# Advanced Hydrogen Lifecycle and Economic Evaluation Training Course

29 August – 2 September 2027
Johannesburg

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**Ref:** 1150_184952 **Date:** 29 August – 2 September 2027 **Location:** Johannesburg **Fees:** 4500 Euro

## Overview

Advanced Hydrogen Lifecycle and Economic Evaluation Training Course is a one-week course for energy finance, engineering, project development, investment, and strategy teams who leave with a Hydrogen Pathway Evaluation Pack. Participants combine hydrogen lifecycle assessment, hydrogen techno-economic analysis, levelized hydrogen cost modeling, hydrogen emissions accounting, and hydrogen investment scenario analysis to compare production and delivery pathways. The course turns inconsistent assumptions into traceable decisions. Agile Leaders Training Center develops hydrogen lifecycle and economic evaluation capability.

## Who Should Attend

- Teams responsible for energy project finance and investment screening
- Functions responsible for hydrogen project development and feasibility
- Engineers responsible for process assumptions and technology comparisons
- Analysts responsible for emissions, costs, and scenario modeling
- Strategy teams responsible for pathway and portfolio decisions

The course assumes participants can interpret engineering data and spreadsheet-based financial models, and it leaves out introductory hydrogen science and detailed process design.

## Departments and Industries

The course supports departments and industries that evaluate hydrogen assets, supply chains, and capital commitments.

- Energy finance, corporate strategy, and investment committees
- Renewable power, utilities, and industrial gases
- Refining, chemicals, steel, and fertilizer operations
- Transport, logistics, ports, and infrastructure development
- Engineering, sustainability, and project controls

## Learning Objectives

By the end of this course, participants will be able to:

- Compare hydrogen value-chain pathways using consistent boundaries
- Build energy and material balance assumptions
- Apply lifecycle emissions accounting to pathway alternatives
- Build CAPEX, OPEX, and levelized cost models
- Analyze sensitivities, scenarios, and uncertainty ranges
- Evaluate investment options through an integrated decision pack

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## Course Agenda

## Day 1: Pathway Boundaries and Evidence

- Hydrogen Value-Chain Pathway Map
- Goal and Scope Definition Canvas
- Well-to-Gate System Boundary Diagram
- Functional Unit and Reference Flow Method
- Data Quality and Assumption Register

## Day 2: Technical Performance and Emissions

- Energy and Material Balance Worksheet
- Electrolyzer Efficiency and Capacity Factor Model
- Carbon Capture Performance Assumption Sheet
- IPHE Production Emissions Boundary Method
- Greenhouse Gas Intensity Calculation Model

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## Day 3: Cost and Financial Architecture

- Capital Expenditure Breakdown Structure
- Operating Cost Driver Matrix
- Replacement and Decommissioning Cost Schedule
- Discounted Cash Flow Assumption Model
- Levelized Cost of Hydrogen Calculation

## Day 4: Scenarios and Investment Decisions

- Pathway Comparison Scorecard
- One-Way Sensitivity Tornado Chart
- Scenario and Uncertainty Range Matrix
- Offtake and Revenue Assumption Map
- Hydrogen Investment Screening Gate

## Day 5: Hydrogen Evaluation Practice

- Exercise: Define Comparable Pathway Boundaries
- Exercise: Reconcile Energy and Emissions Inputs
- Exercise: Calculate Levelized Hydrogen Cost
- Exercise: Test Investment Sensitivities
- Capstone Exercise: Hydrogen Pathway Evaluation Pack

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## Practical Exercises

The course uses suggested activities to convert technical, emissions, and financial evidence into documented choices.

- Suggested activity: map boundaries for electrolysis and reforming pathways
- Suggested activity: reconcile power, feedstock, water, and emissions assumptions
- Suggested activity: construct a levelized cost model with CAPEX and OPEX drivers
- Suggested activity: prepare an investment recommendation under alternative scenarios

## FAQs

### Who suits advanced hydrogen lifecycle and economic evaluation training?

Energy finance, engineering, project development, investment, and strategy teams suit the training. Participants should already interpret technical data and spreadsheet financial models.

### How does hydrogen lifecycle and economic evaluation differ from hydrogen fundamentals training?

Hydrogen lifecycle and economic evaluation focuses on boundaries, emissions, costs, uncertainty, and investment choices. Hydrogen fundamentals training focuses on basic technologies, properties, applications, and terminology.

### What is included in hydrogen lifecycle assessment?

Hydrogen lifecycle assessment defines a functional unit and system boundary, quantifies energy and material flows, assigns upstream and direct emissions, and compares pathways on a consistent basis.

### How is levelized hydrogen cost used in project evaluation?

Levelized hydrogen cost converts capital, operating, replacement, financing, utilization, and production assumptions into a comparable cost per unit of hydrogen over the analysis period.

### Which uncertainties matter in hydrogen investment analysis?

Electricity and feedstock prices, utilization, efficiency, equipment cost, financing, carbon intensity, delivery configuration, and offtake assumptions commonly drive hydrogen investment results.

## Conclusion

Participants take back a Hydrogen Pathway Evaluation Pack containing boundary maps, balance sheets, emissions calculations, cost models, sensitivity charts, and a screening recommendation. The pack changes disconnected technical and financial inputs into an auditable comparison. It helps teams test alternatives and explain investment decisions.