



# BRISE CHEMICALS

**OEM Of Industrial Gas Plant**

**Brise Chemicals: "Breaking Convention,  
Powering a Greener Tomorrow."**



# About Our Company

The name “Brise” originates from the classical ballet term “Brisé”, symbolizing precision, balance and disciplined movement. Much like the elegance of this traditional art form, Brise Chemicals Pvt. Ltd. stands for integrity, righteousness, and virtue—principles that guide every aspect of our engineering and innovation.

Brise Chemicals Pvt. Ltd. is a technology driven organization and an OEM & technology owner of industrial gas plants. We are specializing in Cryogenic and Non-Cryogenic Industrial Gas Plants, with certifications in **ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018.**

Our expertise lies in developing larger and complex industrial gas plants and integrated gas complex involving Oxygen, Hydrogen, Nitrogen, Ammonia, Methanol generation and purification plants with Methane, Carbon Dioxide Air separation plants purification plants. Our young and dynamic team provides a robust and hands on experience to spearhead the organization towards sustainable growth. Brise has a total of 10000 sq. Ft manufacturing facility equipped with 15MT overhead Crane, required machinery, testing facilities, sub-contractors, quality control engineers and domain expert engineers.

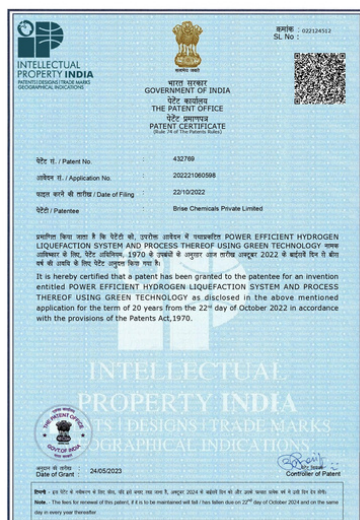
As a pioneer in clean and sustainable energy technologies, Brise proudly holds:

- Hydrogen Liquefaction **Patent No. 432769**
- Alkaline Electrolyser System **Patent No. 555368**

With deep expertise in Cryogenic Air Separation Plants (ASU), EPC execution, Hydrogen generation systems and adsorption-based gas plants for industrial and medical applications, Brise has established a reputation for excellence in process design, engineering and innovation.

We cater to industries such as healthcare, oil & gas, refineries, steel, energy and advanced manufacturing, delivering solutions that are efficient, reliable and environmentally responsible. Every project we undertake reflects our commitment to innovation, quality and performance—supporting India’s vision of technological advancement and sustainable industrial growth

## Patent Details



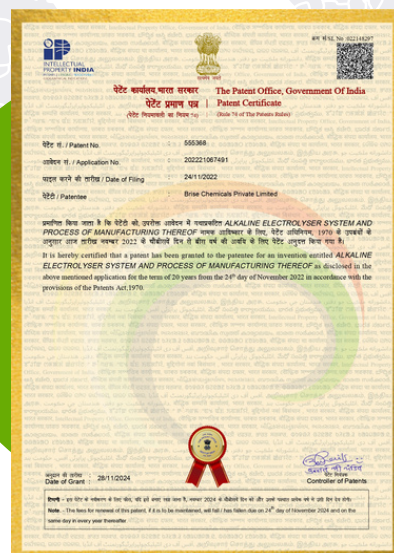
### Patent: Power-Efficient Hydrogen Liquefaction System (Patent No. 432769)

Brise Chemicals holds a granted patent for its Power Efficient Hydrogen Liquefaction System and Process Using Green Technology, showcasing a breakthrough in sustainable hydrogen handling. This innovation uses an advanced combination of feed-gas and refrigerant-gas circulation units to significantly reduce power consumption during liquefaction. The technology delivers higher efficiency, lower operational cost and supports the transition toward clean, green hydrogen infrastructure.



