Rolls-Royce Open Training Programmes 2012

Featuring:

Package programmes
Trent 64 Package / RB211 Package / Avon Package
501KC/KB Package / FT 125 Controls

New Programmes this year include:-
RB211 Operational Maintenance Review
Power Turbine and Compressor Familiarisation

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Rolls-Royce Training Support for Gas Turbine Packages

As part of Rolls-Royce Power Engineering, Customer Services Business, the Training Services centre of excellence, offer a range of training support. The service is designed to provide the customer with a comprehensive understanding of the equipment that will enhance its operation and maintenance. Leading to improved:

- Safety
- Reliability
- Availability
- Production
- Reduced Costs

The open training programmes will take place at strategic points of delivery identified in the proposal, close to key energy customer global locations.

The open programmes have pre-set schedules throughout 2012

The number of attendees per course is strictly limited to ensure an inclusive programme of maximum benefit for each attendee. Please ensure you promptly reserve the number of places you require.

Full contact details for the Customer Training Centre are on the last page of the proposal.

We look forward to welcoming you onto one of our open programmes.
Rolls-Royce Trent Gas Turbine Packages
Familiarisation and Operation

Who should attend: All personnel supporting the daily operation of the equipment. Engineering personnel involved in specifying and planning new installations.

Duration: 4 days  
Class Size: Minimum 8

Global event locations and schedule, 2012

Melbourne, Australia, 26th > 29th March

Orlando, USA, 15th > 18th October

AIMS:
Attendees will learn about the equipment design, construction, basic engineering theory, operation and operator routines required for a typical unit.

OBJECTIVES:
Upon successful completion of the course, the attendee should be able to:
- Describe the equipment and support systems
- Describe basic construction and operation of the Gas Turbine
- Locate devices on the system diagrams and determine settings
- Describe start and stop sequences
- Locate devices appearing in HMI displays on support system diagrams
- Describe operator routines required on equipment and systems

COURSE CONTENT:
- Course Introduction
- Package introduction, unit specifications and support drawings
- Gas turbine driver theory, construction and basic operation
- P&ID study for Instruments and Main Systems
- Descriptions - diagrams - operator duties - problem diagnosis
  - Air system
  - Gas Generator oil system
  - Fuel system(s)
- HMI overview and HMI displays
- Unit Control Panel features and operation within the HMI
- Unit starting, operating and stopping sequence
Rolls-Royce RB211 Gas Turbine Packages

Familiarisation and Operation

Who should attend: All personnel supporting the daily operation of the equipment. Engineering personnel involved in specifying and planning new installations.

Duration: 5 days  Class Size: Minimum 8

Global event locations and schedule, 2012

Perth, Australia, 19th > 23rd March

Orlando, USA. 22nd > 26th October

Aberdeen, UK. 18th > 22nd June

AIMS:
Attendees will learn about the equipment design, construction, basic engineering theory, operation and operator routines required for a typical unit.

OBJECTIVES:
Upon successful completion of the course, the attendee should be able to:

- Describe the equipment and support systems
- Describe basic construction and operation of the Gas Generator and Power Turbine
- Locate devices on the system diagrams and determine settings
- Describe start and stop sequences
- Locate devices appearing in HMI displays on support system diagrams
- Describe operator routines required on equipment and systems

COURSE CONTENT:

- Course Introduction
- Package introduction, unit specifications and support drawings
- Gas turbine driver theory, construction and basic operation
- P&ID study for Instruments and Main Systems
  Descriptions - diagrams - operator duties - problem diagnosis
  - Air system
  - Main lube oil system
  - Gas Generator oil system
  - Fuel system(s)
- HMI overview and HMI displays
- Unit Control Panel features and operation within the HMI
- Unit starting, operating and stopping sequence
Rolls-Royce Industrial RB211
Operational Maintenance Review

Who should attend: All personnel supporting the daily operation of the equipment. Engineering / Maintenance personnel and maintenance planning personnel

Duration: 3.5 days  Class Size: Minimum 8

Global event locations and schedule, 2012

Perth, Australia, 3rd > 6th September

Aberdeen, UK. 6th > 9th August

Kuala Lumpur or Miri, Malaysia. 10th > 13th September Final location based on demand

AIMS:
Attendees will learn about the equipment, construction, principles and theory, operation and maintenance, receipt and despatch, Maintenance updates.

