

GAS GENERATION · ALKALINE ELECTROLYSIS

Hydrogen Generation Plant

Alkaline water electrolysis from 5 to 2,000 Nm³/hr — hydrogen at 99.9% to 99.999% purity, delivered at up to 30 bar.

5–2,000

NM³/HR SINGLE-STACK
RANGE

99.999%

PURITY AFTER POLISHING

30 bar

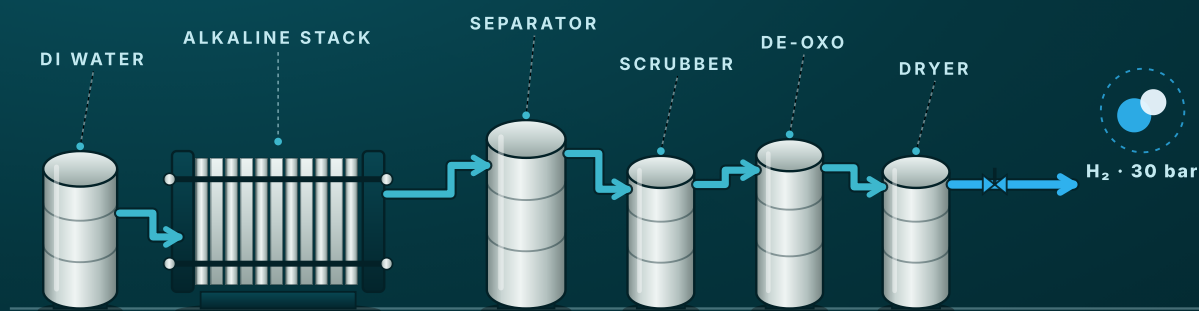
WORKING PRESSURE, UP TO

4.5–4.8

KWH/NM³ POWER DRAW

PROCESS OVERVIEW

HYDROGEN GENERATION PLANT



01 Overview

The Brise Hydrogen Generation Plant converts deionised water into high-purity hydrogen through controlled alkaline water electrolysis. Single-stack systems span 5 to 2,000 Nm³/hr (0.45 to 180 kg/hr), producing hydrogen at 99.9% purity from the stack and up to 99.999% after the integrated purification train — at working pressures up to 30 bar.

Every plant ships with the complete conditioning chain: gas-liquid separator, scrubber, De-Oxo unit and dryer, removing entrained electrolyte, residual oxygen and moisture across multiple stages. A Siemens PLC with remote-control capability sequences the entire plant, from water treatment to pressurised product delivery.

