

**Training Program on “PETROLEUM REFINING TECHNOLOGY and PETROCHEMICALS”**

**PROGRAMME CONTENTS**

Sl.	Topics
1.	Inauguration
2.	Petroleum Refining Industry in India and Future Trends
3.	Recent developments in Petroleum Industry /Technologies
4.	Chemistry of Crude Oil: Composition and Classification
5.	Crude Oil Evaluation Techniques (for fuels/lube/feedstock)
6.	Lab distillation, their inter conversion and significance
7.	Pretreatment of Crude Oil/Desalting Operation
8.	General refinery configuration (Fuel, Lubes and Petrochemical Integration)
9.	LPG-domestic, industrial and Auto) & Motor spirit (Including Ethanol Blending)
10.	Naphtha – specifications for different end users, test methods and significance
11.	Kerosene / ATF and Diesel (Including Biodiesel)
12.	FO/LSHS/HPS – Grades/Specifications/Test Methods
13.	LOBS, Waxes and Greases – Grades/Specifications/Test Methods
14.	RPC/CPC/Needle Coke/Bitumen – Grades/Specifications/Test Methods
15.	Petrochemical products Specifications – LAB,PX,PTA, Propylene, Benzene, Toluene etc.
16.	Specialty Products – FGH/MTBE/Butene-1 /IOC-solvent/ White oil etc.
17.	Basic Testing Principles/Lab & Pilot Plant visits etc.
18.	Crude Oil Distillation (Atm & Vacuum)
19.	Column Internals and Operational Tips
20.	Fundamental – Operation of catalytic Reforming Units (CRU/CCRU)
21.	Fluid Catalytic Cracking (FCC/RFCCU)
22.	Liquid-liquid Equilibrium - Principle of Solvent Extraction
23.	Lube Extraction (NMP & Furfural)
24.	Solvent Extraction (BTX)
25.	De-asphalting of Short Residue for Lubes and other Feed Stocks
26.	Solvent Dewaxing, Deoiling and Manufacture of Waxes including Isodewaxing
27.	Hydrogen Generation Units – Steam Reforming Process
28.	Hydrogen Management / Pinch in Oil Refinery
29.	Diesel Hydro treatments (DHDS/DHDT)
30.	Hydro cracking Units HCU/OHCU
31.	Visbreaking unit
32.	Delayed Coking Unit/Technology
33.	LPG/Gas Treating Unit
34.	Isomerization/MSQ Units
35.	Alkylation Units
36.	Sour Gas Treatment(Amine – Absorption & Amine Recovery Units) Sour Water Treatment Units
37.	Sulphur Recovery Units
38.	Bitumen blowing Unit/Biturox Process and Bitumen Emulsion
39.	Product Blending Procedures/Systems and Advances

40.	Tank Farm Management and Receipt / Dispatch Operations in OM&S
41.	Industrial Water Treatment for Steam generation/Cooling
42.	Integration of Refinery and Petrochemicals – Olefins/Aromatics/Polymer
43.	Production of PX/PTA and Downstream Applications
44.	Polypropylene/MTBE/Butene-1 Units
45.	MEG and Down stream Products/Applications
46.	Solution Process (Swing Operations) for HDPE/LLDPE and Downstream Products
47.	Slurry Process technology for HDPE
48.	Production of LAB
49.	Naphtha /Gas cracker for olefins(Ethylene/Propylene) Production
50.	Rotary Equipments Operations and Reliability
51.	Heat Transfer Equipments (Exchangers/Coolers/Heaters/Boilers etc.) Operation, Safety and Reliability Issues
52.	Shift Management/Leadership during Normal/Emergency and Shut down activities
53.	Basics of Plant Simulation
54.	Distillation Column Design
55.	Column Internal & Tray Hydraulics
56.	Basics of Pinch (Hot, Cold & Grand Composite) & Heat Exchanger Train Synthesis
57.	Preliminaries of Heat Exchanger Design
58.	Basics of Vessel/Tanks/Process & Utility Piping /Flare Design
59.	Preliminaries of Process Equipment Data sheets and related standards(APIs, TEMA)
60.	Design case studies/simulators hands on practice
61.	ADVANCE Process control,
62.	Troubleshooting in reforming and FCC operation
63.	Refinery Economics (RPMS/IP Crude Procurement / Pricing etc.)
64.	Process Safety (Management of Change/HAZOP/Risk Analysis)
65.	Energy Conservation Practices/Systems/Audits
66.	Environment Management; Waste Water Treatment, Emission Control, CDM etc.
67.	Industrial heaters/ furnaces
68.	Pre commissioning and Commissioning of refinery units
69.	Alternative Fuels -LNG, CNG, Gas Hydrates etc.
70.	Role of Catalysts in Petroleum Refining
71.	Corrosion problem in Refinery
72.	Instrumentation Process Control
73.	Refinery Processes Energy Efficiency Measures/Energy Efficiency Opportunities
74.	Fundamental of Refinery Planning & Co-Ordination
75.	Project Management – Practices , Case Studies
76.	Valedictory