

Training Title

GAS TURBINE AND COMPRESSOR OPERATION, MAINTENANCE AND TROUBLESHOOTING

Training Duration

5 days

Training Venue and Dates

<i>Gas Turbine and Compressor Operation, Maintenance and Troubleshooting</i>	<i>5</i>	<i>03-07 February 2025</i>	<i>\$5,500</i>	<i>Dubai, UAE</i>
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Trainings will be conducted in any of the 4 or 5 star hotels.

Training Fees

- ***5,500 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch.***

Training Certificate

Prolific Consultants FZE Certificate of Course Completion will be issued to all attendees.

TRAINING OVERVIEW

COURSE DESCRIPTION

Gas Turbine Training classes provide technical information for those people who maintain the gas turbine engines. The goal of each training program is to build confidence based on knowledge and understanding. Engine System Familiarization and Maintenance Procedures are key focal points of each program. This training is built on a foundation that will enable the student to understand:

- ***Engine Nomenclature & Functions***
- ***Engine Systems Operation***
- ***Gas Turbine Principles and Theory***
- ***Troubleshooting Techniques Through Class Discussions***
- ***Maintenance and Preventative Maintenance***
- ***Inspection technique***

COURSE OBJECTIVE:

The objective of this course is to give participants an understanding of basic gas turbine operations and construction as well as a fundamental knowledge of proper operation, control and protection of the turbine and its accessory systems.

Emphasis is placed on the following areas:

- ***Basic gas turbine operating cycle***

- *Overview of gas turbine major components and equipment arrangements and how these relate to overall operation and performance*
- *Fundamentals of gas turbine control and protection: start-up, speed, load, shutdown and temperature*
- *Operating parameters and control / protection features of the various turbine support systems such as the lubricating oil, hydraulic, variable inlet guide vanes, starting means and fuels*
- *Operating factors and considerations that affect maintenance intervals*

SUITABLE FOR:

Operators, engineers, technicians, and administrative personnel of operating facilities as well those who may work in affiliated industries, who wish to gain an understanding of the day-to-day operation of heavy duty 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 motivate everybody finding the right answers. The attendants will also be encouraged to raise more of their own questions and to share developing the right answers using their own analysis and experience.

All presentations are made in excellent colorful power point. Very useful Course Materials will be given.

DAY WISE COURSE OUT LINE:

- Design theory and practice

1. An overview of gas turbine

Gas turbine cycle

Performance

Design consideration

Major components

Environmental effect

2. Theoretical and actual cycle analysis

Brayton cycle

Combined cycle

3. Compressor and turbine performance characteristics

Performance characteristic

Aerothermal equations

4. Performance and mechanical standards

Major variables for gas turbine application

5. Rotor dynamics

- Major Components

6. Centrifugal compressors

Components

Performance

Surge

Process

7. Axial flow compressors

Blade and cascade

Airfoil theory

Compressor stall

Performance characteristics

8. Radial- inflow turbines

Description theory

Performance of a radial –inflow turbine

9. Axial- flow turbines

Turbine geometry

Impulse turbine

Reaction turbine

Turbine blade cooling

Cooled turbine Aerodynamic

Turbine losses

10. Combustors

Combustion terms

Combustion chamber design

Fuel atomization and ignition

Typical combustor arrangement

Air pollution problems

- Materials, fuel technology and fuel systems

11. Materials

General metallurgical behaviours in gas turbine

Gas turbine material

Compressor blades

Forging and non-destructive Testing

Coating

12. Fuels

Fuel specifications

Fuel properties

Fuel treatments

Heavy fuel
Cleaning of turbine components
Fuel economic
Heat tracing of piping system
Storage of liquids

- Auxiliary components and Accessories

13. Bearings

Bearing design principles
Tilting pad journal bearing
Bearing materials
Bearing and shaft instabilities
Thrust bearing
Thrust bearing power loss

14. Seals

Noncontact seals
Mechanical face seals
Mechanical seal selection and application
Seal systems
Associated oil system
Dry gas seals

15. Gears

Gear types
Factors affecting gear design
Installation and initial operation

- Installation, operation and maintenance

16. Lubrication

Basic oil system
Lubrication selection
Oil sampling and testing
Contamination and filter selection
Cleaning and flushing
Lubrication management

17. Spectrum analysis

Vibration sensors
Vibration measurements
Vibration analysis

18. Balancing

Rotor imbalance
Balancing procedures

Application of balancing techniques

Balancing machine

19. Coupling and alignment

Gear coupling

Metal diaphragm coupling

Metal disc coupling

Shaft misalignment and correction

20. Control system and instrumentation

Control system

Condition monitoring system

Implementation of condition monitoring

Life cycle cost

Temperature measurements

Pressure measurements

Vibration measurements

Failure diagnostics

Mechanical [problem diagnostics

21. Maintenance techniques

Philosophy of maintenance

Training of personnel

Tools and shop equipments

Machine cleaning

Hot section maintenance

Compressor maintenance

Bearing maintenance

Coupling maintenance

Repair and rehabilitation of turbomachinery

Foundation

Typical problem encountered in gas turbine

Case Studies, Role Plays, Videos, Discussions, Last Day Review & Assessments will be carried out.

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