02 At a Glance



Wide capacity band

5–2,000 Nm³/hr from a single stack; parallel stacks beyond



Complete purification

Separator → scrubber → De-Oxo → dryer as standard



Pressurised product

Up to 30 bar without a separate compressor stage

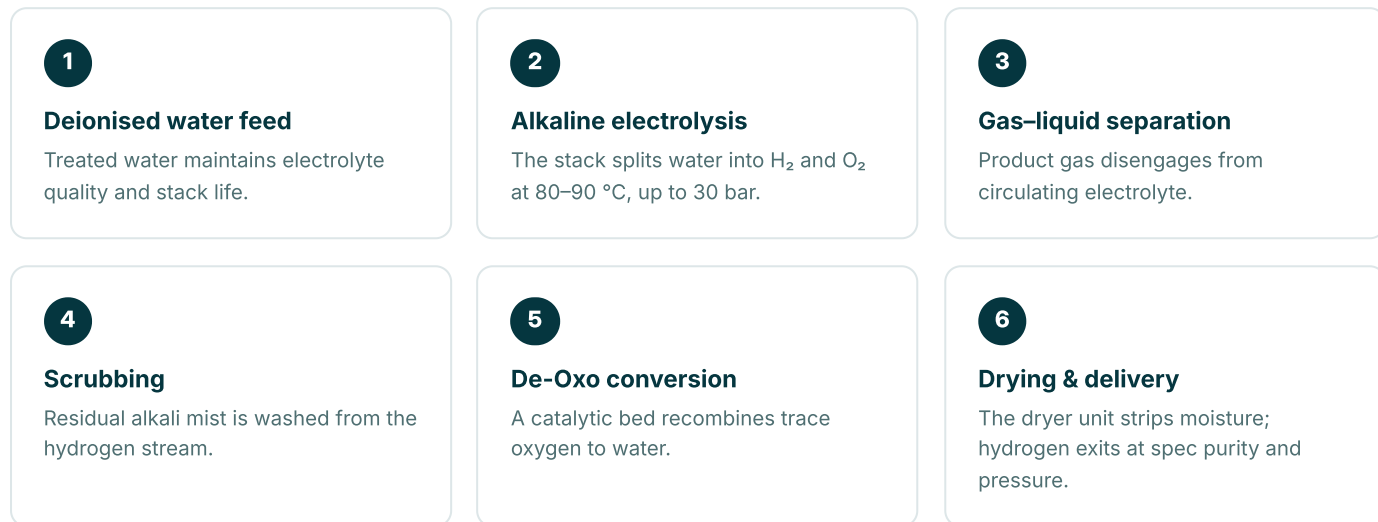


Compact plants

Up to 1 MW in standard footprint; custom designs above

03 Technology & Process

DC power drives electrolysis in a 30% w/w KOH electrolyte at 80–90 °C. The raw gas streams then pass a multi-stage purification train that lifts product quality to industrial and high-purity grades:



CELL REACTIONS	CATHODE	$2\text{H}_2\text{O}(\text{l}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g}) + 2\text{OH}^-(\text{aq})$
	ANODE	$2\text{OH}^-(\text{aq}) \rightarrow \frac{1}{2}\text{O}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) + 2\text{e}^-$
	OVERALL	$\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$

 End-to-end EPC delivery Concept, FEED and engineering through construction, commissioning and PG testing.	 Certified quality ISO 9001 / 14001 / 45001 systems; designs per PESO, IEC, ATEX & IS standards.	 Lifecycle partnership Operator training plus AMC/CMC programmes for maximum plant uptime.
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04 Technical Specifications

PARAMETER	SPECIFICATION
Technology	Alkaline water electrolysis
Capacity (single stack)	5–2,000 Nm ³ /hr · 0.45–180 kg/hr
Hydrogen purity	99.9% to 99.999%
Working pressure	Up to 30 bar
Operating temperature	80–90 °C
Power consumption	4.5–4.8 kWh/Nm ³ H ₂
Electrolyte	30% w/w aqueous KOH solution
Water quality	Deionised water
Purification train	Gas–liquid separator · scrubber · De-Oxo · dryer
Footprint	Standard up to 1 MW; custom designs for higher capacity
Control	Siemens PLC with remote-control capability

✓ Final specifications are confirmed per project during FEED / basic engineering. Figures shown are design values from Brise Chemicals product documentation; final specifications are confirmed during detailed engineering.

05 Key Features



Scalable capacity

From 5 Nm³/hr pilot duty to 2,000 Nm³/hr industrial supply on one platform.



Multi-stage purification

Separator, scrubber, De-Oxo and dryer deliver stable 5N-grade product.



Pressurised delivery

Up to 30 bar working pressure straight from the plant.



Efficient conversion

4.5–4.8 kWh/Nm³ specific consumption keeps hydrogen OPEX predictable.



Siemens PLC automation

Fully sequenced operation with remote-control capability.



Renewable compatible

Pairs with solar, wind and hybrid power for green hydrogen duty.

