

## **ADVANCE DIPLOMA IN PETROLEUM /GAS MARKETING DISTRIBUTION**

### **THE PROGRAMME OVERVIEW**

The programme will cover the following area of petroleum and gas marketing and distribution

1. Economics Principles of oil refining
2. Tank farm operations and management
3. Instrumentations and control installation in the oil and gas industry
4. Introduction to work permit system in the oil and gas industry

#### **1. ECONOMICS PRINCIPLES OF OIL REFINING**

The programme discusses the quality of crude oil and its value, the refined petroleum products and its quality and the markets that they are traded in. We will study how the size, configurations and complexity of refineries impact on refinery profitability and how margins can be calculated. How refinery operations such as planning, as well as optimization and blending affects refinery profitability. How to manage energy and oil loss in the refinery will also be looked into. Long term planning in market study to forecast product demand and configuration to evaluate processing options will finally be projected.

This program is designed for anyone interested in the economics of the petroleum refining industry, with a deeper look at opportunities to improve refinery profit margins. It is best for refinery planning personnel, oil and gas engineers, Oil Marketing Companies, Oil Trading Companies, Bulk Distributing Companies, consulting companies, insurance firms financial Institutions and government agencies will also find the program useful.

### **COURSE DETAILS DESCRIPTION**

<b>Course Code</b>	<b>Course Title</b>	<b><u>Course Description</u></b>
ISASP /OG101	Crude Oil Quality and Value	<ul style="list-style-type: none"> <li>○ Cost and quality of crude oil</li> <li>○ Factors affecting price of crude oil</li> </ul>

ISASP /OG102	The refined products slate	<ul style="list-style-type: none"> <li>○ Main groups and general petroleum products</li> <li>○ Factors affecting the quality and value of petroleum products</li> </ul>
ISASP /OG103	Oil Markets	<ul style="list-style-type: none"> <li>○ Dynamics in supply and demand of crude oil and petroleum products</li> <li>○ Benchmarks</li> <li>○ Markets and Contracts</li> <li>○ Arbitrage</li> </ul>
ISASP /OG104	Refinery size, configuration and Complexity	<ul style="list-style-type: none"> <li>○ How size of refineries impacts on profitability</li> <li>○ Types of refinery configuration</li> <li>○ How refinery configuration affects profitability</li> <li>○ How complexity is measured</li> </ul>
ISASP /OG105	Refinery Crack Spreads or Margins	<ul style="list-style-type: none"> <li>○ How to assess industry performance</li> <li>○ How to calculate crack spreads</li> </ul>
ISASP /OG106	Operational efficiency	<ul style="list-style-type: none"> <li>○ Refinery planning (day-to-day operations optimisation)</li> <li>○ Refinery scheduling (crude oil, production unit and blending)</li> </ul>
ISASP /OG107	Energy conservation and loss	<ul style="list-style-type: none"> <li>○ Understanding energy in a refinery and its related cost</li> <li>○ Understanding oil loss and its cost</li> <li>○ Interaction between energy and oil loss</li> </ul>
ISASP /OG108	Investing for the future	<ul style="list-style-type: none"> <li>○ Assess main trends in crude oil quality that will affect refineries in the future</li> <li>○ Assess main trends in products demand and specifications that will affect refineries in the future</li> <li>○ New builds versus upgrades of refineries</li> </ul>
ISASP /OG109	Level Gauging, draining and Blending of Petroleum Products	<ul style="list-style-type: none"> <li>○ Customs dipping –ullage and innage</li> <li>○ water level gauging</li> <li>○ product level gauging</li> <li>○ using the product paste</li> </ul>

