Training Title
GAS TURBINE AND COMPRESSOR OPERATION, MAINTENANCE AND TROUBLESHOOTING

Training Duration
5 days

Training Venue and Dates

Gas Turbine and Compressor Operation, Maintenance and Troubleshooting	5	05-09 Jan, 2024	$5,500	Dubai, UAE

Trainings will be conducted in any of the 5 star hotels.

Training Fees
- 5,500 US$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet 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 looses
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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