Global Leader in Training for the Process Industries

COURSE PORTFOLIO

Hands On Training Using Simulation

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At ESD Simulation Training, we know the limitations of the ‘Chalk & Talk’ lecture format. A talking head at the front of the room and students taking notes for hours creates a passive and ineffective learning environment. Our courses are broken into 40-minute sessions comprised of lectures, simulation model exercises, videos, CBT, multi-media training and group discussions. With a firm focus on hands-on training and interaction, these courses keep students engaged and result in a deeper and more lasting understanding of process operations.

**Dynamic Simulation**

At ESD Simulation Training, we use dynamic simulation models to deliver hands-on training to professionals in the oil and gas and other process industries. The capacity to create real scenarios in real time provides an engaging learning environment and measurable results. It allows you to explore high-risk scenarios without risk to yourself or your plant. It can also help you make better decisions in the design of the systems and in the operation and maintenance of equipment.

**Quality**

Quality control is the number one priority at ESD, with many courses being approved and recognized by the IChemE, the NFA, APEGGA, the IMechE and Engineers Australia.

Continuing Education Units (CEU’s) will be awarded for all ESD courses with either 3.5, 2.1, 1.4 or .7 CEU’s awarded based on the number of course days completed.
ESD TRAINING FACILITIES

ASIA, AUSTRALIA, CANADA, UK & EUROPE, USA

With purpose built training facilities in Kelowna (Canada), Aberdeen (Scotland) and Perth (Australia), as well as exceptional third party facilities in all other ESD locations, possibly the hardest question to answer when deciding on which ESD course to attend is not when, but where!
CANADA, Kelowna
The global headquarters of ESD is based in Kelowna in the heart of the Okanagan Valley. Perhaps most renowned for its internationally recognised wines, this stunning area of British Columbia has everything. Majestic mountains, pristine lakes and rivers, lush orchards, world-class golf courses and ski hills all provide endless opportunities for outdoor recreation and enjoyment.

AUSTRALIA, Perth
Offset by the vast tranquil waters of the Swan River, the beautiful city of Perth is both modern and vibrant. Commonly referred to as the ‘friendly city’, Perth is today experiencing record growth as a premier destination for business, entertainment, nightlife, culture and the arts – all helped along by year round sunshine!

UK, Aberdeen
With its sparkling granite buildings, Aberdeen has one of Scotland’s most enchanting skylines, while the old town has a magical air of time gone by. The capital of the Grampian Highlands is even more distinctive thanks to the treasures on its doorstep – malt whisky trail, castle trail, champion golf courses, ski slopes and a coastline where vast, empty and dramatic cliff top scenery is waiting to be explored.

USA, Houston
Houston is the nation’s fourth largest city, home to two million people and a hub of international business. A vibrant, cosmopolitan city, Houston is a renowned centre for visual arts, science, history and cultural heritage. Its cultural diversity and uninhibited attitude combine to boost the local culinary scene, and its abundance of malls makes it a shopper’s paradise.
CUSTOMISED TRAINING

With a wide range of courses offered at a variety of locations around the globe, it is our goal to provide comprehensive training through our open access programmes and we are constantly updating our course material to reflect current industry conditions. However, some of our clients go one step further and have a course designed specifically for their platform or process. Our customised curriculum is created using a methodical, client-focused process and includes a full suite of dynamic simulation models tailored to specific processes and plant conditions. Customised courses are not only of the utmost relevance to their target audience but can also prove to be very cost effective. To find out more, visit our website or contact one of our sales representatives.

THE TRAINERS

In addition to leading-edge computer models and simulation tools, ESD Simulation Training has a highly qualified faculty of experienced engineers and operations professionals who have undergone extensive training within their areas of expertise. The depth of their collective knowledge in the process industries and their proven ability to convey their knowledge has won the trust and respect of over 30,000 delegates during the past 20 years.
This hands-on, three-day course uses dynamic simulation models to give a practical introduction to centrifugal gas compressors and their operation in process plants. The practical exercises and workshops will use dynamic simulation models of compression systems running on PCs. They will be easy to use and the participants will require no prior knowledge of dynamic simulation.

