



Advanced Gas Turbines Design, Troubleshooting, Maintenance & Inspection



Introduction:

Gas turbines became widely adopted and many thousands of sets are now installed worldwide. The development of gas turbine from the theoretical stage to its present worldwide adoption has three main inputs.

These may include:

- the practical and theoretical work of established steam turbines manufacturers wishing to expand into the gas turbine field.
- Intensive and aerodynamic work on compressors and turbines. By aero-engine manufacturers, arising particularly from the development of aero engine superchargers
- Metallurgical developments, which provided alloys capable of withstanding the continuous high temperatures and stress to which the turbine blades are subjected.

Who Should Attend?

Operators and engineers who are involved with gas turbines, operation and maintenance, and those who have engineering backgrounds and works on gas turbines.

Methodology:

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

Certificate:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration.

Course Objectives:

Upon completion of this short programme, the participant will be able to understand the principle of gas turbine operations. They will appreciate the applications of gas turbines. They will be able to assess and measure vibration, calibrate vibration measurement systems. They will also be able to understand how to manage and solve other problems related to the gas turbines.

Course Outline:

DAY 1

- General Introduction on gas turbines

- Basic thermodynamics (entropy, compression and expansion processes, gas turbine cycles)
- Gas turbines background and forms (open cycle gas turbines, the closed cycle gas turbine,
- Uses of gas turbines
- Gas turbine power and sizes
- Gas turbines components

DAY 2

- GT combustion monitoring and protection the combustion chambers
- gas turbines fuels , calculation types, wet and dry analysis, stoichiometric, gravimetric method, air/fuel ratio exhaust gas temperature monitoring
- combustion products, check balance, exhaust gas analysis exhaust gas as pollutants
- combustion intensity, fuel calorific value, upper and low limits

DAY 3

- GT over speed control and protection
- basic function of control system control system calibrate and cost
- lubrication system, start-up system, ignition and flaming system, fuel control and governor system
- control and safety system

DAY 4

- Vibration protection
- Vibration in gas turbines, blade and disc vibration, rotor vibration, flame and casing vibration, noise level, vibration monitoring,
- Ignition and flame control system, fuel control and governor system, control and safety system, Application of vibration analysis
- Hand on equipment
- Case study & Troubleshooting techniques

DAY 5

- GT generators and transformers
- Back ground, financial, environmental, calculations, overall efficiency, WHB, combined cycle cogeneration, system description,
- Maintenance, preventive maintenance, conditioned monitoring, endoscopes checking, trend analysis, maintenance documentation & records, cost of maintenance, factors affecting maintenance,
- Case study & Troubleshooting techniques