06 Applications & Industries



Transportation

Fuelling for hydrogen mobility programmes



Steel manufacturing

Reducing atmospheres and DRI applications



Fertiliser industry

Feedstock hydrogen for ammonia synthesis



Industrial processes

Hydrogenation, heat treatment, float glass



Power generation

Generator cooling and turbine applications



Energy storage

Power-to-hydrogen buffering of renewables



Heating & backup power

Clean fuel for burners and standby systems

07 Scope of Supply



Electrolyser stack & electrolyte circuit



Water treatment / DI polishing package



Purification train (separator, scrubber, De-Oxo, dryer)



Rectifier, MCC & Siemens PLC panels



Installation, commissioning & PG testing



Training & AMC/CMC support

**CERTIFIED &
COMPLIANT**

ISO 9001:2015

ISO 14001:2015

ISO 45001:2018

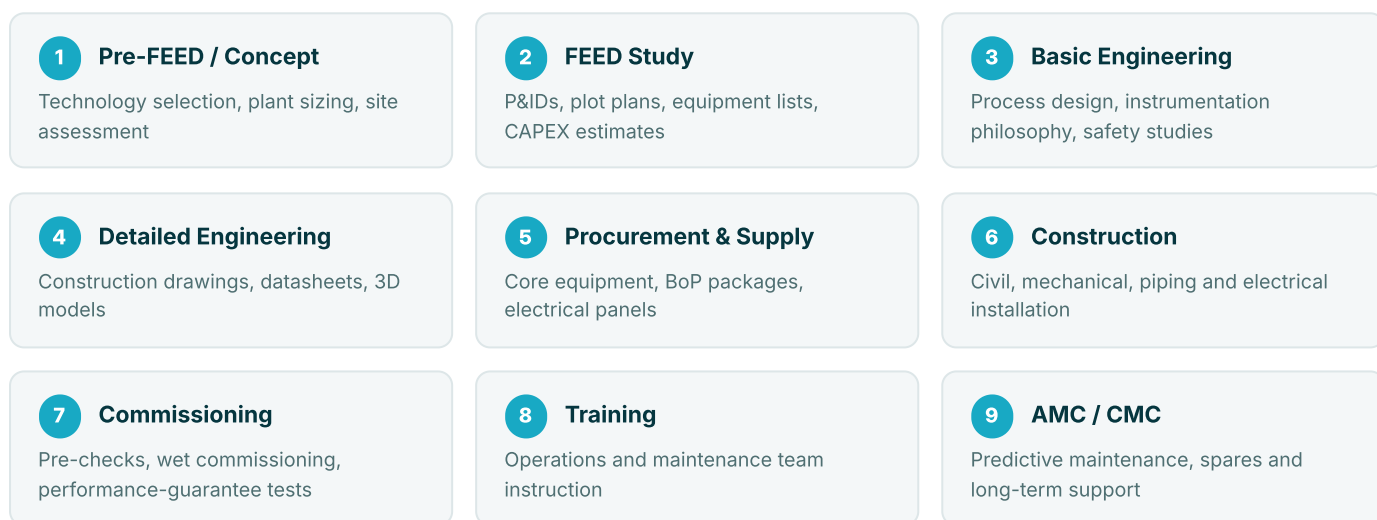
Designs compliant with PESO, IEC, ATEX & IS safety standards

08 About Brise Chemicals

Brise Chemicals Pvt. Ltd. is a technology-driven OEM and industrial gas plant technology owner, founded by professionals with deep experience across turbo-machinery, oil & gas, refineries and the industrial gas sector. From our engineering and fabrication base in Pune, India, we design, engineer, manufacture, install and commission cryogenic and non-cryogenic gas plants — spanning alkaline electrolysis, gas generation, gas purification, ammonia and methanol synthesis, air separation and hydrogen liquefaction.

Our name derives from the ballet step “Brisé” — a reminder that precision, integrity and discipline underpin everything we build. With in-house fabrication, certified welding, an HVOF catalyst-coating facility and rigorous QA/QC, we deliver complete EPC projects and stand behind them through long-term AMC/CMC support.

09 The Brise EPC Lifecycle



10 Industries We Serve



Let's engineer your plant.

Request a detailed proposal, FEED study or site consultation for the Hydrogen Generation Plant.

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