

# West African Perspectives on Refining Operations & Economics

## Technology of Refining Processes



Focus on: **The Manager** ☒ **The Specialist** ☒ **Spotlight Programme** ☐ **Hands-on Skills** ☐



### Course Overview

This course provides a comprehensive foundation in petroleum refining technology, tailored to the West African refining landscape. Participants will learn about crude oil properties, refining processes, and product specifications while exploring regional challenges such as low refinery utilization, reliance on imports, and the transformative impact of the Dangote Refinery and regional upgrades.

Through case studies and practical exercises, attendees will connect global refining technologies with local realities in Nigeria, Ghana, and Côte d'Ivoire. The course equips participants with both technical knowledge and economic insights to optimize refinery operations, evaluate investment opportunities, and align with regional energy security goals.

Course Objectives		This Course is Ideal For:	
1	<b>Understand West African Crude Oils</b> – Characteristics of Bonny Light, Qua Iboe, Akpo condensate, Jubilee, and Dalia.	✓	Refining technologists & process engineers
2	<b>Gain Insights into Refinery Technologies</b> – Atmospheric/vacuum distillation, cracking, coking, hydroprocessing, and blending.	✓	Refinery operations staff, shift supervisors & plant managers
3	<b>Evaluate Regional Refining Capacity &amp; Utilization</b> – Lessons from Port Harcourt, Warri, Kaduna, Tema, SIR Abidjan, and Dangote.	✓	Corporate planners & business analysts in refining and trading
4	<b>Apply Real-World Case Studies</b> – Analyze refining economics in Africa's import-dependent fuel markets.	✓	Project managers, engineers, and scheduling professionals
5	<b>Explore Refinery Economics</b> – Cost estimation, product pricing, and residue reduction strategies.	✓	Bankers, lawyers, and service providers supporting refining projects
6	<b>Develop Industry-Relevant Skills</b> – Troubleshooting, process optimization, and aligning refining with market demands.	✓	Policy makers & regulators engaged in refining and downstream operations

### Course Content

Day	Theme	Coverage
1	Refinery Technology & Regional Crude Characteristics	<ul style="list-style-type: none"> <li>Origins &amp; properties of crude oils (with West African examples)</li> <li>Crude assays: Bonny Light vs heavier crudes (Dalia, Escravos)</li> <li>Refinery complexity and configurations in West Africa</li> <li>Product specifications: gasoline, diesel, jet fuel, LPG, fuel oil</li> </ul>

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		<ul style="list-style-type: none"> <li>Case Study 1: Why most West African refineries operate below capacity</li> </ul>
2	Crude Processing Technologies	<ul style="list-style-type: none"> <li>Desalting, atmospheric &amp; vacuum distillation</li> <li>Heavy oil processing: visbreaking, delayed coking, flexicoking</li> <li>Thermal vs catalytic processes in African refinery contexts</li> <li>Case Study 2: Port Harcourt vs Dangote Refinery – processing capabilities compared</li> </ul>
3	Motor Fuel Production	<ul style="list-style-type: none"> <li>Fluid catalytic cracking (FCC) &amp; hydrocracking</li> <li>Isomerization, alkylation &amp; catalytic reforming</li> <li>Hydrotreating for clean fuel standards (low sulfur diesel, Euro V)</li> <li>Case Study 3: Meeting West African gasoline &amp; diesel demand through blending imports and refining outputs</li> </ul>
4	Supporting Operations	<ul style="list-style-type: none"> <li>Blending operations to meet local specifications</li> <li>Hydrogen production and refinery gas plants</li> <li>Acid gas treatment and sulfur recovery in refining</li> <li>Case Study 4: Tema Refinery (Ghana) &amp; SIR Abidjan – regional lessons in operations &amp; upgrading</li> </ul>
5	Refining Economics & Market Integration	<ul style="list-style-type: none"> <li>Refinery economics in West Africa: cost drivers &amp; product pricing</li> <li>Residue reduction strategies &amp; asphalt/fuel oil markets</li> <li>Economic evaluation of refinery upgrades vs imports</li> <li>Regional cooperation opportunities (Nigeria, Ghana, Côte d'Ivoire)</li> <li>Case Study 5: Dangote Refinery's potential impact on West African fuel imports &amp; pricing</li> <li>Group discussions and course wrap-up</li> </ul>

### Course Assessment

#### Participants will be assessed on:

Participation in sessions  
Completion of exercises & case studies  
Performance in assessments

### Certification

Upon successful completion of the course, participants will receive a **Certificate of Successful Completion**, along with a **Transcript of Marks** showing the performance by grade in each element of assessment and overall.

### Course Instructor

With BSc and PhD degrees from the UK, and with over 30 years of refinery technology, operations, and management expertise for several famous-name oil companies, this speaker is now an internationally-famous chemical engineering consultant.

As a Chartered Chemist, a Member of the Royal Society of Chemistry and a Member of the American Institute of Chemical Engineers, he holds honorary appointments at a number of European universities and conducts cutting-edge research into vacuum distillation, gas recovery, absorption and pyrolysis.