Key topics covered in the course include compressor performance and selection, instrumentation and control, surge protection and compressor operation. Case studies will be used and participants will be encouraged to solve problems for themselves.

Suitable For: Engineers with little previous knowledge of compressors and who are involved in the design, control, operation or commissioning of process plants.

Key Topics Covered:

- Compression Principles
- Process & Control Description
- Compressor Operations
- Mechanical Design - Centrifugal Compressors
- Instrumentation & Control
- Simple Anti-Surge Control
- Recycle Valve Sizing
- Compressor Protection & Complex Anti-Surge Control
- Compressor Operations
- Case Studies
- Course Review
This two-day course offers delegates an overview of the design, construction, control and operation of reciprocating compressors. The course describes the principles of operation of the compressor and how the design is adapted to a number of different configurations to meet numerous needs. A fundamental understanding of gas behaviour will be an asset but not mandatory for this course.

Suitable For: Engineers and operations personnel who are either supervisors or are responsible for the day to day operation and maintenance of reciprocating installations, process operators, technicians and engineers.

Key Topics Covered:
- Compressor Selection
- Compression Process
- Theory of Operation
- Compressor Operation
- Compressor Cylinder Assembly
- Frame Assemblies and Compressor Configurations
- Cooling and Lubrication
- Capacity Control
- Performance & Design Calculations
- Case Studies and Compressor Applications
This intensive and interactive three-day course is designed to address the operation and control of both fixed and variable speed centrifugal gas compressors and their drivers. Safe and efficient operation of a centrifugal compressor requires an good understanding of the compressor, the driver and their control systems. Most centrifugal compressors are driven by either gas turbines, steam turbines or electric motors and all three types of driver will be covered depending on the interest of the delegates.

The principles of operation, anti-surge control and start-up and shutdown will be key course topics. The most popular sophisticated anti-surge control system on the market is the Compressor Controls Corporation (CCC) system and the operation of this system will be covered in detail.

Suitable for: This course is designed for anyone involved with the operation of centrifugal gas compressors on any kind of processing plant. Operations personnel who have some level of responsibility for the operation, control or management of the gas facilities which contain centrifugal compressors will benefit most from this course.

Key Topics Covered:

- Centrifugal Compressor Control and Operation
- Drivers
- Centrifugal Compressor Capacity Control
- Anti-surge Control
- Compressor Controls Corporation (CCC) Anti-surge Control System
- Start-up and Shutdown
- Dry Gas Seals
This two-day course explores the construction and configuration of the centrifugal compressor in some detail. It is an add-on to our Control & Operation of Centrifugal Compressors training course but is also run as a stand-alone package.

**Suitable For:** People involved in the specification, maintenance, and inspection of compressors. The course would also be useful for personnel who are responsible for the operation of centrifugal compressors.

**Key Topics Covered:**
- Principles of Operation
- Designs
- Construction
- Configurations
- Rotor Assembly
- Casing/Shaft Seals
- Lubrication
- Condition Monitoring
- Gas Cooling
- Liquid Knockout
- Piping Systems
- Instrumentation
- Compressor Installation
- Compressor Operations
PRACTICAL ASPECTS OF COMPRESSOR CONTROL USING THE CCC SYSTEM

This two-day course gives a thorough appreciation of the CCC compressor control system, including practice sessions on tuning and setting up the controllers on a CCC simulator.

Suitable for: Instrument technicians, supervisors, operations technicians and engineers.

Key Topics Covered:

- Control Modes Employed
- Functions Implemented
- Correct Operational Response to 'Safety On'
- Correct Operational Response to 'Recycle Trip'
- Interface with Distributed Control Systems
- The Importance of DEV (Deviation)
- What the Information from the CCC Controllers Means
This two-day course uses dynamic simulation models to give a practical introduction to carbon dioxide, its application, characteristics, and carbon capturing technology. This course also covers the principles of gas compression when CO2 is the process medium, the selection of the correct type of compressor, the design of the compressor, how performance of the compressor is controlled and more.

