Rolls-Royce
Open Training Programmes
Proposal for 2011
Featuring: -
Trent 60 Package / RB211 Package / Avon Package
501KC/KB / FT 125 Controls

Issue 01
9th November 2010

Reference: SM9/11/09 TR

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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 2010.

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, 2011

Perth, Australia, 28th > 31st March

Singapore, 7th > 10th November

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
• 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, 2011

Perth, Australia, 21st > 25th March

Houston, USA. 23rd > 27th May

Aberdeen, UK. 6th > 10th June

Kuala Lumpur, Malaysia. 19th > 23rd September

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 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, 2011

Aberdeen, UK. 27th June > 1st July

Kuala Lumpur 26th > 30th September

Abu Dhabi, U.A.E. 16th > 20th 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 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, 2011

Aberdeen, UK 13th > 17th June
Indianapolis, USA 15th > 19th August
Singapore, FE 28th Nov > 2 December

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
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  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
CUSTOMER TRAINING CENTRE

- Unit starting, operating and stopping sequence

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, 2011

Aberdeen, UK 9th > 13th May

Singapore, 24th > 28th October

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
- Trace and related devices shown on graphic display to system devices

COURSE CONTENT:
- Course Introduction
- Controls Documentation
  - Schematics
  - Assembly drawings
  - Logic block diagrams
- 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>
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<tbody>
<tr>
<td>5 Day Package, RB211 / Avon</td>
<td>1,799 GBP</td>
</tr>
<tr>
<td>5 Day Controls, FT 125</td>
<td>2,099 GBP</td>
</tr>
<tr>
<td>4 Day Package, Trent / 501</td>
<td>1,499 GBP</td>
</tr>
</tbody>
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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**

Customer Training Manager at Ansty, UK
Dean Blazye: +44 (0) 2476 624726
e-mail grant.morrell@rolls-royce.com

**UK**
Administrator at Ansty, UK:
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Principal Customer Training Engineer
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