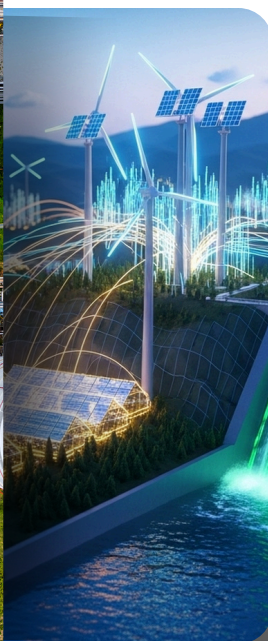
## Patent: Alkaline Electrolyser System (PatentNo.555368)

The company also owns a patent for its Alkaline Electrolyser System and Manufacturing Process, designed to bring down both capital and operating costs in hydrogen production. The system uses a compact stack of bipolar plate assemblies, enabling efficient electrolysis with reduced power usage and simplified manufacturing. This innovation strengthens Brise Chemicals' role in delivering practical, scalable and cost-effective green hydrogen solutions.



## Industries we serve

- Healthcare & Medical
- Oil & Gas
- Steel & Metal Processing
- Chemical & Petrochemical
- Energy & Power Generation
- Food & Beverage
- Electronics & Semiconductor
- Automotive & Manufacturing





# Brise In-house Capabilities

1

## Project Management

Brise ensures smooth and reliable project delivery through expert LSTK management. Our team drives every phase—from planning to handover—with precise scheduling, cost control and proactive risk management.

2

## Advanced Programming & Control Systems

Our PLC, SCADA and DCS-based control systems , enabling precise automation of industrial gas plants. Our expertise ensures optimized process control, safety interlocks and real-time monitoring for stable and efficient operations.

3

## In-House Catalyst Coating Facility

Brise operates a specialized High Velocity Oxy-Fuel (HVOF) coating facility designed to meet the demanding requirements of hydrogen production and gas processing applications.

4

## Process Engineering

Brise has strong expertise in industrial gas technologies including ASU, Hydrogen, Syngas, CO<sub>2</sub> capture and LNG. Our team develops detailed PFDs and P&IDs, performs heat and material balances and carries out precise equipment sizing and specification.

5

## Fabrication

Brise has fully integrated fabrication capabilities for industrial gas and hydrogen projects, supported by advanced workshops and strict quality systems. Our fabrication processes follow global standards with certified welding procedures, NDT inspection and rigorous QA/QC to ensure reliability, safety and long service life of all fabricated equipment.



# Hydrogen Generation plant

## Technical Specification

Parameter	Specification
Technology	Alkaline Water Electrolysis
Hydrogen Production Capacity	5 to 2,000 Nm <sup>3</sup> /hr (single stack )
H2 capacity	0.45 to 180 kg/hr
Hydrogen Purity	99.9% to 99.999%
Working Pressure	Up to 30 bar
Working Temp	80 to 90 °C
Power Consumption	4.5 to 4.8 Kwh /Nm <sup>3</sup> of h2
Water Quality	Deionized Water
Electrolyte Solution	30 % W/W aqueousKOH solution
Footprint	Upto 1 MW and customize design for higher capacities
Control System	Siemens PLC with remote control capabilities.



### Application

- Transportation
- Steel
- Fertilizer industry
- Industrial processes
- Power generation
- Energy storage
- Heating applications
- Backup power systems

## Process Description

**Brise Chemical Private Limited** offers an advanced hydrogen production system that converts de-ionized water into high-purity hydrogen through a controlled electrochemical process. The generated H<sub>2</sub> and O<sub>2</sub> gases pass through a multi-stage purification line to ensure superior output quality. Our system includes a Gas-Liquid Separator, Scrubber, De-Oxo Unit and Dryer Unit for effective removal of impurities and moisture. Each stage is designed for maximum reliability, safety and efficiency.

The result is a clean, stable and high-purity hydrogen supply suitable for diverse industrial applications and Processes.