Suitable for: Personnel at all levels of responsibility and authority within engineering and operations functions. The primary objective of the course is to introduce the technology and functional design of carbon dioxide compression systems to those who have had limited exposure to such compression systems but who, by virtue of a new project or responsibility, need to update their knowledge and familiarity. This course will also offer a comprehensive study of the subject for those who may have had only limited first hand compressor operation experience.

Key Topics

- Physical Properties of CO₂ and its Behaviour
- Gas Compression Principles and Performance Mapping
- Compressor Selection and Main Influential Factors
- Design of the Integral Geared Compressor
- Typical Installations
- Performance Control
- Anti-Surge Control
- Protection on a Trip
This practical two-day course offers a comprehensive overview of the operation and control of industrial gas turbines used for both power generation and as drivers for compressors and pumps. The course explains how a turbine works and the different types in common use. How to control and operate turbines efficiently and key troubleshooting techniques and information will also be explained.

The course is structured to address the needs of engineers and operations personnel who have a requirement to understand the principles of the gas turbine and how industrial units are configured to perform prime driver duties.

**Suitable for:** Chemical, instrumentation, process, mechanical, maintenance and electrical engineers. Also process plant operation, maintenance and supervisory staff together with anyone who requires an understanding of the operation and control of industrial gas turbines.

**Key Topics Covered:**

- Introduction
- Basic Design
- Thermodynamics
- Gas Generator Compressor
- Combustion
- Control Strategies
- Safeguarding
- Emissions
- Efficiency
This course gives a thorough introduction to the control, design and operation of positive displacement helical screw compressors. This type of compressor is used for both air and process gas applications.

**Suitable for:** Engineers, maintenance and operations personnel who work with screw compressors.

**Key Topics Covered:**

- History of Screw Compressors
- Compression Principles & Thermodynamics
- Oil Free Screw Compressors
- Control

- Operation
- Performance Calculations
- Compressor Design
This intensive five-day, hands-on course uses dynamic simulation models of compression systems running on PCs, to give a practical introduction to control, operation and troubleshooting of centrifugal and reciprocating gas compressors. The two key issues which will be addressed for existing compression plants are how to maximise throughput, and how to minimise downtime. There will be a strong emphasis on the troubleshooting and optimisation of existing compressor operations and the use of various techniques to analyse performance. These techniques will be supported by specially developed check lists which will cover all of the key troubleshooting activities. A large part of the course will be workshop sessions which will allow participants to apply troubleshooting and optimisation techniques to actual examples.

Suitable for: Experienced engineers and operations personnel

Key Topics Covered:
- Centrifugal and Reciprocating Compressors
- Reciprocating Compressor Operation
- Centrifugal Compressor Operation
- Centrifugal Compressor Control
- Centrifugal Compressor Anti-Surge Control
- Maintenance Issues
- Troubleshooting and Optimisation
This two day course will provide a good understanding of troubleshooting and problem solving in process plants. Using a series of simulated practical examples, delegates will be challenged to identify and correct real-life process problems. The problems will include equipment malfunctions, instrumentation faults, and issues with control systems.

**Suitable for:** Process engineers, supervisors, and operation personnel working on any process plant.

**Key Topics Covered:**

- Monitoring normal conditions
- Responding to abnormal operating conditions
- Troubleshooting theory
- Standard troubleshooting methodology
- Understand several processes with simulation models
- Hands on experience in identifying what has changed
- Identifying the cause of the problem
- Clarifying the appropriate solution
This course gives a practical introduction to the principles of measurement and control of process plants. It is a hands-on course and participants will have the opportunity to explore the set-up and tuning of control loops using simulation and other computer-based training packages. This is offered as either a two or three-day course, depending on where the course is held.

**Suitable for:** Young graduates who require a practical introduction to measurement and control systems on process plants. It will also be useful to anyone working in the process industries who would like to understand the techniques used in measurement and control and who have not had the previous opportunity to learn about them.

