

TRAINING MODULES – COURSE OVERVIEWS

Introduction to Process Control

Course Code GS001A – Two Day Instructor Led

Introduction

This two day course offers a comprehensive review of process instrumentation to provide a broad understanding of the various types of commonly used instruments and their applications. The course offers an appropriate balance of class room based theoretical content and hands-on practical elements, the latter being facilitated by ABLE's purpose built, state of the art training rig.

Attendees

The course is suitable for those who would like an overview or refresher covering multiple measurement disciplines and applications but do not require in-depth knowledge of individual instrument technologies, which can be attained via subsequent courses.

It is particularly suitable for:

- Graduates
- Non-engineers
- Instrument Engineers
- Design Engineers
- Buyers

Course Objectives

On completion of the course, students will:

- Have attained a basic understanding of process instrumentation
- Be familiar with basic terminology and applications, including International System of Units (SI) outputs and protocols
- Have a firm grasp of the most important factors influencing instrument selection
- Have developed an insight into the practical operation of a variety of process instruments including communication methodology and devices
- Recognise the various types of commonly-used instrumentation and explain their basic function
- Understand safe and hazardous area definitions and categories, product approvals and Ingress Protection ratings
- Have a working knowledge of the role of the PLC & the DCS in the industrial and technology sectors

Prerequisites

There are no prerequisites for this course.

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ABLE Instruments & Controls Ltd
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TRAINING MODULES – COURSE OVERVIEWS

Introduction to Pressure Instrumentation

Course Code: PT001B, 1 day; Instructor-Led

Introduction

A one day review of pressure instrumentation designed to provide a broad understanding of the various types of commonly used instruments and their applications. Delegates will have the opportunity to gain hands-on experience of common types of pressure instruments on the ABLE training rig.

Attendees

This course is suitable for those who would like an overview of pressure instrumentation and their applications but do not require in-depth knowledge of individual instrument technologies, which can be achieved on subsequent courses.

It is particularly suitable for:

- Graduates
- Process Engineers
- Instrument Engineers
- Design Engineers
- Buyers

Course Objectives

To provide delegates with the following:

- A basic understanding of common types of pressure instrument technologies, their operation and the advantages and disadvantages of each
- A better understanding of the principles of pressure instrumentation and the ability to apply the most suitable technology to an application
- An opportunity to experience common types of pressure instruments in an operational situation on the ABLE rig
- An insight into the practical operation of a variety of pressure instruments
- The ability to recognise the various types of commonly-used pressure instrumentation and explain their basic function

Prerequisites

There are no prerequisites for this course.

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TRAINING MODULES – COURSE OVERVIEWS

Introduction to Flow Measurement

Course Code: FL001A, 1 day; Instructor-Led

Introduction

A 1-day review of the full range of available flow measurement instrumentation designed to provide a broad understanding of the various technologies and their applications. Delegates will be given the appropriate balance of classroom based theoretical instruction and practical experience of the main types of flow instruments via access to ABLE's training rig.

Attendees

This course will benefit those who would like an overview or a refresher of flow instrumentation.

It is particularly suitable for:

- Graduates
- Process Engineers
- Disciplines other than instrumentation e.g. control systems, valves

Course Objectives

To provide delegates with the following:

- Familiarity with all the main types of flow instrument technologies and their application
- A firm grasp of the advantages and disadvantages of each flow technology – meter selection criteria
- Process considerations in using flow instrumentation
- An opportunity to see all the main types of flow instruments in an operational situation
- A better understanding of the principles of flow instrumentation

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TRAINING MODULES – COURSE OVERVIEWS

Introduction to Level Measurement

Course Code: LV001B 1 day; Instructor-Led

Introduction

A 1-day review of level instrumentation designed to provide a broad understanding of the various types of commonly-used instruments and their applications. Delegates will have the opportunity to view and interact with all the main types of point and continuous level instruments which have been installed on the ABLE rig.

Attendees

This course will benefit those who would like an overview or a refresher of level instrumentation technology.

It is particularly suitable for:

- Graduates
- Process Engineers
- Disciplines other than instrumentation e.g. control systems, valves

Course objectives

To provide delegates with the following:

- Familiarity with all the main types of level instrument technologies and their application
- A better understanding of the principles of level instrumentation
- An opportunity to experience and operate the main types of level instrument in a “live” process situation by way of the ABLE rig
- A firm grasp of the advantages and disadvantages of each level technology – instrument selection criteria

Prerequisites

There are no prerequisites for this course.

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TRAINING MODULES – COURSE OVERVIEWS

J405 Jerome Mercury Vapour Analyser – Good Practice in Operation and Maintenance

Course Code: AZ001A 1/2 day; Instructor-Led

Introduction

The course is constructed to provide instruction for best practice in the operation and maintenance, both preventative and long-term, for users of the J405 Jerome Gold Film Portable Mercury Vapour Analyser. The training will include a mix of classroom and hands-on elements.