# Electrolyser

## Technical Specification

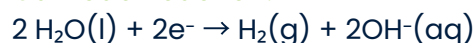
Category	Specification
Electrolyte	30% NaOH / KOH
Stack Size (Energy Consumption)	3.8 – 4.4 kWh/Nm <sup>3</sup>
Operating Temperature	70 – 90 °C
Operating Pressure	1–30 barg
Ambient Temperature	5 – 35 °C
Cell Voltage	230 – 420 V
Current Density	0.2 – 0.8 A/cm <sup>2</sup>
Stack Current	100 – 4000 A
Cell Active Area	125 – 20,000 cm <sup>2</sup>
Hydrogen Purity (H <sub>2</sub> )	99.99 – 99.9999%
Oxygen Purity (O <sub>2</sub> )	99.99 – 99.9999%
Oxygen Limit in H <sub>2</sub>	< 2 ppm v
Moisture Content	< 2 ppm v



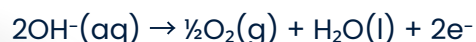
## Process Description

Brise Chemicals offers high-efficiency **bipolar alkaline hydrogen electrolyzers** that split high-purity De-ionized water into hydrogen and oxygen using DC power. In our compact bipolar design, hydrogen forms at the **cathode** and oxygen at the **anode**, delivering higher efficiency and reduced internal losses. The system operates at **0–30** bar, producing pressurized hydrogen without the need for a separate compressor.

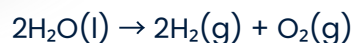
### Cathode Reaction:



### Anode Reaction:



### Overall Reaction:



The generated oxygen can be released or utilized, while hydrogen can be stored, compressed, or used in various clean-energy applications.



# Brise Electrolyser Key Features

Category	In-House Capability Focus	Key Expertise & Functions
I. Core Technology OEM (Electrolyzer Stack)	Product Design & Manufacturing Mastery	<ul style="list-style-type: none"><li>Cell/Stack Fabrication: Manufacturing of proprietary Bipolar Plates (BP), specialized Electrode Coating techniques and high-efficiency Cell Stack Assembly.</li><li>R&amp;D and Testing: Continuous stack efficiency improvement.</li></ul>
II. Balance of Plant (BOP) Integration	Process System Engineering & Safety	<ul style="list-style-type: none"><li>Process Engineering: Design and integration of the electrolyte loop, Gas Purification.</li><li>Power Electronics: Specification/supply of specialized Rectifiers and DC power integration with the stack.</li><li>Control Systems</li></ul>
III. EPC Execution (Balance of System - BOS)	Project Construction & Field Installation	<ul style="list-style-type: none"><li>Site Management: Experienced teams for large-scale Installation and civil/mechanical construction.</li><li>HSE &amp; Quality: Hydrogen-specific safety protocols and high-purity piping QA/QC</li></ul>
IV. Commissioning & O&M	Performance Guarantee & Asset Reliability	<ul style="list-style-type: none"><li>Start-up: Dedicated teams for Pre-Commissioning and Final Commissioning (C&amp;C), performance guarantee testing, and client training.</li><li>Operations &amp; Maintenance (O&amp;M): Provision of comprehensive long-term service contracts, including Predictive Maintenance and internal capability for Stack Refurbishment/Replacement.</li></ul>



## Application

- Industrial hydrogen production
- Green hydrogen for fuel cells and mobility
- Steel, refinery and chemical industries
- Ammonia and methanol production
- Power generation & renewable energy storage

# Green Ammonia Plant

## Technical Specification

Parameter	Description
Technology	Haber-Bosch process
Ammonia Production Capacity	1 TPD to 200 TPD
Operating pressure	150Bar- G – 300 Bar-G
Final Product	<b>Green Ammonia (NH<sub>3</sub>)</b> , Purity: 99.99% ( custom 6 N)
Ammonia plant efficiency	<b>85 %</b>
Specific Energy Consumption	Based on input details received from client
H2: N2 Feed Ratio	3:1



## Process Description

Our integrated system efficiently produces **hydrogen, nitrogen and ammonia** for industrial applications. Hydrogen and nitrogen are purified and compressed before integrating in reactor. The H<sub>2</sub> and N<sub>2</sub> gas is then combined in a high-pressure mixer and is further sent to the **Haber-Bosch reactor** for ammonia production. The ammonia gas produced is then further cooled in a high purity cryogenic distillation to liquid ammonia which is then separated, collected and stored, ready for downstream applications in chemicals, fertilizers and energy industries. The system is designed for **high efficiency, safety and continuous operation**, ensuring consistent, high-quality output. It provides a reliable solution for industries aiming for sustainable and scalable production.