**Key Topics Covered:**
- Principles of Control
- Measurement Principles
- PID Control
- Control Tuning
- CBT Exercises
- Control Techniques
- Computer Control Systems - DCS, SCADA, PLCs
- Control Valves
CENTRAL CONTROL ROOM OPERATION SIMULATOR “PEARL”

DURATION: 5 DAYS

This simulator course for Control Room operations personnel use the ESD Simulation Training ‘PEARL’ Simulator. Reflecting the behaviour of a real plant, this process model consists of the main process areas typically found on an oil & gas plant. Starting up the plant, bringing it to full production, shutting it down – all operations are able to be performed in a controlled way using ‘PEARL.’

Fundamentals of Control Room Operations:
Five days, suitable for prospective control room operators, team leader, supervisors and anyone wanting to experience control room operations in a simulated environment.

Key Topics Covered:
- Principles of Production Facility Operation and Overview of Systems referring to DCS Graphics
- Process Control Fundamentals and Overview of the Control System.
- Manipulation of Controls.
- Principle Operating Parameters
- Introduction to the ESD/PSD Systems
- Start-up Operations
- Reciprocating Compressor Operation
- Production Shutdown
- Troubleshooting Theory
- Gas Treating
- Introduction to Fire and Gas Systems
- Controller Tuning
This three-day course offers a comprehensive study of distillation technology and provides an introduction to a variety of processes which employ this key unit operation. The principles of distillation will be covered in detail to provide a platform on which the discussion of distillation column design, control and operation will be based.

The course is designed on a modular basis such that all major aspects of the unit operation are dealt with in a logical manner. Each module builds on the learning achieved in the previous session. Dynamic simulation is used to explore the topics covered on the course.

**Suitable for:** Operations personnel whose work scope involves any number of tasks related to the management, control and operation of distillation units in a variety of refinery process plants.

**Key Topics Covered:**
- Principles of Distillation
- Distillation Process
- Distillation using Packed Towers
- Process Control
- Control Systems
- Tower Design
- Fractional Distillation
- Crude Oil Distillation
- Vacuum Distillation
- Special Application Distillation
This intensive three-day course offers an introduction and comprehensive overview of production, processing and emergency systems on offshore facilities. The general trend is to make offshore processing as simple as possible while ensuring safety of personnel and assets.

**Suitable For:** Engineers of all disciplines who have made a career move to the regulatory bodies which oversee the industry, process personnel who may be transferring to a primary production area.

**Key Topics:**
- Hydrocarbon Engineering
- Disposals
- Reservoir Characteristics & Well Fluids
- Reservoir Drive & Artificial Lift
- Well Design
- Oil & Gas Separation
- Produced Water
- Gas Compression & Treatment
- Water Injection
- Utility Systems
- Emergency Shutdown Systems
- Fire and Gas Systems
This two-day course is designed to provide a comprehensive study of the glycol dehydration process. The course explores the process from several different perspectives, including what the plant is designed to do, how it does it, the design of the equipment, how the process is controlled and safeguarded, and conventional start-up and shutdown operations. The topics are covered using a mix of short lectures, video, dynamic simulation and group workshops.

Suitable For: Operations personnel who have some level of responsibility for the operation, control or management of the glycol plant.

Key Topics Covered:

- Liquid Absorption using TEG
- Process Flow Scheme
- Contactor Tower
- Regeneration System

- Process Control
- Safeguarding
- Start-Up and Shutdown Operations
This intensive and interactive two-day course is designed to give a comprehensive study of the amine treatment process. The course explores the process from several different perspectives; what the plant is designed to do, how it does it, how it’s designed, process controls and safeguards and conventional system start-up and shutdown. The topics are covered using a mix of short lectures, videos, dynamic simulation models and group workshops.

Pre-requisites: This course is designed for participants with little or no prior amine treatment experience. A basic understanding of unit operations including gas/liquid absorption and distillation would be an advantage but not necessary.

Participant Profile: Operations personnel who have some level of responsibility for the operation, control or management of the amine treatment plant.

