

SPECIALTY SYSTEMS · CRYOGENIC ASU

Air Separation Unit

Large-scale cryogenic plants engineered for high-volume production of liquid oxygen, nitrogen and argon at low specific power consumption.

LOX·LIN·LAR

LIQUID O₂, N₂ & ARGON
PRODUCTS

Cryo

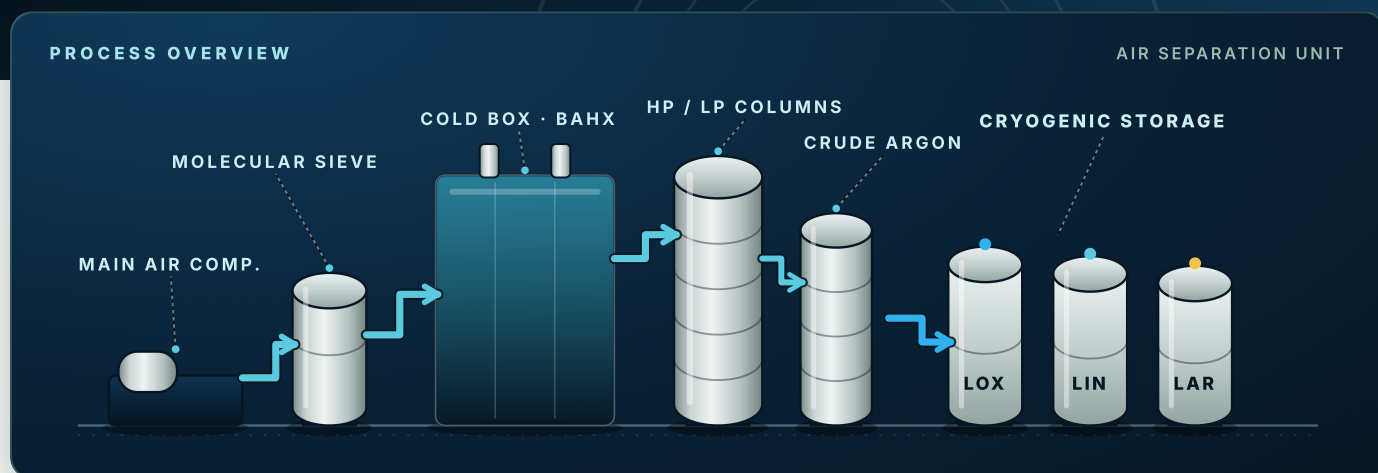
DOUBLE-COLUMN
DISTILLATION

Tonnage

HIGH-VOLUME PLANT SCALE

Low

SPECIFIC POWER
CONSUMPTION



01 Overview

The Brise Air Separation Unit liquefies and distils air itself into its valuable constituents — producing liquid oxygen, liquid nitrogen and liquid argon (plus gaseous streams) at industrial tonnage scale. Cryogenic distillation remains the only technology that delivers this combination of very high purity, very high volume and co-produced argon.

Our ASUs are engineered around low specific power consumption — the metric that decides an air-gas plant's lifetime economics. Efficient compression, deep heat integration in brazed-aluminium exchangers, and optimised double-column distillation squeeze the kilowatt-hours out of every normal cubic metre of product.

02 At a Glance



Three products

Oxygen, nitrogen and argon
from a single air feed



Liquid + gas

Liquid storage for merchant
sale; pipeline gas for
process use



Energy-optimised

Heat integration engineered
for low kWh per Nm³

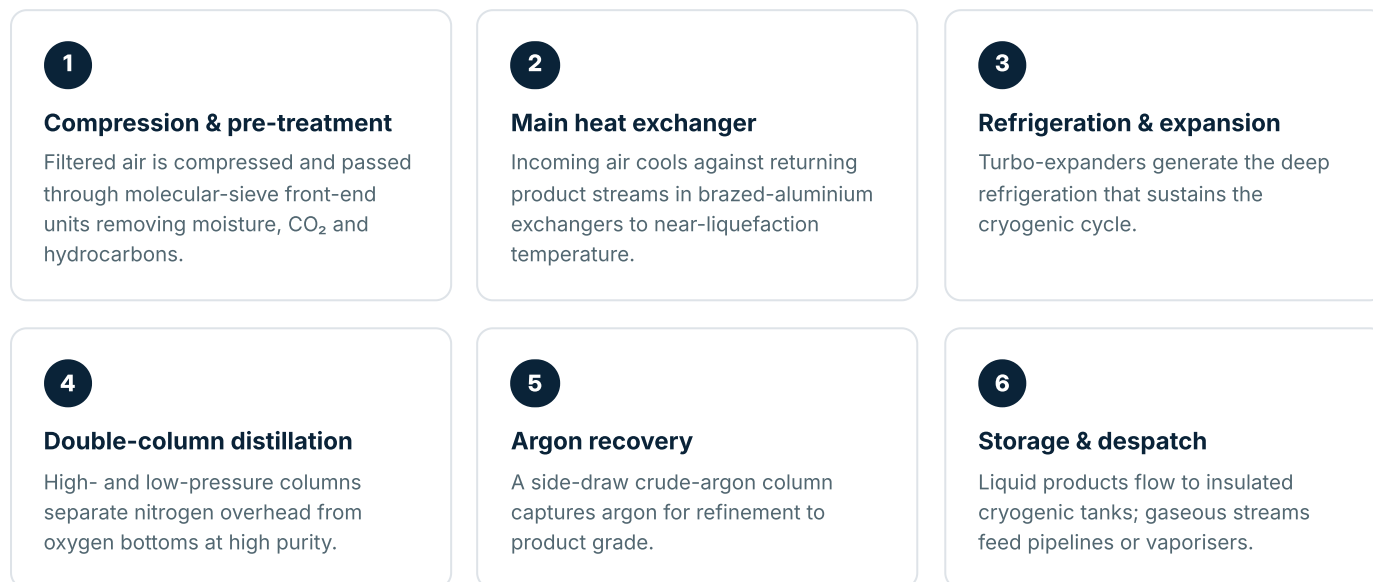


Tonnage scale

High-volume plants for steel,
chemicals and merchant
supply

03 Technology & Process

Air is compressed, cleaned, cooled to cryogenic temperature and distilled in a double-column system that separates it by boiling point — oxygen (−183 °C), argon (−186 °C) and nitrogen (−196 °C):



