Training - Downstream Economics and Management

EAV-EN-P | Face-to-face only | 15 days

This course provides participants a complete view of the economic principles of the downstream sector as well as the methods necessary for the decision-making processes

Level

Knowledge

Public

Professionals from the refining, the petrochemicals and the distribution sectors in a management position where they need to deepen their understanding of all the essential economic aspects as well as the management tools used in the oil downstream sector

Objectives

Attendees will be able to implement the following skills:

- Analyze the economic fundamentals of the energy scene, with an awareness of the importance of market dynamics and its impact on the downstream oil economy
- Explain the resource/output balances of the refining industry
- Design and use the management and optimization tools of a refinery to increase its productivity
- Understand the elaboration of oil contracts and their clauses
- Understand the meaning of the terms used in the contracts and their operational, legal and financial scope
- Estimate the economic values of the various intermediate or semi-finished products
- Evaluate the economic profitability of a project
- Set up a logistic scheme and master different supply modes
- Analyze the technical and economic aspects of a logistics chain
- Identify and analyze the possible synergies between refining and petrochemicals
- Explain the economic stakes and the main parameters influencing the profitability of these sectors

Pedagogical & technical resources

- Numerous case studies and group exercises
- Use of spreadsheets and the Excel solver (especially for economic optimizations and cash flow schedules)

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the

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specific needs of learners from the professional world

Program

TECHNICAL-ECONOMIC FRAMEWORK OF THE OIL FLOW — 2 days

Fundamentals of supply and demand of crude oil and products
Refining supply: overcapacity, types and quantities produced.
Main issues: deep conversion, new product specifications, integration of petrochemicals, environment, etc.
Technical reminder of the main refining units: distillation, conversion, blending, etc.
Evolution of refining schemes.
Planning of supply, crude arbitrage, product quality, etc.
From monthly schedule to (daily) scheduling.
Refining costs and margins.
Optimization of margins from different units.
Case study: Valuation of intermediate products from a FCC (Fluid Catalytic Cracking) unit.

MARKETS & CONTRACTUAL FRAMEWORK FOR PETROLEUM PRODUCTS — 3 days

Price determination: market equilibrium (supply/demand) and its implications, trade-offs
Main parameters influencing the price of a crude oil or the price of a petroleum product
Presentation of the physical and financial markets
Methodology and role of reporting agencies: Platt's, Argus...
Notion of product, benchmark crude
Maritime transport component and estimation of the cost of maritime transport (use of "worldscale")
Review of the main types of chartering (voyage, time charter, bareboat...)
Roles and responsibilities of independent inspection companies
On board binder
Organization of a trading room.
Roles and responsibilities of each "office" (front-office, middle-office, back-office)
Functional review (legal, audit...) of contracts, review of Incoterms
Negotiation and drafting of a contract
Main clauses and their implications: Operational (laycan, laytime, NOR, demurrage), Financial (payment terms, credit limit, L/C (letter of credit), silent cover...), Customs, fiscal, legal (safeguard clause, force majeure clause...)
GT&C's (General Terms & Conditions) and risk assessment of each clause
Follow-up of the contract
Case studies: Purchase/sale of crude oil and products; hedging strategies

LINEAR PROGRAMMING — 2 days

Linear equations, preparation of a matrix.
Objective function, profit maximization or cost minimization.
Optimization of refining operations: Simplex method, graphical interpretation.
Analysis of linear programming results: properties of the optimum, validity domain of the results, marginal costs.
Sensitivity analysis.
Case study: construction of a refinery model matrix (material balances, product specifications, energy balance, objective function, etc.); group work on the optimization of a refinery operation.

INVESTMENT PROFITABILITY STUDIES — 3 days

Value creation and cost of capital, cash flow, discounting principle and impact of inflation.
Difference between income statement and cash flow. Key performance ratios at the corporate level.
Development of cash flow schedules: differences between income statement and cash flow, taking into account taxation, impact of working capital requirements, valuation horizon.
Economic evaluation criteria: Net Present Value (NPV), Internal Rate of Return (IRR), payback time, financial exposure, profitability index. Impact on project profitability.

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Introduction to risk analysis: Identification and consideration of risks (PESTLE analysis, risk premium), sensitivities ("Tornado", "Spider" graphs), scenarios.
Project financing and return on equity.
Exercises:

- Calculating the WACC of a company.
- Calculating the Impact of working capital on a polypropylene plant project.
- Profitability analysis of a Petrochemicals plant.
- Profitability analysis of a Bio refinery (ungeared and geared).

SUPPLY CHAIN MANAGEMENT — 3 days

Supply chain fundamentals
Mechanisms of inventory management: specifics, types of flows, inventory diagrams, lead times, product seasonality, impact of specification changes
Technical aspects of storage and transportation: underground and overhead storage, inventory measurement, losses, facility security, pipelines, safety stocks
Economic aspects of the logistics chain: costs, role of warehouses, sizing, investments, maintenance, contracted transportation
General and contractual characteristics of maritime transport
Benchmarking: performance indicators, operational optimization, economic optimization.
Case study: Analysis of a company's supply chain.

REFINING & PETROCHEMICALS SYNERGIES — 2 days

Main petroleum products and petrochemicals: reminder of key specifications.
Refining schemes vs. petrochemical schemes.
HSE specificities of refining (H2S, etc.) and petrochemicals (product instability, etc.)
Synergies of utilities exchanges (H2, gas, fuel oil)
Synergies of supplies: ethane, LPG, naphtha, atmospheric gas oil, vacuum distillate
Product exchanges (pyrolysis, olefins)
Joint processing of aromatic cuts and pooling of services
Refining vs. petrochemical margins and costs: gains from synergies
Case study: economics of a refinery, a steam cracker and the integration of the two using some synergy points.

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