## Application

- Fertilizer production
- Energy storage
- Fuel for power generation
- Marine and heavy-duty transport fuel
- Chemical industry feedstock



# Green Methanol Production plant

## Technical Specification

Parameter	Description
Feedstock	CO <sub>2</sub> (captured) + H <sub>2</sub> (from electrolysis)
Main Reaction	CO <sub>2</sub> + 3H <sub>2</sub> → CH <sub>3</sub> OH + H <sub>2</sub> O
Operating Pressure	50 – 100 bar
Operating Temperature	200 – 280°C
Catalyst	Cu/ZnO/Al <sub>2</sub> O <sub>3</sub> (fixed bed)
Methanol Purity	99.99% (customized for high purity)
CO <sub>2</sub> Conversion (per pass)	15 – 25% (with gas recycle, 85–95%)
H <sub>2</sub> :CO <sub>2</sub> Feed Ratio	3:1

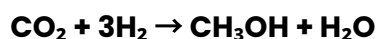


## Process Description

The Green Methanol Production Plant utilizes an advanced catalytic synthesis process to produce methanol from renewable hydrogen and captured carbon dioxide. The process begins with the purification and compression of two primary feedstock's:

**Green Hydrogen (H<sub>2</sub>)** – Sourced from electrolysis powered by renewable energy.  
**Carbon Dioxide (CO<sub>2</sub>)** – Captured from industrial emissions.

These feedstock's are mixed in a stoichiometric ratio and fed into a catalytic reactor, where they undergo hydrogenation at elevated temperatures (200–280°C) and pressures (50–100 bar) over a copper-zinc oxide or copper-zinc-alumina catalyst. The reaction is represented as:



The reactor output is cooled to separate crude methanol from unreacted gases and water. The crude methanol is purified through a multi-column distillation system to achieve fuel-grade purity (>99.99%). Unreacted gases are recycled to improve carbon efficiency.

## Application

- Fuel
- Chemical feedstock
- Hydrogen carrier
- Carbon recycling

# Oxygen Generation plant

## Technical Specification

Parameter	Specification
Technology	PSA / VSA
Oxygen Generation	Medical /Industrial
Purity Range	93% – 96%
O <sub>2</sub> Production Capacity	2–17 TPD (PSA / VSA)
Flow Rate	5–300 Nm <sup>3</sup> /hr for Medical and industrial (PSA)
Operating Pressure	1–9 barg (PSA), –0.55 to –7 barg (VPSA)
Dew Point	–60°C
Operation	Fully Automatic & Remotely Controlled



## Process Description

BRISE Oxygen Generators provide a continuous, on-demand oxygen supply using advanced PSA/VSA technology, where compressed and dried air passes through Zeolite that selectively adsorb nitrogen to deliver consistent 93–96% purity oxygen. Built for 24/7 operation, the system features fully automatic and remotely controlled functionality, low power consumption, quick installation and a compact footprint. By eliminating cylinder handling, delivery dependency and changeover losses, BRISE plants significantly reduce oxygen costs—often by 60–80%—while ensuring stable purity, high reliability and minimal maintenance through internationally certified components and robust engineering.

## Application

- Medical
- Industrial
- Aquaculture
- Water Treatment
- Glass Production



# Nitrogen Generation Plant

## Technical Specification

Parameter	Specification
Technology	Pressure Swing Adsorption
Purity Range	95% to 99.999%
Flow Rate Models	100 to 8,000 L/Min
Custom Capacity	Available for higher flow requirements
Outlet Pressure	5 Kg/cm <sup>2</sup>
Dew Point	-40°C to -80°C
Noise Level	<75 dB to <85 dB (Measured at 1 meter)
Operation	Fully Automatic & Remotely Controlled



## Process Description

BRISE Nitrogen Gas Generators deliver a continuous, on-site nitrogen supply through an efficient PSA process, where compressed and pre-treated air passes through Carbon Molecular Sieves that selectively adsorb oxygen to produce high-purity nitrogen up to 99.999%. The compact, fully automatic system ensures low operating costs, reduced carbon footprint and enhanced safety by eliminating cylinder handling and delivery dependence. Designed for reliable 24/7 performance with minimal maintenance.