Key Topics Covered:

- Amine treatment process
- Amine regeneration system design
- Contactor tray and nozzle design
- Vapour stripping and amine / water recovery
- Acid gas treatment
- Process controls
- Operating parameters
This two-day course is intended to provide a comprehensive study of subsea systems. The coverage will include the design of such systems, the equipment installed and how the system is monitored and controlled from the platform. The course assumes that the participants already have some understanding of petroleum production technology and a basic understanding of process control and safeguarding systems will also be an advantage.

Suitable For: Engineers and other personnel whose work scope involves the specification, design, operation or management of offshore projects.

Key Topics Covered:

- Field Development
- Subsea Completions
- Control Umbilical
- Control Systems
- Well Workover
This three day course will use dynamic simulation models to give a practical introduction to centrifugal gas compressors, their turbine drivers, and their operation within a typical gas compressor station. This course will include operating principles, mechanical design, and control strategies.

Suitable For: Process engineers, supervisors, and operation/maintenance personnel working on natural gas compressor stations.

Key Topics Covered:

- Compression principles
- Compressor performance
- Simple anti-surge control
- Compressor operations
- Compressor protection
- Introduction to gas turbines
- Overview of each turbine section
- Control strategies and start-up/shutdown
- Control Systems
- Well Workover
This intensive three-day course is designed to address the operation and control of natural gas processing equipment for onshore fields. Gas processing onshore involves the gathering of the gas using field or nodal compressors before dehydrating, compressing and either re-injecting, storing in caverns or exporting via a pipeline. Carbon Dioxide may be removed from the gas using membrane separation and further removal of heavier hydrocarbons may occur by dew-point conditioning. The field/nodal compressors are usually screw or reciprocating units with centrifugal compressors used in the larger gas plants. Reciprocating compressors, screw compressors, gas dehydration (using glycol units), and hydrocarbon dew-point conditioning will therefore be covered in detail. Centrifugal gas compressors and acid gas removal using membrane separation will be briefly touched depending on the interest of the delegates attending each course. Each topic will be covered using a mix of short lectures, videos, dynamic simulation models and group workshops.

Suitable for: This course is designed for participants who are involved with the operation of onshore natural gas production either working in the field or at the gas plant. Operations personnel who have some level of responsibility for the operation, control or management of the gas processing facilities will benefit most from this course.

Key Topics Covered:
- Reciprocating Compressor Control and Operation
- Screw Compressor Control and Operation
- Dehydration - Glycol
- Hydrocarbon Dew Point Conditioning
- Acid Gas Removal
- Centrifugal Compressor
This intensive and interactive three-day course is designed to address the operation and control of coal seam gas processing plants. Coal seam gas processing involves gathering gas from well heads at near atmospheric pressure through the use of screw compressors. The gas is then compressed and dehydrated in gas plants utilising centrifugal compressors and tri-ethylene glycol (TEG) dehydration. Centrifugal gas compressors, screw compressors and glycol dehydration are therefore the core topics which will be covered in detail. Each topic will be covered using a mix of short lectures, videos, dynamic simulation models and group workshops. When this course is run on a site/location specific basis, it can be customised to include reciprocating compressors and molecular sieves if appropriate.

Pre-requisites: This course is designed for participants with little or no prior coal seam gas processing experience. A basic understanding of unit operations including centrifugal compressors and glycol dehydration would be an advantage but not necessary.

Participant profile: Operations personnel who have some level of responsibility for the operation, control or management of the coal seam gas processing facility.

Key Topics Covered:

Centrifugal Compressor Control and Operation
- Compression Principles and Performance
- Capacity Control
- Simple Anti-surge Control
- Compressor Protection

Screw Compressor Control and Operation
- Advantages and Disadvantages of Screw Compressors
- Compression Principles

Glycol Dehydration
- Oil Injected and Oil Free Screw Compressors
- Screw Compressor Controls and Operation
- Glycol Dehydration Process
- Functional Design
- Contractor Section Design
- Regeneration Section Design
- Process Control and Operation
NATURAL GAS PROCESSING ON OFFSHORE FACILITIES

