



## PHASE 1A Avon Gas Turbine Package Familiarisation and Operation

<b>Who should attend</b>	: Personnel who support daily operation of the equipment.
<b>Duration</b>	: 5 days (between Mon-Fri)
<b>Location</b>	: RR Facility / Customer Facility on-shore
<b>Class Size</b>	: 12 Maximum
<b>Course Identification</b>	: Phase 1A (Avon)
<b>Prerequisites:</b>	: None

### AIMS:

Attendees will learn about the equipment design, construction, basic engineering theory, operation and operator routines required for the equipment supplied.

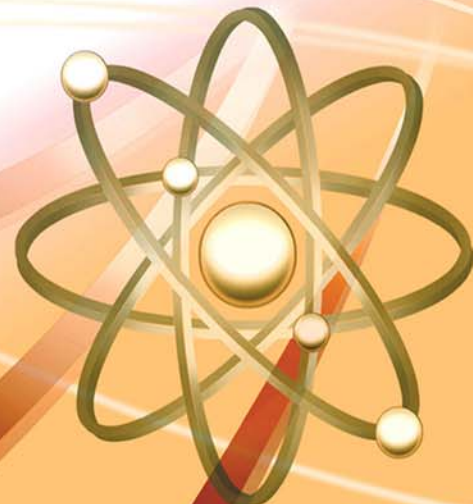
### OBJECTIVES:

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

- Describe the equipment and support systems supplied on this package
- Describe basic construction and operation of the Gas Generator and Power Turbine
- Locate devices on the system diagrams and determine proper settings
- Describe the proper start and stop sequences
- Locate devices appearing in HMI displays on the proper 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
- Gear & driven equipment theory, construction and operation (if supplied by Rolls-Royce).
- Drawing Symbols and Instrumentation Diagrams
- 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
- Condition alarm and shutdown matrix
- Unit starting, operating and stopping sequence
- Equipment knowledge exercise





## PHASE 2A Avon Gas Generator Familiarisation & Operation

<b>Who should attend</b>	: Operators, mechanics, technicians and supervisors who support daily operation of the equipment.
<b>Duration</b>	: 3 days (between Mon-Fri)
<b>Location</b>	: RR Facility / Customer Facility on-shore
<b>Class Size</b>	: 12 Maximum
<b>Course Identification</b>	: Phase 2A (Avon)
<b>Prerequisites:</b>	: Phase 1A recommended

### AIMS:

The course is designed to give the attendee a detailed knowledge of the Avon Gas Generator and required support systems.

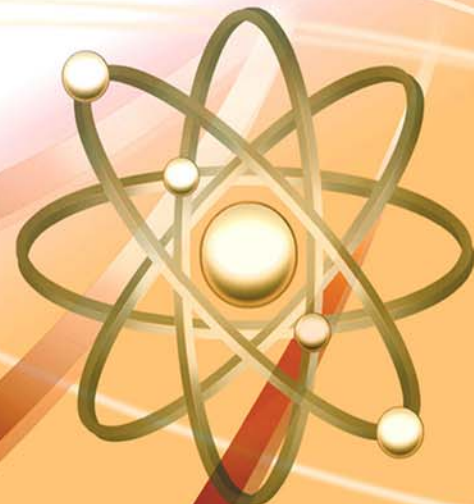
### OBJECTIVES:

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

- Describe the theory of gas generators
- List and describe the construction of the Gas Generator
- Identify the oil requirements of the Gas Generator
- Explain the airflow and airflow control of the Gas Generator
- Describe the operation of on engine ignition, fuel, oil and air flow devices
- Explain the operating limitations of the Gas Generator

### COURSE CONTENT:

- Course Introduction
- Gas Turbine Theory and Construction
- Gas Generator Introduction, detailed description and Operating Limitations
- Gas Generator compressor air flow control and surge prevention
- Gas Generator bearing design and operation
- Gas Generator mounted instrumentation and sensors
- Required Gas Generator support services.
  - Fuel system – Lubricating scavenge and hydraulic oil
  - Instrument, bleed, and seal air - Ignition
- Gas Generator compressor washing procedures and intervals
- Basic Gas Generator removal and installation procedures
- Equipment knowledge exercise





## PHASE 11A      Supervisory Training Avon Package Familiarisation

<b>Who should attend</b>	: Personnel who require a familiarisation and basic knowledge of the package [Supervisors, etc.].
<b>Duration</b>	: 2 days (between Mon-Fri)
<b>Location</b>	: RR Facility / Customer facility on-shore
<b>Class Size</b>	: 12 Maximum
<b>Course Identification</b>	: Phase 11A
<b>Prerequisites:</b>	: None

### **AIMS:**

The course provides the production operation supervisors with an overview of the Avon gas turbine package and systems to support safe and reliable operation of the equipment purchased.