## Application

- Food & Beverage
- Electronics
- Pharmaceuticals
- Oil & Gas
- Laboratories & Research

# UHP GAS Purification plant (N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, Ar)

## Technical Specification

Parameter	Nitrogen (N <sub>2</sub> )	Oxygen (O <sub>2</sub> )	Hydrogen (H <sub>2</sub> )	Argon (Ar)
Purity Range	99.9 – 99.999%	90 – 99.999%	99.9 – 99.999%	99.9-99.999%
Production Capacity	5 – 5,000 Nm <sup>3</sup> /hr	5 – 5,000 Nm <sup>3</sup> /hr	10 – 10,000 Nm <sup>3</sup> /hr	10-300 Nm <sup>3</sup> /hr
Technology Used	catalyst	catalyst	catalyst	catalyst
Typical Feed Pressure	6 – 10 bar	5 – 8 bar	8 – 20 bar	5 -12 bar
Dew Point	-40°C to -70°C	-40°C to -60°C	-60°C to -80°C	-70°C
CO / CO <sub>2</sub> Content	< 1 ppm	< 1 ppm	< 1 ppm	<0.02ppm
Moisture Content	< -60°C dew point	< -60°C dew point	< -70°C dew point	<0.01 ppm
Power Consumption	TBD	TBD	TBD	TBD



## Process Description

Our purification system produces high-purity, dry gases such as H<sub>2</sub>, N<sub>2</sub> and O<sub>2</sub>. The gas first passes through a Deoxidation Column to remove trace contaminants and then through a Three-Bed TSA Dryer to eliminate moisture. The three-bed configuration ensures continuous operation, with one bed drying, one regenerating and one cooling providing uninterrupted flow. This system delivers ultra-dry, contaminant-free gas with dew points as low as <-70°C, suitable for critical industrial and laboratory applications, while maintaining consistent performance, energy efficiency and low maintenance.

# Purification plant (CH<sub>4</sub>, CO<sub>2</sub>)

## Technical Specification

Parameter	Specification
Gas Separation / Purification	CH <sub>4</sub> / CO <sub>2</sub>
Purification Technology	PSA / TSA
Inlet feed Composition	CH <sub>4</sub> 50-75%, CO <sub>2</sub> 25-50%, H <sub>2</sub> , H <sub>2</sub> S, N <sub>2</sub>
Operating Pressure	4 – 10 barg
Purified Gas Delivery Pressure	3 – 8 barg
Gas Purity	CH <sub>4</sub> ≥ 95-99.99%, CO <sub>2</sub> ≥ 99.99%
Dew Point	< -40°C to < -60°C
Flow Capacity	50 – 5,000 Nm <sup>3</sup> /hr
Power Consumption	TBD

## Process Description

BRISE delivers specialized PSA-based purification systems for both methane enrichment and carbon dioxide recovery. Our Methane Purification Plant transforms raw biogas into high-purity biomethane through selective adsorption of CO<sub>2</sub>, N<sub>2</sub> and O<sub>2</sub> after thorough pre-treatment, delivering pipeline-ready renewable gas. The system achieves optimal recovery rates while maintaining compliance with international fuel standards. Simultaneously, our standalone CO<sub>2</sub> Purification Plant captures and refines carbon dioxide from various industrial streams to 95%-99.99% purity using similar advanced adsorption technology, providing high-value CO<sub>2</sub> for commercial applications. This dual-plant approach enables complete biogas utilization while creating additional revenue streams from waste gases.





# Air Separation unit

## Technical Specification of ASU

Specification	
Oxygen Production Capacity (Liquid - LOX)	10 TPD to over 100 TPD
Nitrogen Production Capacity (Liquid - LIN)	Varies (often 5–15% of total N <sub>2</sub> production)
Argon Production Capacity (Liquid - LAR)	Varies (often 2–5% of O <sub>2</sub> capacity)
Oxygen Purity (%)	≥ 99.5%
Nitrogen Purity (%)	99.9% to 99.99%
Specific Power Consumption (SEC)	0.4–0.6 kWh/Nm <sup>3</sup> of O <sub>2</sub>
Air Compressor Discharge Pressure	Typically 5–10 barg



## Process Description

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## Happy Clients





# Let's Stay Connected

Work together to bring clean,  
reliable energy to your business.



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