



## PHASE 6100 FT100 Package Controls Training

<b>Who should attend</b>	: Technicians who support daily operation of the equipment.
<b>Duration</b>	: 5 days (between Mon-Fri)
<b>Location</b>	: RR Facility/Customer supplied site
<b>Class size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 6100 (FT100),
<b>Prerequisites</b>	: Phase 1 Rolls-Royce training and or equivalent experience on Rolls-Royce designed equipment

### AIMS:

To prepare a group of technicians to use best practices to diagnose, troubleshoot and maintain Rolls-Royce FT100 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 :

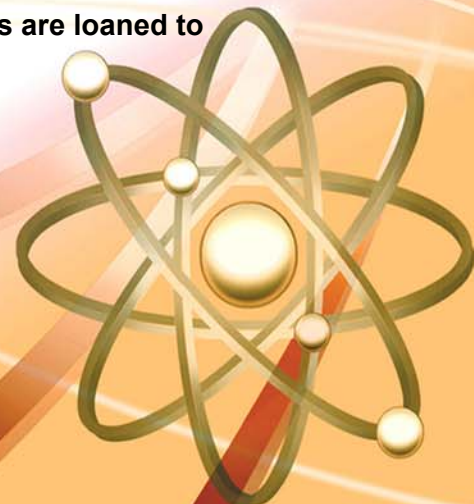
Upon the successful completion of the course attendees will have performed and demonstrated the abilities and should be able to:

- 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
- Project 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 FT100 Control demo/trainer along with 4 computer workstations are loaned to enhance the learning experience**





## PHASE 6110 FT110 Package Controls Training

<b>Who should attend</b>	: Technicians who support daily operation of the equipment.
<b>Duration</b>	: 5 days (between Mon-Fri)
<b>Location</b>	: RR Facility/Customer supplied site
<b>Class size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 6110 (FT110)
<b>Prerequisites</b>	: Phase 1 Rolls-Royce training and or equivalent experience on Rolls-Royce designed equipment

### AIMS:

To prepare a group of technicians to use best practices to diagnose, troubleshoot and maintain Rolls-Royce FT110 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 :

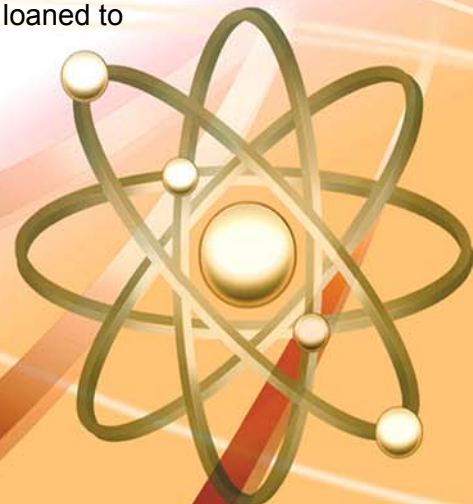
Upon the successful completion of the course attendees will have performed and demonstrated the abilities and should be able to:

- 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 datalog, 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
- Project 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 FT110 Control demo/trainer along with 4 computer workstations are loaned to enhance the learning experience





## PHASE 6125 FT125 Package Controls Training

<b>Who should attend</b>	: Technicians who support daily operation of the equipment.
<b>Duration</b>	: 5 days (between Mon-Fri)
<b>Location</b>	: RR Facility/Customer supplied site
<b>Class size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 6125 (FT125)
<b>Prerequisites</b>	: Phase 1 Rolls-Royce training and or equivalent experience on Rolls-Royce designed equipment

### AIMS:

To prepare a group of technicians to use best practices to diagnose, troubleshoot and maintain Rolls-Royce FT125 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 :