OBJECTIVES:
Upon successful completion of the course, the attendee should be able to:
- Describe the equipment and support systems
- Describe construction and operation of the Gas Generator and Power Turbine
- Describe start and stop sequences
- Be familiar with recent maintenance information
- Describe Airflow Control
- Describe Despatch / Receipt requirements

COURSE CONTENT:
- Course Introduction
- Package / GG introduction
- Gas turbine driver theory, construction and principles of unit operation
- Detailed study of RB211 Airflow control systems, Stall and Surge
- Compressor Cleaning techniques / Best practice / Hand Cleaning
- Routine maintenance
- Unit Health and GG Condition Monitoring
- Gas Generator receipt and despatch checks, inspections and records
- Maintenance updates and service bulletin review
- Start / Stop Sequencing, Data recording
Rolls-Royce Avon Gas Turbine Packages

Familiarisation and Operation

Who should attend: All personnel supporting the daily operation of the equipment.

Duration: 5 days  Class Size: Minimum 8

Global event locations and schedule, 2012

Abu Dhabi, U.A.E. 4th to 8th March, 4th to 8th November

Calgary, Canada. 23rd to 27th July

AIMS:
Attendees will learn about the equipment design, construction, basic engineering theory, operation and operator routines required for a typical unit.

OBJECTIVES:
Upon successful completion of the course, the attendee should be able to:
- Describe the equipment and support systems
- Describe basic construction and operation of the Gas Generator and Power Turbine
- Locate devices on the system diagrams and determine settings
- Describe the start and stop sequences
- Locate devices appearing in HMI displays on support system diagram
- Describe operator routines required on equipment and systems

COURSE CONTENT:
- Course Introduction
- Package introduction, unit specifications and support drawings
- Gas turbine driver theory, construction and basic operation
- P&ID study for Instruments and Main Systems
  - Descriptions - diagrams - operator duties - problem diagnosis
    - Air system
    - Main lube oil system
    - Gas Generator oil system
    - Fuel system(s)
    - Fire and Gas System
- HMI overview and HMI displays
- Unit Control Panel features and operation within the HMI
- Unit starting, operating and stopping sequence
Rolls-Royce 501KC / KB Gas Turbine Packages
Familiarisation and Operation

Who should attend: All personnel supporting the daily operation of the equipment.

Duration: 4 days  Class Size: Minimum 8

Global event locations and schedule, 2012

Indianapolis, USA 7th >10th May and 26th > 30th November

Singapore, 2nd > 5th July

AIMS:
Attendees will learn about the equipment design, construction, basic engineering theory, operation and operator routines required for a typical unit.

OBJECTIVES:
Upon successful completion of the course, the attendee should be able to:

• Describe the equipment and support systems
• Describe basic construction and operation of the Gas Generator and Power Turbine
• Locate devices on the system diagrams and determine settings
• Describe the start and stop sequences
• Locate devices appearing in HMI displays on the support system diagram
• Describe operator routines required on equipment and systems

COURSE CONTENT:
• Course Introduction
• Package introduction, unit specifications and support drawings
• Gas turbine driver theory, construction and basic operation
• P&ID study for Instruments and Main Systems
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  • Air system
  • Main lube oil system
  • Gas Generator oil system
  • Fuel system(s)
  • Fire and Gas System
• HMI overview and HMI displays
• Unit Control Panel features and operation within the HMI
• Unit starting, operating and stopping sequence
Power Turbine Familiarisation and Maintenance
Compressor Familiarisation and Maintenance

Applicable to Rolls-Royce RT62 / 56 Power Turbines
and RR Compressor types

Who should attend : All personnel supporting the daily operation of the equipment.

Duration : 4 days total   Class Size : Minimum 8

Global event locations and schedule, 2012

Indianapolis, USA 13th > 16th August

Singapore, 14th > 17th May

Hong Kong, 21st > 24th May

Days 1 and 2

AIMS:
The course is designed to give the attendees a detailed knowledge of the Power Turbine.

OBJECTIVES:
Upon successful completion of the course, the attendee will be able to:

• List and describe the Power Turbine construction and theory of operation.
• Explain the purpose and location of instrumentation sensors.
• Explain the normal and abnormal conditions based upon observed parameters
• Describe the purpose of proper start up and routine maintenance procedures.
• Identify the required auxiliary support systems including:
  • Mineral oil, normal, coast down, post lube
  • Instrument, bleed, seal and cooling air
  • Instrumentation
• Describe procedures and special tools to remove / install the power turbine rotor.

