Basic Vibration Analysis & Condition Monitoring (Gas Turbines)

Roxby Training Solutions Ltd, Unit 4 John Clarke Centre, Dockside Road,
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COURSE CONTENT

Aim

To appreciate how theoretical and applied principles are met in relation to the parameters of both Gas Turbine Engine performance monitoring and condition monitoring and how this theory can be applied through practical problem solving to overcome common problems encountered with this type of equipment.

To investigate Gas Turbine Engine performance monitoring.

To investigate Gas Turbine Engine condition monitoring.

To undertake fault finding and problem solving of major Gas Turbine Engine trend monitoring systems.

To apply knowledge to undertake monitoring, inspection and maintenance tasks.

To analyse Gas Turbine Engine reliability programs.

Pre-requisites

Successful completion of a GTE 5 day program or extensive post-qualification first-hand experience within gas turbine engines and the maintenance or operating environment.

Course Duration

This course is of 5 days in duration.

Optimum Number

Maximum of 6 recipients is recommended.

Training Aids

Portable visual aids, program notes, electronic images, problem solving exercises and all assessment material supplied. Ideally, access to a 'live' industrial gas turbine engine or a training derivative would be desirable.

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Assessment

Assessment is conducted using a number of different methods. All methods are designed to be non-threatening and accurately measure understanding which in turn assists with knowledge retention. These methods are commonly used:

1. As an integrative and non obtrusive part of the learning process.
2. In periodical assessment trigger points.
3. As systematic reinforcement following topic conclusion.
4. As a summative review of understanding and to consolidate value added knowledge.

A full report detailing an analytical performance profile is produced for each candidate.

Course Objectives

In terms of gas turbine engine management - at the conclusion of this 5 day program, candidates should be able to:

- Explain the mechanical and electrical principles of a basic Gas Turbine Engine performance monitoring systems with particular regard to: Mass airflow; temperature & power output; types of thermocouple & positioning; exhaust gas temperature (EGT) & jet pipe temperature (JPT); thrust & rotational speed; engine pressure ratio (EPR) & integrated engine pressure ratio (IEPR); data analysis and performance trend monitoring.
- Explain the mechanical and electrical principles of a basic Gas Turbine Engine condition monitoring systems with particular regard to: Vibration analysis; lubrication systems; temperature health monitoring outputs; audio logical detection & analysis; data analysis and performance trend monitoring.
- Understand and fully describe typical integrated engine trend monitoring and control systems, their function and health & safety implications.
- Conduct problem solving simulations and perform monitoring, inspection and maintenance tasks.
- Explain engine performance and monitoring characteristics and demonstrate informed comparisons between particular systems.

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COURSE SYLLABUS

SESSION 1	SESSION 2	SESSION 3	SESSION 4
GTECM	GTECM	GTECM	GTECM
Introduction to the GTE Format and Layout of a Typical Engine	Introduction to the GTE Format and Layout of a Typical Engine	Introduction to Gas Turbine Engine Performance, Condition & Trend Monitoring	Introduction to Gas Turbine Engine Performance, Condition & Trend Monitoring

SESSION 1	SESSION 2	SESSION 3	SESSION 4
GTECM	GTECM	GTECM	GTECM
Properties of Air & the Atmosphere	Principles of Temperature, Pressure & Velocity	Performance Monitoring - Mass Airflow, Temperature & Power	Performance Monitoring - Exhaust Gas Temperature/Jet Pipe Temperature & Thermocouples

SESSION 1	SESSION 2	SESSION 3	SESSION 4
GTECM	GTECM	GTECM	GTECM
Performance Monitoring - Thrust & Rotational Speed Engine Pressure Ratios	Performance Monitoring - Data Analysis Performance Trend Monitoring	Practical Problem Solving	Practical Problem Solving

SESSION 1	SESSION 2	SESSION 3	SESSION 4
GTECM	GTECM	GTECM	GTECM
Condition Monitoring - Vibration Analysis	Condition Monitoring - Vibration Analysis	Condition Monitoring - Lubrication Systems	Condition Monitoring - Temperature Health Monitoring Systems Audiological Detection & Analysis Systems

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SESSION 1	SESSION 2	SESSION 3	SESSION 4
GTECM	GTECM	GTECM	GTECM
Condition Monitoring - Data Analysis and Trend Monitoring	Practical Problem Solving	Practical Problem Solving	Program conclusion and review

Dates available on request

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