE**

**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

### **COURSE AUDIENCE**

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.

### **COURSE CONTENT**

**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

**TRAINIT**  
ACADEMY

## 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

## **COURSE CERTIFICATE**

**TRAINIT ACADEMY** will award an internationally recognized certificate(s) for each delegate on completion of training.

## **COURSE FEES**

\$6,150 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

## **COURSE METHODOLOGY**

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. 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.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises

- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions