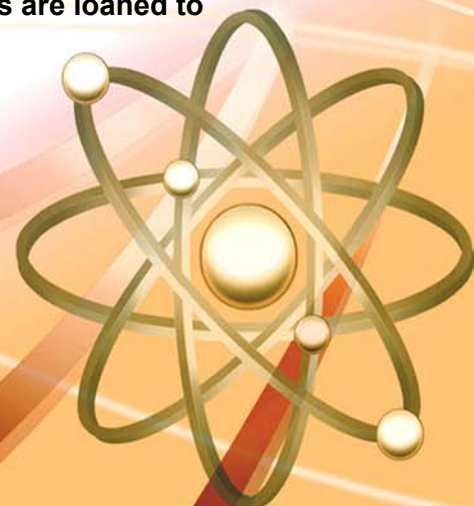
Upon the successful completion of the course attendees will have performed and demonstrated the abilities and should be able to:

- 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 datalog, 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
- Project 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 FT125 Control demo/trainer along with 4 computer workstations are loaned to enhance the learning experience**





## PHASE 655 FT55 Package Controls Training

<b>Who should attend</b>	: Technicians who support daily operation of the equipment.
<b>Duration</b>	: 5 days (between Mon-Fri)
<b>Location</b>	: RR Facility/Customer supplied site
<b>Class size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 655 (FT55)
<b>Prerequisites</b>	: Phase 1 Rolls-Royce training and or equivalent experience on Rolls-Royce designed equipment

### AIMS:

To prepare a group of technicians to use best practices to diagnose, troubleshoot and maintain Rolls-Royce FT55 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 :

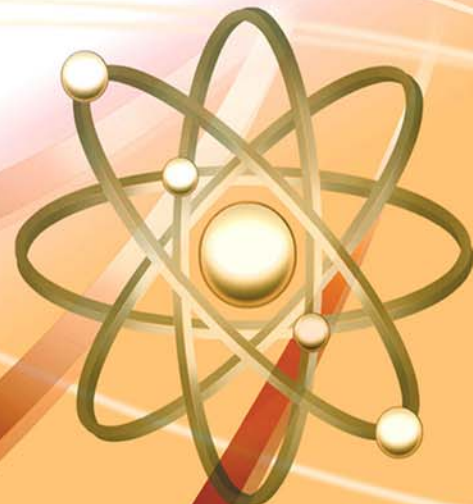
Upon the successful completion of the course attendees will have performed and demonstrated the abilities and should be able to:

- 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 datalog, 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
- Project 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 FT55 Control demo/trainer along with 4 computer workstations are loaned to enhance the learning experience





## PHASE 7110 FT110 Fuel Control System Operation

<b>Course</b>	: Fuel control adder to phase 5 training only.
<b>Who should attend</b>	: Technicians responsible for daily support of the equipment
<b>Duration</b>	: 2 days (following Phase 6110 or 6125 as an add-on)
<b>Location</b>	: RR Facility / Customer Facility on-shore
<b>Class Size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 7110
<b>Prerequisites</b>	: Phase 6110

### AIMS:

To prepare the attendees to use best practices to diagnose, troubleshoot and maintain a Rolls-Royce FT110 Fuel control System.

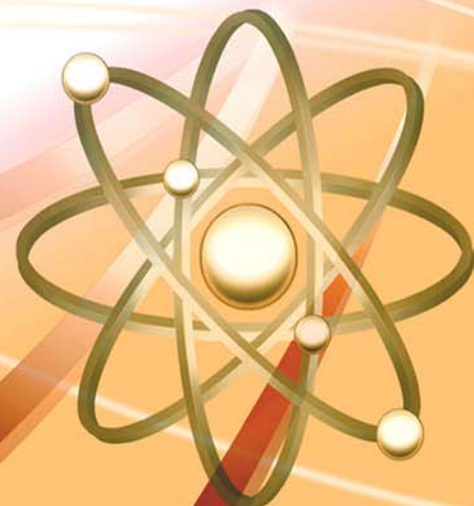
### OBJECTIVES:

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

- Isolate the problem to the field or the control panel
- Isolate the problem to the module level if within the control panel
- Make replacement of modules to establish proper operation as needed
- Understand the fuel control operation as applicable and be able to describe the fuel control hardware and its operation
- Be able to use and maintain the system, access and change tuning accessible constants in conjunction with the fuel program supplied
- Understand and be able to define troubleshooting and diagnostic procedures available and applicable to the fuel control
- Understand the field set up requirements applicable to the fuel control system supplied

