2014 UK & Ireland Training Offerings
Fiscal Metering

Your Plant Personnel: Asset or Liability?
Training Determines the Difference.

ACQUIRING AND RETAINING QUALIFIED PEOPLE IS A MAJOR CHALLENGE
MISSED PROFITABILITY GOALS DUE TO AVOIDABLE MISTAKES
CHALLENGED TO MAINTAIN A SAFE, SECURE ENVIRONMENT

What if you could...
- Increase your people’s performance quality for better plant profitability?
- Train your operators safely, off line, on situations specific to your facility?
- Increase personnel retention without breaking your payroll budget?
- Have greater flexibility in how, when and where you train your people?
- Measure your people’s training performance?
- Keep your personnel up-to-date on automation technologies they could apply to enhance your facility?
**Ultrasonic Flow Meter Operation and Maintenance**

**Course**
- D4230 Gas
- D4280 Liquid

This 2-day course provides students with an in-depth understanding into Liquid and / or Gas Ultrasonic flow meter operating principles. Meter operation and configuration will be explained, with use of a simulator and the appropriate configuration and diagnostic software. The use of advanced diagnostic techniques will show the user how maintenance can be planned on a prescriptive basis. Routine maintenance and meter re-calibration will also be covered. Full supporting literature will be supplied.

**Prerequisites**
A background in flow measurement is required.

**Topics**
- Introduction to the Daniel Ultrasonic Flow Meter
- Theory of Operation
- Ultrasonic Flow Meter Design
- Configuration and Diagnostics
- Calibration and Maintenance
- Transducer Replacement
- Signal Processing
- Communications Interface
- Advanced Diagnostics
- Performance Trending
- Condition Based Monitoring

**Venue**
Emerson Process Management Stirling, Scotland, U.K.

**Start Dates 2014**
- 10th February
- 11th August
- 6th May
- 3rd November

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**Compact Prover Operation and Maintenance**

**Course D4270**

This 2-day course provides students with an in-depth understanding into the operating principles, installation and use of the small volume Prover. The control interface with the Prover Computer and its implementation for ‘Direct’ and ‘Master Meter’ proving will be explained. Proof status and abort conditions will be analysed and appropriate corrective actions will be discussed. Prover volume calibration and routine maintenance will also be covered. Full supporting literature will be supplied.

**Prerequisites**
A background in flow measurement is required.

**Topics**
- Introduction to Meter Provers
- Why Do We Prove?
- Types of Prover
- Prover Installation
- Theory of Operation
- Design Considerations
- Accuracy Considerations
- Prover Validation
- Prover Applications
- Prover Maintenance

**Venue**
Emerson Process Management Stirling, Scotland, U.K.

Start Dates 2014
- 12th February
- 13th August
- 8th May
- 5th November

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**Qualitative Measurement and Properties of Natural Gases Principles and Applications**

**Course D4109**

This 2-day course provides students with a detailed understanding of the constituents of Natural Gas, and its behaviour under different operating conditions. Analytical measurement techniques will be explained with reference to current environmental policy, legal requirements, and commercial operating procedures. Good installation practice, the latest analytical techniques, routine, as well as breakdown maintenance, and necessary remedial actions, will be covered comprehensively. Full supporting literature will be supplied.

**Prerequisites**
A background in flow measurement is required.

**Topics**
- Introduction to a Typical Gas Quality Measurement System
- Why Analyse Natural Gas?
- What properties of Natural Gas are we interested in?
- Who needs the Analysis Data?
- Methods for Analysing Specific Properties of a Natural Gas Mix
- Good Installation Practices
- Maintaining Accuracy
- Fault Analysis and Repair

**Venue**
Emerson Process Management Stirling, Scotland, U.K.

Start Dates 2014
- 17th February
- 18th August
- 12th May
- 10th November
FloBoss S600 Flow Computer Operation and Maintenance

Course D4530

This 2-day course is offered as an introduction to high accuracy fluid flow measurement systems. The instructor will explain the range of gas and liquid flow measurement products, and necessary secondary instrumentation. For product quality; liquid sampling, and gas analysis techniques will be explained. Flow computer calculations, based on applicable standards, will also be reviewed. System maintenance and good metering practice will be discussed. Full supporting literature will be made available to students.

Prerequisites
A background in process control or process instrumentation is required.