DURATION: 3 DAYS

This intensive three-day course is designed to address the operation and control of natural gas processing equipment on an offshore facility. Gas processing offshore involves the removal of any liquids (condensate/oil and water) from the well fluids in one or more separators before dehydrating, compressing and either re-injecting or exporting via a pipeline. Acid gases (Carbon Dioxide and Hydrogen Sulphide) may be removed from the gas on the facility and further removal of heavier hydrocarbons may occur by dew-point conditioning. The compressors used in the processing and export of the gas are usually centrifugal compressors. Centrifugal gas compressors, gas dehydration (using glycol units), and hydrocarbon dew-point conditioning will therefore be covered in detail. Acid gas removal (by the use of scavengers, amine units, membrane separation or molecular sieves) will be touched briefly depending on the interest of the delegates attending the course. Each topic will be covered using a mix of short lectures, videos, dynamic simulation models and group workshops.

Suitable For: This course is designed for participants who are involved with the operation of offshore natural gas production on either fixed platforms or FPSOs. Operations personnel who have some level of responsibility for the operation, control or management of the gas processing facility would benefit most from this course.

Key Topics Covered:
- Centrifugal Compressor Control and Operation
- Dehydration - Glycol
- Acid gas removal - the principal methods used
This two-day course provides a comprehensive study of the formation of oil and gas reservoirs, their flow characteristics and management to optimise recovery both naturally and by use of artificial means.

The course studies both the principles and practicalities of well operations including a description of the mechanical design of wells for both natural and artificial lift.

The study of the phase behaviour of well fluids and the process of three-phase separation at the wellhead is also covered as is the design and operation of a typical wellhead separation plant.

Suitable For: Operators and technicians.

Key Topics Covered:

- Oil and Gas Reservoirs
- Reservoir Management
- Enhanced Oil Recovery (EOR)
- Design of the Well
- Well Operations
- Fluid Behaviour
- Three-Phase Separation
- Wellhead Separation Plant
- Operation of a Wellhead Plant
This three-day course has been designed to provide a comprehensive study into the subject of modern floating production systems. The subject matter is presented in a manner to reflect what might be considered a standard project development path and encompasses the areas of technology, engineering, project management and legislation.

Suitable for: A wide range of personnel whose work scope involves the specification, design, management or operations of FPSO projects.

Key Topics Covered:
- Introduction to Floating Production Systems
- Field Development
- FPSO System
- Mooring and Turret Design
- Subsea System
- Marine Systems
This practical two-day course aims to satisfy the need for understanding the role LNG plays in the energy market. One overriding objective is to stress the safety and security issues surrounding LNG and to show that, contrary to public perception, the production and transportation is safe. The emphasis is on the LNG plant itself and the storage of LNG on-site. Plant sizing and process selection is fundamental to the overall life cycle costs and viability of the project, and as such, the course aims to highlight the main selection criteria, technical and economic drivers.

Suitable for: Most engineers and those in a supervisory, engineering or managerial role within the oil and gas industry.

Key Topics Covered:

- The LNG Market
- LNG Plants
- Natural Gas Liquefaction
- Feed Gas Pre-Treatment and By-Product Handling
- Plant Utilities
- LNG Storage and Export Terminal
- LNG Reception Terminal and Gas Distribution
- The Future of LNG
This two-day course is designed to give a comprehensive overview of the production, storage and transfer of liquefied natural gas (LNG) in a marine environment. The course also considers the subject of offshore reception terminals and the re-gasification of the LNG for onward transmission to the onshore distribution network.

The emphasis is on the safe handling of LNG in the open sea with specific reference to the role of the FPSO and the conversion of standard LNG carriers to FPSO service.

**Suitable for:** Engineers and managers who are involved with the design of offshore LNG facilities. It will also be of interest to those who may have a future need to understand the challenges and technologies being applied to this new area of the offshore industry.

**Key Topics Covered:**

- Physical Properties of LNG
- Challenges of Offshore LNG Production
- Conversion of Natural Gas to LNG
- LNG Storage
- LNG Transfer
- LNG Loading and Offloading
- Offshore Reception Terminals
MODULAR PROGRAMMES

ESD offers modular training programmes for both operators and engineers. Each module is self contained being either one, two or three days in duration.