### COURSE CONTENT:

- Course Introduction
- Review of the DLE or Non-DLE package supplied.
  - Overview and introduction of the fuel control system supplied
  - How it works (Combustion system)
  - Fuel system details/Instrumentation and monitoring
- Fuel Controller :
  - Hardware / software interface / Power supplies & distribution
  - Controller processor/Communication processor
  - Calibration requirements
- Operation (Program tuning limits)
  - Normal starting, stopping and run sequence
  - Parameters for operation
  - Alarm and shutdown matrix
- **Field Set-Up Requirements**
- **Troubleshooting & Problem Diagnosis**





## PHASE 7125 FT125 Fuel Control System Operation

<b>Course</b>	: Fuel control adder to phase 5 training only.
<b>Who should attend</b>	: Technicians responsible for daily support of the equipment
<b>Duration</b>	: 2 days (following Phase 6110 or 6125 as an add-on)
<b>Location</b>	: RR Facility / Customer Facility on-shore
<b>Class Size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 7125
<b>Prerequisites</b>	: Phase 6125

### AIMS:

To prepare the attendees to use best practices to diagnose, troubleshoot and maintain a Rolls-Royce FT125 Fuel control System.

### OBJECTIVES:

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

- Isolate the problem to the field or the control panel
- Isolate the problem to the module level if within the control panel
- Make replacement of modules to establish proper operation as needed
- Understand the fuel control operation as applicable and be able to describe the fuel control hardware and its operation
- Be able to use and maintain the system, access and change tuning accessible constants in conjunction with the fuel program supplied
- Understand and be able to define troubleshooting and diagnostic procedures available and applicable to the fuel control
- Understand the field set up requirements applicable to the fuel control system supplied

### COURSE CONTENT:

- Course Introduction
- Review of the DLE or Non-DLE package supplied.
  - Overview and introduction of the fuel control system supplied
  - How it works (Combustion system)
  - Fuel system details/Instrumentation and monitoring
- Fuel Controller :
  - Hardware / software interface / Power supplies & distribution
  - Controller processor/Communication processor
  - Calibration requirements
- Operation (Program tuning limits)
  - Normal starting, stopping and run sequence
  - Parameters for operation
  - Alarm and shutdown matrix
- Field Set-Up Requirements
- Troubleshooting & Problem Diagnosis





## PHASE 8110 FT110 Surge Control System

<b>Who should attend</b>	: Specialists requiring training on FT Surge Control applications
<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 Identifications</b>	: Phase 8110
<b>Prerequisites</b>	: Phase 6110

### **AIMS:**

Attendees acquire an understanding compressor surge and working knowledge of the surge prevention application, application program, operation, calibration, troubleshooting, diagnostics and problem solving associated with the surge prevention system.

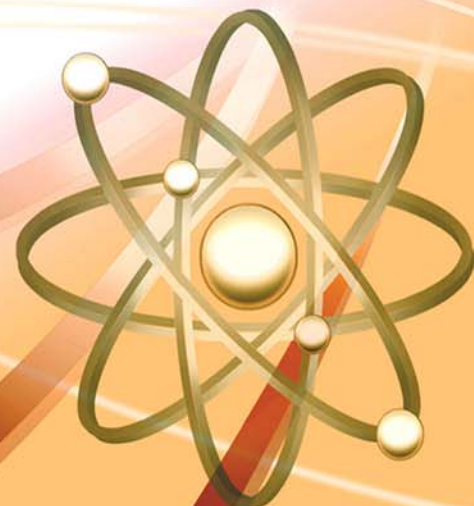
### **OBJECTIVE:**

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

- Explain the basic of compressor surge
- Explain the methods of surge prevention
- Explain the basics of a PID controller
- Perform calibration of input and output devices
- Isolate operating problems of the surge prevention system
- Understand the surge control application software
- Isolate the problem to the module level if within the control panel

