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Green Hydrogen Electrolyser Technology and Plant Basics Training Course

7 – 11 March 2027
Muscat

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Ref: 3153_119804 **Date:** 7 – 11 March 2027 **Location:** Muscat **Fees:** 6500 GBP

Green Hydrogen Electrolyser Technology and Plant Basics is a 1-week training course for engineers and project staff entering hydrogen projects, and it ends with each participant building an electrolyser option comparison sheet for a real or sample project. As heavy industry seeks low-carbon fuels, organisations need staff who can read stack datasheets and plant layouts with confidence. Jupiter Prime Training offers this course for newcomers to the field.

Why Green Hydrogen Electrolyser Technology Matters Now

Variable wind and solar output changes how a stack is loaded across the day, so plant designers must plan for ramping, standby and degradation. Industrial buyers in refining, ammonia, steel and transport want firm supply contracts, which puts pressure on availability and purity. Lenders question stack replacement, water sourcing and safety distances. A project team that chooses the wrong stack chemistry, undersizes water treatment or misjudges hydrogen hazards can face delays, lost output and costly redesign, while a prepared team can defend its choices.

Who Gains Most from Green Hydrogen Electrolyser Technology

- Electrical engineers responsible for rectifiers and the renewable power link
- Process engineers responsible for water purification and gas purity
- Mechanical engineers responsible for compressors, pressure vessels and storage layout
- Project engineers responsible for scope and vendor interfaces
- Health and safety staff responsible for hazardous zones and ventilation

Early-stage project teams gain most when electrical, process and safety members attend together.

Green Hydrogen Electrolyser Technology Capabilities

Participants leave able to read electrolyser offers critically and to link stack behaviour with the plant around it.

- Compare alkaline, proton exchange membrane and solid oxide stacks on efficiency, flexibility and maturity — technology selection
- Calculate hydrogen output, power demand and water consumption — early sizing
- Specify water treatment steps from raw source to deionised feed — process design scope
- Assess how variable renewable supply affects stack loading and degradation — power supply strategy
- Weigh compression and storage options against delivery pressure and offtake pattern — downstream configuration
- Apply hydrogen hazard principles to separation distances and plant layout — site safety review

Key Green Hydrogen Electrolyser Technology Terms

- Electrolyser stack — the assembly of cells where electricity splits water into hydrogen and oxygen.
- Balance of plant — the equipment around the stack, such as rectifiers, water treatment and drying.
- Specific energy consumption — the electricity needed to produce one kilogram of hydrogen.
- Stack degradation — the gradual loss of cell performance over operating hours, raising voltage and energy use.
- Turndown ratio — the lowest stable load an electrolyser can run at, compared with its rated capacity.
- Hazardous zone — an area where flammable gas may be present, limiting ignition sources.

Green Hydrogen Electrolyser Technology Day by Day

Day 1: Hydrogen Value Chain and Electrolysis Principles

- Hydrogen Colour Categories and Carbon Intensity — Positioning a Low-Carbon Supply Offer
- Water Splitting Chemistry and Cell Voltage — Reading Efficiency Claims in Vendor Offers
- End-Use Markets in Ammonia, Refining and Steel — Matching Plant Size to Offtake
- Charge Balance Between Cell Current and Output — Estimating Daily Hydrogen Production
- Project Phases From Concept to Operation — Setting Early Technical Scope

Day 2: Comparing Electrolyser Stack Chemistries

- Alkaline Electrolysers and Liquid Electrolyte Design — Choosing Mature Technology for Base Load
- Proton Exchange Membrane Stacks and Catalyst Needs — Handling Fast Load Changes
- Solid Oxide Cells and Heat Integration — Using Industrial Steam and Waste Heat
- Pressurised Versus Atmospheric Stack Operation — Reducing Downstream Compression Duty
- Degradation Curves and Stack Replacement Intervals — Planning Lifetime Operating Cost

Day 3: Power Supply and Water Treatment

- Rectifier and Transformer Arrangements — Sizing the Electrical Interface to the Stacks
- Wind and Solar Profiles With Battery Buffering — Setting Stack Loading Strategy
- Grid Connection Versus Islanded Renewable Supply — Balancing Availability and Carbon Intensity
- Raw Water Sources and Desalination Options — Securing Feed Water at Site
- Reverse Osmosis and Deionisation Trains — Meeting Stack Water Purity Limits

Day 4: Compression, Storage and Plant Safety

- Reciprocating and Diaphragm Compressors — Matching Delivery Pressure to the Offtake
- Pressurised Vessels, Tube Trailers and Salt Caverns — Choosing Storage for Buffer Duty
- Gas Drying and Oxygen Removal Units — Achieving Purity for Fuel Cells and Chemicals
- Hydrogen Flammability, Leak Detection and Ventilation — Defining Hazardous Zones
- Plant Layout and Separation Distances — Placing Stacks, Compressors and Storage Safely

Day 5: Practising the Electrolyser Option Comparison Sheet

- Sizing Calculation for a Sample Plant — Applying Output, Power and Water Estimates
- Stack Chemistry Scoring Against Project Needs — Applying Flexibility and Maturity Criteria
- Power Supply and Water Treatment Selection — Applying Interface Choices to the Site
- Safety and Layout Check of the Chosen Configuration — Applying Hazardous Zone Principles
- Electrolyser Option Comparison Sheet — Presenting a Recommended Configuration to the Project Team

Applying Green Hydrogen Electrolyser Technology After the Course

- Run a sizing check on a current or planned project, comparing vendor energy and water figures with your own estimates.
- Lead a review of the site layout, marking hazardous zones and separation distances.

Green Hydrogen Electrolyser Technology Questions FAQ

What is Green Hydrogen Electrolyser Technology and why does it matter now?

It is the equipment and plant that split water into hydrogen using renewable electricity. It matters now because industrial users want low-carbon fuel and feedstock, and plants must cope with variable wind and solar output.

Which roles gain most from Green Hydrogen Electrolyser Technology training?

Engineers and project staff new to hydrogen gain most. Each specialist sees how their part of the plant links to the stack and can ask vendors sharper questions.

How does Green Hydrogen Electrolyser Technology training differ from a hydrogen economics course?

It focuses on the equipment and plant rather than market pricing or investment structures. Stack chemistries, water treatment, power interfaces, compression and safety are the core.

What do you bring back from Green Hydrogen Electrolyser Technology training?

You bring back a completed comparison of electrolyser options for a sample or real project. It covers sizing, stack choice, power, water, storage and layout.

Green Hydrogen Electrolyser Technology: The Way Forward

The electrolyser option comparison sheet gives a project team a first, defensible view of which stack chemistry and plant configuration suits its site and offtake. It first informs the vendor shortlist. Project engineers and technical leads use it, and it is worth revisiting once real wind and solar profiles and site water analysis become available.