



## Turbine Technology: Performance, Operation, Control, Troubleshooting & Maintenance

Date	Venues	(\$)Fees	Book your seat
24 Mar -28 Mar 2024	Bahrain	2900	<a href="#">Register Now</a>

### Course Overview

This course enables engineers, supervisors, and operation and maintenance personnel to safely operate gas turbines. Also, the course introduces the routine maintenance procedures of the turbine support systems required to attain high levels of availability and reliability from the gas turbine. This course develops a background in gas turbine operation that enables participants to analyze operating problems properly and take the necessary corrective action.

### Course Objective

The course is intended to supply the participants with the principal of gas turbine operation. Also, to train them in monitoring the behavior of the gas turbine in general and practice the maintenance procedures that will help them in enhancing its performance. The course will be also directed to the tools and the trouble shooting techniques obeyed so as to help them to reach the full understanding of the operation of each system components.

### Who Should Attend?

Mechanical & electrical engineers and qualified technicians should benefit from this course. Also practicing power engineers who work in generation plant should (Gas Turbine) update and refresh their knowledge by attending this course.

### Course Outline

#### 1. TURBINE SYSTEM BASIC

- Ideal thermodynamic cycle
- The control cycle system
- Otto, Diesel, Briton and Mixed cycle

#### 2. TURBINE OPERATION PRINCIPLES

- Working principles and characteristics
- Operating Limitation
- The control Cycle

#### 3. APPLICATION GAS TURBINE

- Industrial application
- Power Plant application
- Drive application

#### 4. TURBINE SHAFT CONFIGURATIONS

- Single shaft engine
- Two shaft engine
- Hot & cold end
- Components

## 5. INCREASING TURBINE EFFICIENCY

- Turbine performance characteristic
- Cooling system
- Effect of air inlet
- Effect of exhaust temperature

## 6. BASICS OF OPERATION

- Start up
- Normal operation
- Shut-down
- Emergency procedure

## 7. COMPONENTS OF TURBINE

- Gas turbine compressor
  - *Compressor types and main requirements.*
  - *Multi stage compressor and its operation*
  - *Compressor trouble shootings.*
  - *Compressor surge*
- Combustion chamber
  - *Types of chambers*
  - *Ignition location, methods*
  - *Cooling systems*
  - *Diffuser sections at inlet*
  - *Nozzel configurations*
- Turbine Section
  - *Turbine configurations*
  - *Blades shapes*
  - *Multi-stages*
  - *Rotor, stator blades*
- Fuel System
  - *Fuel control sequence*
  - *Fuel gas control system*
  - *Fuel flow control valves*

## 8. TURBINE MAINTENANCE

- Inlet systems
- Exhaust systems
- Lubricating oil system
- Hydraulic oil system
- Trip oil system
- Seal oil system Inlet guide vanes
- Cooling water system
- Cooling air system
- Sealing air system
- Fuel systems
- Atomizing air system
- Water/steam injection

## 9. TURBINE SYSTEM PROTECTION

- Flameout protection
- Over speed protection
- Over temperature protection
- Vibration protection
- Cooling generator protection

## Training Methodology

- Presentation & Slides
- Audio Visual Aids
- Interactive Discussion
- Participatory Exercise
- Action Learning
- Class Activities
- Case Studies
- Workshops
- Games & Role plays



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