		<ul style="list-style-type: none"> <li>○ catchment area draining</li> <li>○ flow rate estimation and transfer monitoring</li> <li>○ tank draining, roof draining and catchment area draining</li> <li>○ Effect of tank measurement errors. Product temperature and free water level gauging</li> </ul>
ISASP/OG110	Transfer of Products	<ul style="list-style-type: none"> <li>○ Operational procedure for receiving of products from a ship to the tank farm</li> <li>○ Operational procedure for loading of products from the tank farm to a ship</li> <li>○ Determining the volume of product in a tank</li> <li>○ calculating time taken to stop an in/out product tank</li> <li>○ Reading of Tank Calibration chart</li> </ul>
ISASP/OG111	Chemical and Physical Properties of Petroleum Products	<ul style="list-style-type: none"> <li>○ Recognize the chemical and physical properties of crude oil and natural gas</li> <li>○ Point out the atomic structure of hydrocarbon molecules</li> <li>○ Distinguish between the four major classes of hydrocarbon molecules – paraffins, olefins, naphthenes and aromatics</li> <li>○ Identify the characteristics of esters</li> </ul>
ISASP/OG112	Supply Chain at the Downstream Industry	<ul style="list-style-type: none"> <li>○ Elements of supply chain management</li> <li>○ Lean, green and agile</li> <li>○ Supply chain strategy</li> <li>○ Supply chain dynamics and optimisation</li> <li>○ Supply chain improvement and systems</li> </ul>
ISASP/OG113	Types of Pipelines	<ul style="list-style-type: none"> <li>○ Flow Pipelines</li> <li>○ Gathering and Feeder Pipelines</li> <li>○ Crude Trunk Pipelines</li> <li>○ Petroleum Product Trunk Pipelines</li> </ul>

ISASP/OG114	Pipeline Regulations and Standards	<ul style="list-style-type: none"> <li>○ Regulatory engagement and process</li> <li>○ Stakeholder engagement</li> <li>○ Environmental planning and assessments</li> <li>○ Environmental control measures</li> <li>○ Design codes and standards</li> <li>○ Code or spec breaks</li> <li>○ Pipeline materials</li> <li>○ Stress considerations</li> <li>○ Buoyancy Control</li> <li>○ Pipeline Trench Design</li> </ul>
ISASP/OG115	Pipeline Configurations and Operations	<ul style="list-style-type: none"> <li>○ Oil pumping and compressor stations</li> <li>○ Pipeline product storage</li> <li>○ Pipeline cleaning</li> <li>○ Communications</li> <li>○ Petroleum product shipment</li> <li>○ Pipeline and Marine Receipts</li> <li>○ Product receipt and delivery</li> <li>○ Batch shipments and interface</li> <li>○ Environmental protection</li> </ul>
ISASP/OG116	Marine Tankers and Barges	<ul style="list-style-type: none"> <li>○ Tank ship dangerous liquid</li> <li>○ Tank ship familiarization (dangerous liquid)</li> <li>○ Tank ship familiarization (Liquefied gasses)</li> </ul>
ISASP/OG117	Crude Oil petroleum products marine vessels	<ul style="list-style-type: none"> <li>○ Supertankers</li> <li>○ Oil tankers</li> <li>○ Barges</li> </ul>
ISASP/OG118	Motor Vehicle and Railroad Transport of Petroleum Products	<ul style="list-style-type: none"> <li>○ Introduction to the oil &amp; gas industry</li> <li>○ Crude oil logistics fundamentals</li> <li>○ Types of vessels (offshore)</li> <li>○ Offshore oil and gas logistics</li> <li>○ Maritime transportation and tanker charter</li> <li>○ Functional areas of maritime logistics</li> </ul>