Attendees

The course is suitable for all owners/operators of the current generation of Jerome Mercury Vapour Analysers and particularly those personnel involved with health & safety management in the workplace, i.e. Occupational Health Advisors and Medics.

Course Objectives

Delegates shall receive full instruction in:

- Theory of Operation
- Performance vs. alternative technologies
- The correct application and day to day maintenance of the Jerome to ensure optimum performance
- Long term maintenance of their analyser(s) to promote maximum instrument longevity
- Troubleshooting
- Negating potential interferences
- The use of the Functional Test Kit (FTK) for validation of performance

Prerequisites

There are no prerequisites for this course.

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TRAINING MODULES – COURSE OVERVIEWS

Mercury Hazards & Management in the Oil & Gas Industry

Course Code: AZ001B 1 day; Instructor-Led

Introduction

The course is designed to provide instruction for best practice in the management of mercury hazards in the oil, gas & chemical industry, particularly during the breaking of containment of vessels and hydrocarbon lines. The will explain the chemistry and health risks associated with mercury and the protection of personnel via accurate and effective monitoring. The training will include a mix of classroom and hands-on elements.

Attendees

The course is suitable for all owners/operators of the current generation of Jerome Mercury Vapour Analysers deployed in the Oil & Gas industry and particularly those personnel involved with health & safety management in the workplace, i.e. Occupational Health Advisors and Medics.

Course Objectives

Delegates shall receive tuition in:

- Applications and Uses of Mercury Throughout History
- The Chemistry of Mercury
- Associated Health Risks
- Occupational Exposure & Regulations
- The Occurrence of Mercury in the Oil, Gas & Chemical Industry
- Available Technologies for Monitoring – Pros & Cons
- Best Practice in Operation of the Jerome J405 Mercury Vapour Analyser

Prerequisites

There are no prerequisites for this course.

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TRAINING MODULES – COURSE OVERVIEWS

Air Quality Monitoring for Hydrogen Sulphide

Course Code: AZ001B 1/2 day; Instructor-Led

Introduction

The course is designed to provide instruction for best practice in the monitoring of Hydrogen Sulphide (H₂S) hazards with particular emphasis on nuisance odour monitoring. The course will explain the chemistry and associated health risks, applications and available technologies for detection. The last part of the course will focus on the merits and technical specifications of the Jerome J605 Gold Film H₂S Analyser in context of some application stories. This section will incorporate an extensive hands-on element facilitated by ABLE's manufacturer approved, dedicated calibration laboratory.

Attendees

The course is suitable for all owners/operators of the current generation of Jerome J605 Hydrogen Sulphide Analysers and those personnel involved in odour monitoring for regulatory compliance at waste water, sewage treatment and landfill sites.

Course Objectives

Delegates shall receive tuition in:

- Properties of H₂S
- Creation and Sources of H₂S
- Health Risks
- Action Levels
- Nuisance Odour Monitoring
- Available Technologies
- Introduction to the Jerome J605 Gold Film H₂S Analyser and competition
- Advantages/Disadvantages
- Application Stories
- The Jerome J605 – Technical Specifications and operation

Prerequisites

There are no prerequisites for this course.

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TRAINING MODULES – COURSE OVERVIEWS

J605 Jerome Hydrogen Sulphide Analyser – Good Practice in Operation and Maintenance

Course Code: AZ001C 1/2 day; Instructor-Led

Introduction

The course is designed to provide instruction for best practice in the monitoring of Hydrogen Sulphide (H₂S) hazards with particular emphasis on nuisance odour monitoring. The course will explain the chemistry and associated health risks, applications and available technologies for detection. The last part of the course will focus on the merits and technical specifications of the Jerome J605 Gold Film H₂S Analyser in context of some application stories. This section will incorporate an extensive hands-on element facilitated by ABLE's manufacturer approved, dedicated calibration laboratory.

Attendees

The course is constructed to provide instruction for best practice in the operation and maintenance, both preventative and long-term, for users of the J605 Jerome Gold Film Hydrogen Sulphide Analyser. The training will include a mix of classroom and hands-on elements.

Course Objectives

Delegates shall receive tuition in:

- Jerome History
- Instrument Operation
- Menu Structure
- Interferences
- Maintenance
- Calibration
- Accessories/Parts
- Performance Verification

Prerequisites

There are no prerequisites for this course.

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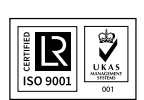
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TRAINING MODULES – COURSE OVERVIEWS

Magnetic Level Indicators, Options and Accessories including the ABLE Fusion Magnetic Gauge / Radar Level System

Course Code: LV001B 1 day; Instructor-Led

Introduction

This one-day review of Magnetic Level Gauges is designed to provide a broad understanding of the various types of gauge configurations and level instruments available and their applications on process plants, offshore and refineries. Delegates will have the opportunity to view and operate magnetic level gauges and continuous level instruments.

Course objectives

Hands-on working knowledge and appreciation of Magnetic Level Indicators including the ABLE Fusion Magnetic Level Gauge / Radar Combo Level System.