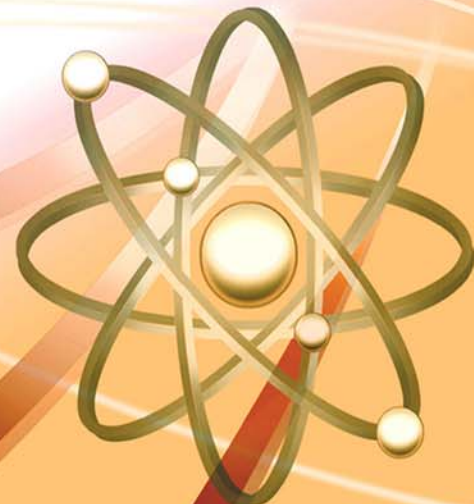
### **OBJECTIVES:**

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

- List and describe the major components of the package
- List and describe the support systems of the Gas Turbine package
- Describe the operator duties Gas Turbine package
- Identify the proper starting sequence

### **COURSE CONTENT:**

- Course Introduction
- Package introduction -- Unit specifications
- Gas turbine driver theory - construction - basic operation
- Gear & driven equipment basic theory - construction - operation if supplied by Rolls-Royce.
- Main Systems
- Descriptions -- Operator duties
- Air system
  - Main lube oil system
  - Gas Generator oil system
  - Fuel system(s)
  - Fire and Gas System
- HMI overview and HMI displays
- Unit starting sequence





## PHASE 12A Avon Gas Generator Familiarisation & Operation With Borescope Procedures

<b>Who should attend</b>	: Operators, mechanics, technicians and supervisors who support daily operation of the equipment.
<b>Duration</b>	: 4 days (between Mon-Fri)
<b>Location</b>	: RR Ansty Facility / Customer Facility on-shore
<b>Class Size</b>	: 12 Maximum
<b>Course Identification</b>	: Phase 12A (Avon)
<b>Prerequisites:</b>	: Phase 1A recommended

### AIMS:

The course is designed to give the attendee a detailed knowledge of the Avon Gas Generator construction and operation, as well as the oil and fuel requirements.

### OBJECTIVES:

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

- Describe the theory of gas generators
- Describe the construction of the Gas Generator
- Identify the oil requirements of the Gas Generator
- Explain the airflow and airflow control of the Gas Generator
- Describe the operation of on engine ignition, fuel, oil and air flow devices
- Explain the operating limitations of the Gas Generator
- Explain borescope procedures

### COURSE CONTENT:

- Course Introduction
- Gas Turbine Theory and Construction
- Gas Generator Introduction, detailed description and Operating Limitations
- Gas Generator compressor air flow control and surge prevention
- Gas Generator bearing design and operation
- Gas Generator mounted instrumentation and sensors
- Corrective and Preventive Procedures including borescope
- Gas Generator mounted instrumentation and sensors
- Required Gas Generator support services.
- Fuel system – Lubricating scavenge and hydraulic oil
- Instrument, bleed, and seal air -- Ignition
- Gas Generator compressor washing procedures and intervals
- Basic Gas Generator removal and installation procedures

N.B: Access to Rolls-Royce Avon Gas Turbine and borescope equipment is essential.





## PHASE 13A      **Rolls-Royce Industrial Avon Gas Generator Borescope Inspection Course**

<b>Who should attend</b>	: Operators, mechanics, technicians and supervisors who support daily
<b>Duration</b>	: 2 days (between Mon-Fri)
<b>Location</b>	: RR Ansty Facility, UK / Customer Facility on-shore
<b>Class Size</b>	: 6 Maximum or less recommended
<b>Course Identifications</b>	: Phase 13A
<b>Prerequisites</b>	: Phase 2A recommended.

### **AIMS:**

Attendees will gain knowledge, understanding and experience of the borescope inspection equipment, procedure and analysis of the inspection.

### **OBJECTIVES:**

Upon completion of this course, attendees will have experienced and be able to borescope the industrial Avon and record and analyse the inspection in a safe and proper manner.

### **COURSE CONTENTS:**

- RB211 Gas Turbine Overview
- Introduction to Endoscopy
- Typical borescope equipment and systems.
- Proper use and care of borescopes.
- Setting up of equipment
- RB211 access locations for monitoring.
- Identification of damage and assessment for future running.
- Inspection of: IP Compressor
  - Intermediate Casing
  - HP Compressor
  - Combustion System
  - HP Turbine
  - IP Turbine
- Video and Video capture practices
- Logging and storage of results.

N.B: Access to an Avon Gas Turbine and borescope equipment is essential. The customer is responsible for any damage to the borescope equipment and or the gas generator that occurs during the training exercise.