		<ul style="list-style-type: none"> <li>○ Downstream distribution planning</li> <li>○ FPSO Standards and Codes</li> <li>○ Downstream loading &amp; discharge plan.</li> <li>○ Terminals and Storage</li> <li>○ Understand local legislations, regulations, standards and good practices</li> <li>○ Petroleum products storage</li> <li>○ Oil and gas transportation accident</li> <li>○ Supply chain economics</li> </ul>
ISASP/OG201 9	Loading Rack fire protection	<p>This section describes the design and installation of the new [and modified] portions of the Fire Protection System and a new Foam Fire Protection System for the _____.</p> <p>The design flow rate shall be based on the information indicated on the drawings and this specification. The [modified and] new portion[s] of the fire protection system shall be in accordance with NFPA 11, NFPA 13, NFPA 16, the Owner's insurance carrier _____, and the local fire protection Authority Having Jurisdiction. The Contractor is responsible for designing, furnishing, and installing all Fire Protection services, including but not limited to piping, wiring, equipment and devices as required for a complete, approved, and functioning system.</p>
ISASP/OG120	Aboveground Tank Storage of Liquid Petroleum Products	<ul style="list-style-type: none"> <li>○ Terminals and bulk plants</li> <li>○ Tank Farms</li> <li>○ Storage Tanks <ul style="list-style-type: none"> <li>i. Atmospheric Cone Roof Tanks and Features</li> <li>ii. Atmospheric Floating Roof Tanks and Features <ul style="list-style-type: none"> <li>a. External Floating Roof Tanks</li> <li>b. Internal Floating Roof Tanks</li> </ul> </li> </ul> </li> <li>○ Tank Gauging and Sampling</li> <li>○ Tank Venting and Cleaning <ul style="list-style-type: none"> <li>i. Preliminary Preparations</li> <li>ii. Control of Ignition Sources</li> <li>iii. Removing Residue</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>iv. Isolating the Tank</li> <li>v. Vapour Freeing</li> <li>vi. Initial Entry, Inspection and Certification</li> <li>vii. Cleaning, Maintenance and Repair</li> <li>viii. Returning the Tank to Service</li> <li>ix. Fire Protection and Prevention</li> </ul>
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## **Instrumentations And Control Installation In The Oil And Gas Industry**

### **Course Description**

The course explains the concept of Custody Transfer for liquid petroleum products. Accuracy is important in terms of uncertainty of measurement; calibration; technical specifications and process requirements. Flow Measurement including orifice plate and DP transmitter; multi- beam ultrasonic flowmeter; Coriolis mass meter; turbine meters amongst others.

Level Measurement, traditional methods such as capacitance and hydrostatic techniques are covered together with more modern technologies such as ultrasonic and radar measurements.

### **Terminal & Pipeline Configuration**

Explanation on terminal tank gauging; Lease Automatic Custody Transfer (LACT); sediment and water considerations. Pipeline pressure and process characteristics. Truck custody transfer, marine and aviation, on-loading and off loading.

## **Introduction To Work Permit System In The Oil And Gas Industry**

Work Permit System has become very vital in the Oil and Gas industry. The implementation of a well understood permit to work will help in enhancing and improving safety standards in both the upstream and the downstream oil and gas industry and resulting in the reduction of the likelihood of undesired incidents or accidents in working area.

### **Program outline:**

1. Introduction
2. Works Requiring Permit

- Major and minor maintenance work
- Inspection
- Construction
- Alteration
- Hot work
- Cleaning activities of process equipment
- Entry into confined space
- Excavation
- Vehicle entry into process areas
- Work at height
- Handling of materials using mechanized means in operating areas
- Erection and dismantling of scaffold
- Radiography
- Isolation and energisation of electric equipment/ facilities

### **3. Types of work permit**

- Cold work permit
- Hot works
- Entry in a Confined Space Permit and Clearance
- Excavation Permit and clearances
- Electrical Isolation and Energisation Permit and Clearances
- Working at Height Permit
- Works Exempted / Partially Exempted from Requirement of Permit

### **4. General requirements of work permit**

### **5. Responsibilities of permit signatories**

- Shift in charge
- Head of Department
- Safety officer or Safety head
- Receiver/Executing Authority

### **6. Work permit procedure and guidelines**

- Electrical Isolation and Energisation Permit
- Permit for Working at Height
- General Permit Requirements
- Other Permit Requirements

7. **Surrendering of work permit**
8. **Surveillance and withdrawal of permit**
9. **Training and awareness**
10. **Audit of work permit system**

## **Oil Politics and Oil and Gas Management Oil and Gas**

### **Management**

- Strategic Management
- Oil and Gas Simulation
- Project Management
- Emergency Planning
- Environmental Law
- Corporate Social Responsibility
- Global Governance Initiatives
- Revenue Management
- Oil and Financial Trading

### **Introduction to Project Management in Oil and Gas**

- Project Economics, including Discounted Cash Flow evaluation
- Project Definition
- Planning and Resourcing
- Procurement
- Execution Supervision
- Commissioning and Start-Up