Topics
- Background to High Accuracy Fluid Flow Measurement
- Custody Transfer, Fiscal and Allocation Metering
- Commercial Agreements and Legal Requirements
- Flow Measurement Methods
- Qualitative Measurement
- Reference Standards

Employed
- Flow and Energy Calculations
- System Maintenance
- Good Metering Practices

Venue
Emerson Process Management
Stirling, Scotland, U.K.

Start Dates 2014
12th March
11th September
4th June
3rd December

Metering System Appreciation System Design, Installation Practices and Applications

Course D4530

This 2-day course is offered as an introduction to high accuracy fluid flow measurement systems. The instructor will explain the range of gas and liquid flow measurement products, and necessary secondary instrumentation. For product quality; liquid sampling, and gas analysis techniques will be explained. Flow computer calculations, based on applicable standards, will also be reviewed. System maintenance and good metering practice will be discussed. Full supporting literature will be made available to students.

Prerequisites
A background in process control or process instrumentation is required.

Topics
- Background to High Accuracy Fluid Flow Measurement
- Custody Transfer, Fiscal and Allocation Metering
- Commercial Agreements and Legal Requirements
- Flow Measurement Methods
- Qualitative Measurement
- Reference Standards

Employed
- Flow and Energy Calculations
- System Maintenance
- Good Metering Practices

Venue
Emerson Process Management
Stirling, Scotland, U.K.

Start Dates 2014
12th March
11th September
4th June
3rd December

DanPac Measurement & Control System Introduction to Operation and Maintenance

Course D4540

This 2-day generic course* provides students with an operational introduction to the DanPac Measurement & Control System. The instructor will explain the metering system architecture, its function and administration. As well as showing how to navigate the operator interface, the course covers basic troubleshooting. The instructor will also explain the features and benefits of the control options available within DanPac. Students will receive supporting literature.

Prerequisites
A background in flow measurement is required.

Topics
- Introduction to the DanPac System Architecture
- Operator Interface Graphics and Controls
- Access and Security
- Communications and Interface to System Field Components
- Reporting & Alarm functions
- Simple diagnostics and troubleshooting

Venue
Emerson Process Management
Stirling, Scotland, U.K.

Start Dates 2014
19th February
20th August
14th May
12th November

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See the Calendar on the last page for Dates & Locations or visit our website emersonprocess.com/education
**Course D4520**

This 2-day course provides students with a detailed understanding of the principles of measurement for Hydrocarbon Gases. Consideration of the correct Primary measuring device, its installation, operation, and secondary instrumentation requirements will be explained. The instructor will reference applicable standards, used to design the system to optimize performance. This includes system calibrations and device maintenance. Full supporting literature will be made available to students.

**Prerequisites**
A basic knowledge of flow measurement is required.

**Topics**
- Background to Gas Flow Measurement
- Commercial and Legal Requirements
- Principles of Current Gas Flow Measurement Techniques
- Secondary Instrumentation, including Gas Quality Analysers
- System Design Standards Used
- Meter Operation, Calibration and Master Metering Operations
- Maintenance Procedures
- Reporting and Book Keeping

**Venue**
Emerson Process Management
Stirling, Scotland, U.K.

**Start Dates 2014**
17th March
15th September
9th June
8th December

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**Course D4510**

This 2-day course provides students with a detailed understanding of the principles of measurement for Hydrocarbon Liquids. Consideration of the correct Primary measuring device, its installation, operation, and secondary instrumentation requirements will be explained. The instructor will reference applicable standards, used for design, and to optimize system performance. This includes system calibrations, meter-proving practices, and maintenance. Full supporting literature will be made available to students.

**Prerequisites**
A basic knowledge of flow measurement is required.

**Topics**
- Background to Liquid Flow Measurement
- Commercial and Legal Requirements
- Principles of Current Liquid Flow Measurement Techniques
- Secondary Instrumentation, including Liquid Samplers
- System Design Standards Used
- Meter Operation, Calibration and Meter Proving Operations
- Maintenance Procedures
- Reporting and Book Keeping

**Venue**
Emerson Process Management
Stirling, Scotland, U.K.

**Start Dates 2014**
19th March
17th September
11th June
10th December
Gas Chromatographs

Reliable Performance for Precision Analysis

Introduction to Gas Chromatographs

Course R4100

This 3 day course provides students with a basic understanding of how a gas chromatograph works, emphasizing chromatograph fundamentals and basic theory.