The course will cover:

- Available methods of measurement
- Theory of operation
- Build design and features
- Peripheral equipment including switches, reed chain and magnetostrictive transmitters
- Setup, operation and calibration-check
- Diagnostics and typical maintenance requirements
- Q & A Session

Prerequisites

- A basis understanding of industrial level measurement

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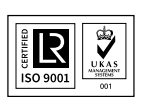
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TRAINING MODULES – COURSE OVERVIEWS

Instrumentation in Hazardous Areas

Course Code: GS003B 11/2 day; Instructor-Led

Introduction

Many facilities deal with the processing and production, storage and distribution of flammable or explosive materials. These cover a wide range of locations such as coalmines, oil production platforms, petroleum refineries, petrochemical and fertiliser plants, gas processing plants and even grain silos.

In these facilities, certain areas may have a risk of fire or explosion. These areas are known as hazardous areas. The instrumentation and electrical equipment that is used in these hazardous areas has to be of a special type, which is suitable and safe for usage in these areas.

Course Overview

Module 1: Basic Concepts

By completing this module, students will gain knowledge of: hazardous areas; the history of hazardous areas; basic concepts regarding hazardous areas such as flammable materials, the fire triangle, explosive limits, and properties of materials (flash point, and ignition temperatures). Also included in this module are dust hazards.

Module 2: Classification

After completing this module, students will understand: the different classification systems; area classification; material and temperature classification; how to carry out area classification of a typical facility and recognise the pitfalls in the process.

Module 3: Protection Methods

After completing this module, students will gain knowledge of: philosophies of protection; explosion proof methodology; intrinsic safety; pressurisation and purging; increased safety and other methods.

Module 4: Fieldbus Application

After completing this module, students will understand: implementing Fieldbus in hazardous areas using traditional methods; intrinsic safety using traditional methods; intrinsic safety using FISCO concept; Hybrid.

Module 5: Certification

After completing this module, students will have knowledge of: certification; certification bodies; marking and labelling; ATEX directives.

Module 6: Maintenance

After completing this module, students will understand: the importance of maintenance of explosion protected equipment; precautions to be taken.

Prerequisites

There are no prerequisites for this course.

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TRAINING MODULES – COURSE OVERVIEWS

Coriolis Metering

Course Code AB-C-012 1 day; Instructor-Led

Course Overview

Module 1 - Introduction to Coriolis Flow Metering

Provides an introduction to flow metering and the differences between volumetric and mass flow metering. This module introduces Coriolis mass flow metering and describes the theory of operation and the different types of Coriolis meters available.

Module 2 - Installation Requirements for Coriolis Flow Meters

Advises when to use a Coriolis mass flow meter over alternative technologies and how to specify a meter for a given application. This module also describes installation requirements and recommendations, available meter sizes, configurations and materials including typical application datasheet review. This module explores typical outputs, protocols, options and documentation.

Module 3 - Installing and Commissioning a Coriolis Flow Meter

Looks at the mechanical and electrical fundamentals of installing and commissioning a Coriolis flow meter and includes a hands-on commissioning exercise. This module also includes typical applications for Coriolis flow meters.

Module 4 - Maintenance, Troubleshooting & Diagnostics

Addresses routine maintenance recommendations and provides a troubleshooting guide for problematic Coriolis metering. The module also includes a practical fault finding and diagnostics session.

Prerequisites

- Basic knowledge of flow metering with an understanding of different media types, process conditions and parameters to be considered when metering flow.
- Awareness of typical technologies used to measure flow including ultrasonic clamp-on flow meters, orifice plates, turbine meters, positive displacement meters etc.

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TRAINING MODULES – COURSE OVERVIEWS

ABLE Clamp-on Ultrasonic Flow Meters

Course Code AB-USM-013 1 day; Instructor-Led

Introduction

This one day course will focus on providing all attendees with an advanced hands-on knowledge of the ABLE Clamp-on Ultrasonic Flow Meters and applications. Students will be taught how to read & interpret diagnostics, understand what they mean in relation to their application, and how to retrieve and analyse data. The course offers an appropriate balance of class room based theoretical content and hands-on practical elements, the latter being facilitated by ABLE's purpose built, state of the art training rig.

Attendees

The course is suitable for those flow measurement professionals who would like to understand more about the performance characteristics of both Transit Time & Reflexor Ultrasonic Flow Meters and ABLE's unique SlugMaster™ Intelligent Flowmeter in which those technologies are combined. Central to the course will be an in depth review of meter installation considerations.

Course Objectives

Delegates will receive tuition in:

- Ultrasonic Flow Metering Technology Comparisons
- Operating Principles of the Wide Beam Clamp-On Flowmeter
- Basic Performance Capabilities of Wide Beam Dedicated Clamp-On Flowmeters
- Meter Configurations
- Hardware Installation Considerations
- Enclosure Options
- Hook-up Arrangements

Prerequisites

Students should have a good understanding of the principles of flow measurement & instrumentation.

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