COURSE CONTENTS:
• Course Induction
• Power Turbine Major component identification and purpose
• Instrumentation sensors
  • Speed pickup, bearing RTD, Shaft vibration, Rim cooling thermocouple
• Operation and Monitoring
• Start-up, Warm up, Rim Cooling, Disc life, Seal inspection and adjustment, power output, inspection criteria
• Life Cycle Maintenance

Compressor Familiarisation and Maintenance

Days 3 and 4

AIMS:
The course provides an understanding of compressor operating characteristics, component parts, general maintenance procedures and special tools associated with common maintenance items.

OBJECTIVES:
Upon successful completion of the course, the attendee should be able to:
• Describe the operating principles of the compressor
• List the major components of the compressor
• Identify the instrument sensors of the compressor
• Explain the operation of seals within the compressor
• Describe bearing replacement procedures and special tool use
• Explain the design point, basic surge and stonewall conditions

COURSE CONTENT:
• Course Introduction
• Centrifugal Compressor Operating principles
• Major Components
  • Case
  • Aerodynamic Bundle
    • Rotor and Impeller
    • Diaphragm and Diffuser
  • Shaft Seals
  • Bearings
• Instrumentation sensors
• Compressor component inspection
• Compressor special tooling
• Operation and compressor curves
  • Design point
  • Surge
  • Stonewall
FT125 Package Controls Training

Who should attend : Technicians who support daily operation of the equipment. Also suitable for controls upgrade customers
Duration : 5 days   Class size : 8 Minimum and Maximum

Global event locations and schedule, 2012

Aberdeen, UK  21st > 25th May

Melbourne, Australia. 25th > 29th June

Indianapolis, USA. 24th > 28th September

AIMS:
To prepare a group of technicians to use best practices to diagnose, troubleshoot and maintain Rolls-Royce controls system hardware and Rolls-Royce package support devices, using Rolls-Royce supplied software and to understand the normal sequence of unit starting and stopping.

OBJECTIVES:
Upon the successful completion of the course attendees will have preformed and demonstrated the abilities and should be able to:

- Use the Rolls-Royce Standard control drawing formats to locate devices on the assembly drawing, bill of material and schematic drawings
- Use provided software diagnostic tools to isolate failures or abnormal operation
- Use datlog, plotlog, traplog and OPC logger to capture normal and abnormal operation data
- Make changes and download changes authorized by Rolls-Royce engineering
- Understand the normal starting sequence of the package
- Use diagnostic tools to isolate defective input and output devices to the controls system

COURSE CONTENT:

- Course Introduction
- Controls Documentation
- Schematics
- Engineering Workstation Communications Configuration -Controller Configuration
- I/O Task Configuration -- Ladder Modules -- Text Modules -- Specific Tasks
- Diagnostics Software and Utilities
- Customer Variable Tuning

An FT Control demo/trainer along with 4 computer workstations are utilised to enhance the learning experience.
PRICING

<table>
<thead>
<tr>
<th>Programme</th>
<th>Price / Attendee</th>
</tr>
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<tbody>
<tr>
<td>5 Day Package, RB211 / Avon</td>
<td>1,899 GBP</td>
</tr>
<tr>
<td>5 Day Controls, FT 125</td>
<td>2,199 GBP</td>
</tr>
<tr>
<td>4 Day Package, Trent / 501/ Power Turbine and Compressor</td>
<td>1,750 GBP</td>
</tr>
<tr>
<td>3.5 Day RB211 Maintenance Review</td>
<td>1,650 GBP</td>
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PRICING NOTES:

THE PRICING INCLUDES:
Supply of a Rolls-Royce English speaking instructor. All custom course preparation. All instructor expenses included. Course manuals in English. Training venue, lunches and refreshments during the training days.

THE PRICING EXCLUDES:
Pricing does not include VAT where applicable, any local taxes. All attendee expenses.

Note 1
A purchase order for the total amount is required when registering attendees and pre-payment is preferred.

Note 2
A minimum of 8 attendees is required to run each programme. Rolls-Royce will only run programmes with 8 or more attendees.

Note 3
All open programmes are delivered in English language.

Note 4
Cancellation policies apply. Cancellation or schedule change, between six and four weeks prior to delivery will incur a cancellation fee of 30%. Cancellation or schedule change, between four and two weeks prior to delivery will incur a cancellation fee of 75% Cancellation or schedule change, less than two weeks prior to course delivery date will incur the full 100% cancellation fee.

Note 5
All training is subject to Rolls-Royce terms and conditions for training, a copy is available on request.

Note 6
To reserve places please complete and e-mail the registration form to the contacts at overleaf.
For further information about Rolls-Royce open training programmes please contact any of the following:

**Contact Details**

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