Topics

- Reviewing Basic Chromatography Principles
- Understanding Chemistry, Flow Configuration and Gas Systems
- Understanding Basic Sample Systems
- Working with Chromatograph Hardware
- Setting Timed Events, Retention Times and Response Factors
- Understanding Data Calculations
- Identifying Problems Using Chromatograms

Available on Request at Dumyat Scotland UK or On-Site

Operation and Maintenance of the Model 500 Gas Chromatograph

Course R4210

This four-day course is most valuable to those with at least six months experience of gas chromatograph or who have completed R4100 "Introduction to Gas Chromatographs".

It prepares participants to operate and repair a Model 500 gas chromatograph with model 2350A controller and covers the following subject headers:-

- Understanding Gas Chromatography and a Gas Chromatograph
- Understanding Carrier and Calibration Gas Systems
- Hardware – location of boards, valves, heaters etc.,
- Hardware- theory of operation and interconnection
- Flow diagrams – C6+, H2S, C9+ and customer specific refinery offgas
- Software – HMI, Application, Base Operating System – Suitability, use and uploading downloading
- Software – HMI – MON2000 a complete guide to all the menus
- Integration- Timed Events,
- Component Data Tables,
- Practical
  - Using MON2000 to view chromatograms, store chromatograms, and compare chromatograms.
  - Disassembling and reassembling a model 2350A controller
  - Setting up valve timings
  - Setting up integration
  - Setting up communications
  - Setting up Timed Events and Component Data Tables
  - Maintenance tasks
    - Changing Detectors
    - Disassembly and Rebuilding Chromatographic Valves
    - Disassembly and Rebuilding Solenoid Valves
    - Leak Testing the GC
      - Fault finding
      - Other customer specific requirements

Available on Request at Dumyat Scotland UK or On-Site

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See the Calendar on the last page for Dates & Locations or visit our website emersonprocess.com/education
**Operation and Maintenance of the Model 700 Gas Chromatograph**

**Course R4212**

This four-day course is most valuable to those with at least six months experience of gas chromatograph or who have completed R4100 "Introduction to Gas Chromatographs". It prepares participants to operate and repair a Model 700 gas chromatograph and covers the following subject headers:

- Understanding Gas Chromatography and a Gas Chromatograph
- Understanding Carrier and Calibration Gas Systems
- Hardware – location of boards, valves, heaters etc.,
- Hardware- theory of operation and interconnection
- Flow diagrams – C6+, H2S, C9+ and customer specific refinery offgas
- Software – HMI, Application, Base Operating System – Suitability, use and uploading downloading
- Software – HMI – MON2000 a complete guide to all the menus
- Integration- Timed Events,
- Component Data Tables,
- Practical
  - Using MON2000 to view chromatograms, store chromatograms, and compare chromatograms.
  - Disassembling and reassembling a model 2350A controller
  - Setting up valve timings
  - Setting up integration
  - Setting up communications
  - Setting up Timed Events and Component Data Tables
  - Maintenance tasks
    - Changing Detectors
    - Disassembly and Rebuilding Chromatographic Valves
    - Disassembly and Rebuilding Solenoid Valves
    - Leak Testing the GC
      - Fault finding
      - Other customer specific requirements

Available on Request at Dumyat Scotland UK or On-Site

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**Operation and Maintenance of the Model 700XA Gas Chromatograph**

**Course R4213**

This four-day course is most valuable to those with at least six months experience of gas chromatograph or who have completed R4100 "Introduction to Gas Chromatographs". It prepares participants to operate and repair a Model 700XA gas chromatograph and covers the following subject headers:

- Understanding Gas Chromatography and a Gas Chromatograph
- Understanding Carrier and Calibration Gas Systems
- Hardware – location of boards, valves, heaters etc.,
- Hardware- theory of operation and interconnection
- Flow diagrams – C6+, H2S, C9+ and customer specific refinery offgas
- Software – HMI, Application, Base Operating System – Suitability, use and uploading downloading
- Software – HMI – MON2000 a complete guide to all the menus
- Integration- Timed Events,
- Component Data Tables,
- Practical
  - Using MON2020 to view chromatograms, store chromatograms, and compare chromatograms.
  - Disassembling and reassembling a model 2350A controller
  - Setting up valve timings
  - Setting up integration
  - Setting up communications
  - Setting up Timed Events and Component Data Tables
  - Maintenance tasks
    - Changing Detectors
    - Disassembly and Rebuilding Chromatographic Valves
    - Disassembly and Rebuilding Solenoid Valves
    - Leak Testing the GC
      - Fault finding
      - Other customer specific requirements