The aim of each set of modules is to give the delegates a thorough introduction to the practical issues associated with each of the module topics, with the emphasis being on the real world application of technology in each area.

Mechanical Engineering Appreciation Courses (for engineers)

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<tr>
<th>Module No</th>
<th>Topic</th>
<th>Duration</th>
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<td>Compressors</td>
<td>2 days</td>
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<td>2</td>
<td>Pumps</td>
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<td>3</td>
<td>Drivers</td>
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<td>4</td>
<td>Vessels</td>
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<td>Piping/ Pipe Stress</td>
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<td>Materials of Construction</td>
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<td>7</td>
<td>Welding</td>
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<td>8</td>
<td>Projects</td>
<td>1 day</td>
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<tr>
<td>9</td>
<td>Heat Exchangers</td>
<td>1 day</td>
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As with all ESD training, the particular topics and target audience for modular courses can be altered to suit the specific needs of an organisation.
HYDROCARBON INDUSTRY FUNDAMENTALS

A suite of 5 courses designed to provide the underpinning knowledge required for a successful career in the hydrocarbon industry. The courses are designed for delegates with little or no hydrocarbon processing experience. The content of all 5 courses can be tailored to suit the requirements of a particular location.

**Process Operations Basics (5 Days)**
- Key Topics Covered:
  - Basic hydrocarbon chemistry
  - P&ID’s
  - Heat exchanging
  - Pumps
  - Valves
  - Instrumentation and control
  - Electrical power generation
  - Purging/Inerting
  - Hazard awareness

The emphasis on this course will be to cover the fundamental underpinning knowledge required to operate the plant safely and efficiently.

**Wellheads And Their Equipment (4 Days)**
- Key Topics Covered:
  - Basic Hydrocarbon Chemistry
  - Introduction to Reservoirs and Drilling
  - Separation
  - Compressor Systems
  - Gas Gathering
  - Produced Water
  - Utilities
  - Basic Instrumentation
  - Electrical Power Supply
  - Safety Systems

The emphasis on this course will be to cover the underpinning knowledge required to operate wellhead equipment safely and efficiently.
HYDROCARBON INDUSTRY FUNDAMENTALS

Oil and Gas Production
A 4 day course designed to give trainees the underpinning knowledge they require to operate oil and gas production facilities.

Key Topics Covered:
- Gas/Liquid Separation
- Hydrocarbon Liquid Handling
- Water Handling
- Gas Compression
- Rotary Equipment Drivers
- Electric motors
- Utilities
- Safety Systems

The emphasis of the course will be to cover the fundamental underpinning knowledge required to operate the plant safely and efficiently.

Natural Gas Processing
A 4 day course designed to give the trainees the underpinning knowledge they require to operate natural gas processing facilities.

Key Topics Covered:
- Natural Gas Characteristics
- Gas Treatment Processes
- Gas Sweetening
- Gas Dehydration
- Oil Treatment
- Gas Transmission by Pipeline
- NGL Recovery
- Pumps
- Heat Exchangers
- Compressor Systems

The emphasis of the course will be to cover the fundamental underpinning knowledge required to operate the plant safely and efficiently.

LNG Operations
A 5 day course designed to give the trainees the underpinning knowledge they require to work in an LNG plant.

Key Topics Covered:
- Refrigeration Basics
- Distillation & Fractionation
- Gas Absorption
- Gas Dehydration
- Compressor Systems
- Prime Movers – Gas Turbines & Diesel Drivers
- Rotary Equipment Drivers
- Electric motors
- Utilities
- Safety Systems
- Gas Transmission by Pipeline
- NGL Recovery
- Pumps
- Heat Exchangers
- Compressor Systems

The emphasis of the course will be to cover the fundamental underpinning knowledge required to operate an LNG plant safely and efficiently.
This one-day course offers an overview of the oil and gas industry and is written and presented in a manner suitable for people of a non-technical background.

The purpose of the course is to enable all those without a technical background to have a better understanding of the industry. The scope of the course covers all of the main sectors of the industry from the reservoir to offshore production and processing to crude oil refining and gas utilisation. For each of the main sectors, the activities and technology will be explained in a clear and concise manner with the objective of introducing the day to day terminology and phraseology of the industry.