### **COURSE CONTENTS:**

- Course Introduction
- Fundamentals of surge prevention
- Application
- System software and hardware
- Operating system
- PID controllers
- Text or math modules
- Multi-segment curves
- Operation
- Commissioning activities (calibration & tuning – field setting procedures)
- Troubleshooting & diagnosis
- Problem solving & corrective action





## PHASE 8125 FT125 Surge Control System

<b>Who should attend</b>	: Specialists requiring training on FT Surge Control applications
<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 Identifications</b>	: Phase 8125
<b>Prerequisites</b>	: Phase 6125

### AIMS:

Attendees acquire an understanding compressor surge and working knowledge of the surge prevention application, application program, operation, calibration, troubleshooting, diagnostics and problem solving associated with the surge prevention system.

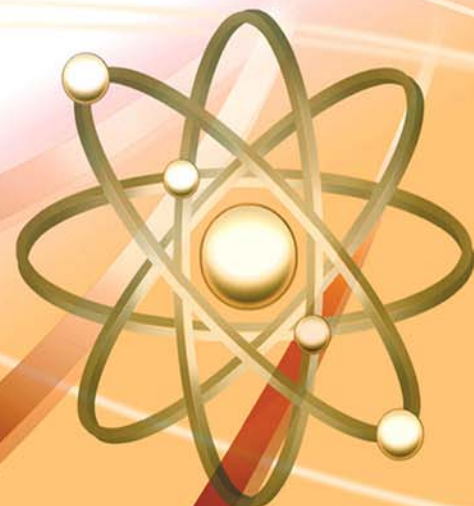
### OBJECTIVE:

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

- Explain the basic of compressor surge
- Explain the methods of surge prevention
- Explain the basics of a PID controller
- Perform calibration of input and output devices
- Isolate operating problems of the surge prevention system
- Understand the surge control application software
- Isolate the problem to the module level if within the control panel

### COURSE CONTENTS:

- Course Introduction
- Fundamentals of surge prevention
- Application
- System software and hardware
- Operating system
- PID controllers
- Text or math modules
- Multi-segment curves
- Operation
- Commissioning activities (calibration & tuning – field setting procedures)
- Troubleshooting & diagnosis
- Problem solving & corrective action





## PHASE 9 FT210 Advanced Training Wonderware Application ONLY

<b>Who should attend</b>	: Control Engineers and advanced technicians.
<b>Duration</b>	: 5 days (between Mon-Fri)
<b>Location</b>	: RR Facility / Customer Facility on-shore
<b>Class Size</b>	: 8 Maximum
<b>Course Identifications</b>	: Phase 9
<b>Prerequisites</b>	: Phase 6100, Phase 6110 or Phase 6125

### AIMS:

Attendees will gain the knowledge of the of the operation of this software package, its features and the application of the Rolls-Royce design of the display screens and there operation.

### OBJECTIVES:

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

- Explain the operation of the FT210 HMI display menus
- Make corrections or changes to displayed information
- Explain the communication between the HMI and subject control system
- Make addition to Historical logging data points

### COURSE CONTENTS:

- Course Introduction
- Flexitrend Family of Products
- PC-Based (Windows) / Historical Trending
- InTouch Software Components
- Data Gathering Methods
- Software
- DDE [RSLinx / FT DDE Server / BN DDE Server FT OPC Server] OPC [RSLinx / FT OPC Server / Others - Siemens, GE, Etc]
- Hardware - Ethernet / ArcNet / ControlNet
- Building Screen Components
- Simple Graphies / Dynamic Graphies / Nested Graphies / The 'Z' Screens  
Tag/Text replacement, indirect and direct tags.
- Modifying Scripts
- Identifying Script Locations / Identifying Script Usage [On Load, On change, On Condition, Key Scripts].
- Using WWLogger to Troubleshoot - using the write command.
- Script components and the Script Editor How to add a new screen.