Available on Request at Dumyat Scotland UK or On-Site

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**Operation and Maintenance of the Flame Photometric Detector Module**

**Course R4215**

The course covers the theoretical and practical aspects of the flame Photometric Module (FPD) used with the model 500, 700 and 700XA. It does not cover any aspect of the theory of the model 500, 700 or 700XA neither does it cover the menus and use of MON2000/MON2020. The course concentrates on practical work. The course is aimed at those who will be carrying out maintenance on the FDP module. The course covers the following subjects:

- Sulphur
- FPD Theory and Maintenance
- Applications
- Dismantling and Rebuilding a Flame Cell Replacing all the “O” Rings
- Removing/Installing the Flame Cell and Photomultiplier into the FDP module
- Setting up the Hydrogen/Air Ratio to Achieve Continuous Combustion
- Adjusting the Entry of the sample into the Flame Cell
- Setting Up the Flame Out Circuit
- Adjusting the Amplifier to Optimize Peak Amplitude
- FPD Chromatographs
- Routine Maintenance
- Fault Finding

Available on Request at Dumyat Scotland UK or On-Site
Remote Automation Solutions

Config S600+ Pro

Course RA901 CEUs: 3.2
The Config600 Pro course is aimed at application engineers and system integrators who design and develop FloBoss S600+ applications for integration with metering systems and skids.

Overview
The Config600 Pro course provides an insight into the generation of application configurations for the FloBoss S600+. The course will include a mixture of input from the trainer and participative training involving work in pairs and as individuals. All attendees will be supplied with a Config600 Pro license, electronic copies of all documentation and Config600 Pro release CD’s (including PDF copies of marketing materials).

Prerequisites
• Participants should have completed the online familiarization course and be familiar with metering techniques and standards
• Participants should bring their own laptop computers to the course and should preferably have administrator privileges
• Participants must be PC literate
• Participants should have the Config600+ application installed on their laptop prior to attending – Note: this must not be installed more than 1 week prior to the course as the evaluation license expires after 14 days
• Participants should have an appreciation of computer programming languages

Topics
• Basic Concepts and Product Architecture
• Install and Configure S600+ Applications
• S600+ Database Structure and Commonly used Features
• Create and Configure Displays/Reports/Modbus Interfaces

S600+ Operator

Course RA902 CEUs: 2.1
The FloBoss S600+ Operator course provides an overview into the hardware and operational aspects of the FloBoss S600+.

Overview
The 3-day course will include a mixture of input from the trainer and participative training involving work in pairs and as individuals.

Prerequisites
• Participants should be familiar with metering techniques and standards
• Participants should bring their own laptop computers to the course and should preferably have administrator privileges
• Participants must be PC literate
• Participants should have the Config600 Lite application installed on their laptop prior to attending

Topics
• Basic Concepts and Product Architecture
• Hardware/Io Capabilities
• Download and Upload S600+ Configurations
• Use of the Front Panel I and Web Browser Capabilities
• Use of the Config600 Lite Tool to Modify Existing Displays/Reports/Modbus Interfaces

ControlWave Configuration

Course RA331 CEUs: 2.1
Field personnel whose responsibilities may include: installation, wiring, start-up, troubleshooting, configuration, or maintenance of the ControlWave products. An individual who seeks a more thorough understanding of the ControlWave products.

Overview
A hands-on course that covers the hardware, configuration and maintenance of the ControlWave product family. This course will equip you with the necessary knowledge and practice needed to configure the ControlWave hardware for communications. Learn how to troubleshoot and utilize software application programs to perform diagnostics and monitor live data and communication statistics.

Prerequisites
• Participants should have formal instrument technician training and a working knowledge of their application/process
• Participants must be thoroughly familiar with Windows XP or later versions

Topics
• Overview of ControlWave Hardware
• Overview of OpenBSI Software Utilities
• Basic Troubleshooting
• Basic ControlWave Configuration

Also Available:
ControlWave Designer Fundamentals
Course RA441 CEUs: 3.2
For personnel responsible for programming and debugging in ControlWave Designer

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See the Calendar on the last page for Dates & Locations or visit our website emersonprocess.com/education
## Training Course Registration Form

**EITHER:** Fax direct to the Stockport Sales office on (0870) 240 4389
**OR:** E-mail to uksales@EmersonProcess.com
**OR:** Post to the Sales Department at the above address

**IMPORTANT NOTE:** We may be unable to accept a course booking if any items marked with an * are left blank

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**Please tick box if you DO NOT wish to receive information on additional training courses.**

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