**Suitable for:** All non-technical people including sales, administration, secretarial and accounting personnel.

**Key Topics Covered:**
- Oil/Gas Reservoirs
- How Reservoirs Produce
- Offshore Production Facilities
- Separating the Well Fluid
- Crude Oil Processing
- Gas Processing
- Gas Export
- The Future
This one-day course is intended to give a comprehensive overview of the nature and purpose of a floating production, storage and offtake system, commonly called an FPSO. In the business of offshore oil production, such systems have become very popular over the last 15 years and they are used throughout the world. The reasons for their proliferation are many and varied but primarily it is because they offer a cost effective solution for the provision of a host facility for many offshore projects. They are ideally suited for oil fields remote from land and those found in deep waters.

They are robust and can withstand severe weather conditions. When the oil runs out they can be relocated to another oil field even on the other side of the globe. In essence, they offer versatility rarely matched in other forms of offshore host platforms.

The course aims to explain, by consideration of how they are built, why they are so popular and why they are so versatile.

**Suitable for:** All non-technical people including sales, administration, secretarial and accounting personnel. It may also benefit operators, technicians and engineers who are entering the FPSO industry.

**Key Topics Covered:**
- The FPSO Concept
- What is an FPSO
- The Ship
- How the Ship is Moored
- The Oil Field
- The Process Plant
- The Crude Oil Storage and Offloading
- The Future
This one-day course is perfect for all non-technical executives, whether involved directly within the oil and gas industry or in a supporting industry. Covering numerous topics from how reservoirs are formed through to the actual production phase, this course will provide all those without a technical background to have a better understanding of both reservoir engineering and drilling.

For each of the main sectors the activities and technology will be explained in a clear and concise manner with the objective of introducing the day to day terminology and phraseology of the industry.

Suitable for: All non-technical executives within the oil and gas industry. It is also perfect for those outside of the industry who require a better working knowledge in order to support their clients such as those within banking, recruitment, government bodies etc.

Key Topics Covered:
- Reservoir Engineering
- What Constitutes an Oil/Gas Reservoir
- Planning the Exploitation
- Natural and Artificial Flow
- Production Engineering
- Drilling
- The Technique
- Drilling Equipment
- Completing a Well
- Workover
This one-day course offers an overview of the subsea systems within the offshore oil and gas industry and is written and presented in a manner suitable for people of a non-technical background. By providing a better understanding of the subsea section of the industry, it will enable all those working within this section to offer more effective support to their technical colleagues.

Topics covered will include field development, subsea completions, control umbilicals and well workovers - all in a friendly, non-technical way. Perhaps you are not too sure of some of the terminology used such as flowlines, risers, wellheads or jumpers - you will be after attending this one-day course!

Suitable for: All non-technical people including sales, administration, secretarial and accounting personnel.

Key Topics Covered:
- Oil/Gas Reservoirs
- How Reservoirs Produce
- Offshore Drilling Rigs
- Getting into Deepwater
- Wells and Workovers
- Transporting the Well Fluid
- Umbilicals - the Life Lines
- The Big Subsea Challenges
The LNG industry has a safety record of which it is justifiably proud. This has been achieved by a recognition that the product can be, if not handled correctly, extremely hazardous. By a combination of good design, high quality engineering, well practiced procedures and a well trained workforce, the hazards are managed and risks are minimised. In developing the course the need to emphasise the safety aspects has been recognised and is covered to a suitable level.

Suitable for: This one-day course is intended primarily to be suitable for the non-engineering disciplines one usually finds within the organisation of companies associated with the energy industry. These people may be in a variety of roles ranging from managerial to supervisory to dedicated team members. No previous technical knowledge is required since the course will provide a sufficient depth of understanding to cover the main aspects of LNG engineering and the industry.

Key Topics Covered:
- Nature of LNG
- Its Uses and Users
- Manufacturing LNG
- Storage and Containment
- Shipping LNG
- Floating LNG
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