Boiling points do the separating

Cryogenic distillation exploits the distinct boiling points of air's components:

Nitrogen (N₂)	−195.8 °C — taken overhead from the low-pressure column
Argon (Ar)	−185.9 °C — drawn as crude argon from the column side
Oxygen (O₂)	−183.0 °C — collected from the column bottoms



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.

04 Technical Specifications

PARAMETER	SPECIFICATION
Process	Cryogenic air separation — double-column distillation
Products	Liquid & gaseous O ₂ , N ₂ , Ar
Oxygen purity	Up to 99.6% (typical cryogenic grade)
Nitrogen purity	Up to 99.999% (typical)
Argon purity	Up to 99.999% (typical, post-refinement)
Front-end	Molecular-sieve adsorbers (H ₂ O, CO ₂ , hydrocarbon removal)
Refrigeration	Turbo-expander cycle, brazed-aluminium heat exchangers
Scale	High-volume / tonnage — sized per project
Power	Low specific power consumption design focus
Storage	Vacuum-insulated cryogenic tanks + vaporisers

✓ Purities marked typical are indicative of cryogenic ASU practice; project figures are fixed during FEED. Figures shown are design values from Brise Chemicals product documentation; final specifications are confirmed during detailed engineering.

05 Key Features



True cryogenic purity

Distillation delivers purity classes adsorption processes cannot reach at volume.



Co-product economics

Oxygen, nitrogen and argon from one plant — three revenue/product streams.



Low specific power

Heat integration and efficient machinery minimise kWh per unit product.



Liquid logistics

On-site liquid storage enables merchant sales and backup autonomy.



Automated cryo operations

PLC/DCS-sequenced start-up, turndown and product switching



Continuous tonnage duty

Engineered for years of steady-state, high-availability operation.

06 Applications & Industries



Steel & metallurgy

Tonnage oxygen for BOF, EAF and furnace enrichment



Healthcare bulk LOX

Liquid medical oxygen supply chains



Chemicals & petrochemicals

Oxidation feed and inert nitrogen at scale



Electronics

High-purity nitrogen for fabs and assembly



Food & beverage

Cryogenic freezing and inert packaging



Welding & fabrication

Argon and oxygen for cutting and shielding



Merchant gas market

Liquid despatch to regional customers

07 Scope of Supply



Air compression & molecular-sieve front-end



Cold box with brazed-aluminium exchangers



Double-column distillation + crude argon system



Turbo-expander refrigeration package



Cryogenic storage tanks & vaporisers



DCS/PLC controls, commissioning, training & AMC/CMC

**CERTIFIED &
COMPLIANT**

ISO 9001:2015

ISO 14001:2015

ISO 45001:2018

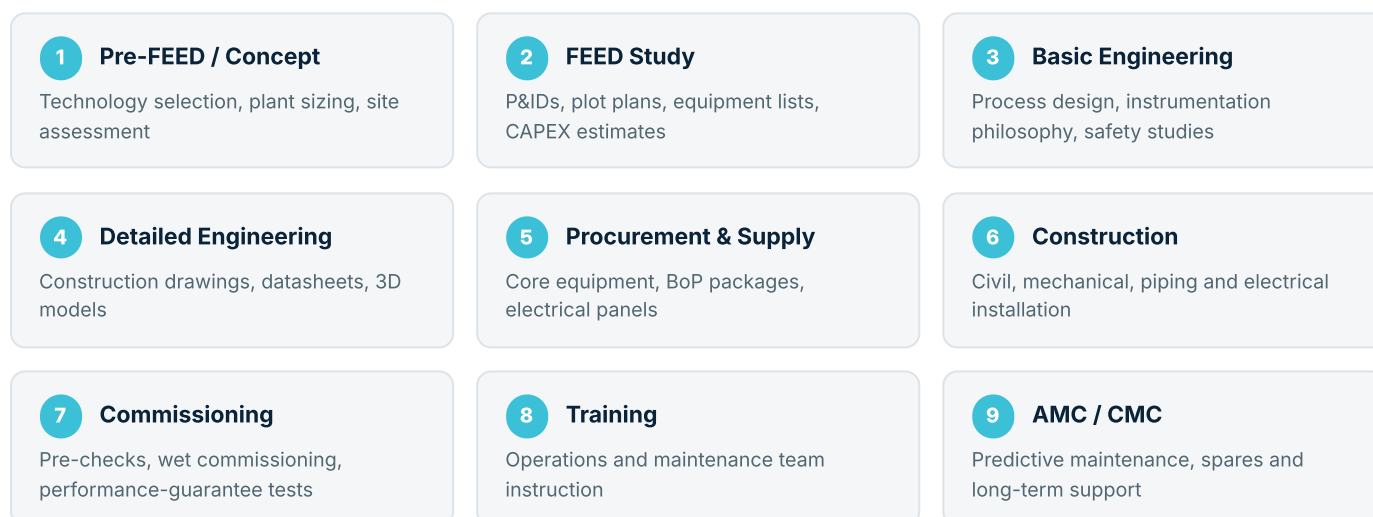
Designs compliant with PESO, IEC, ATEX & IS safety standards

08 About Brise Chemicals

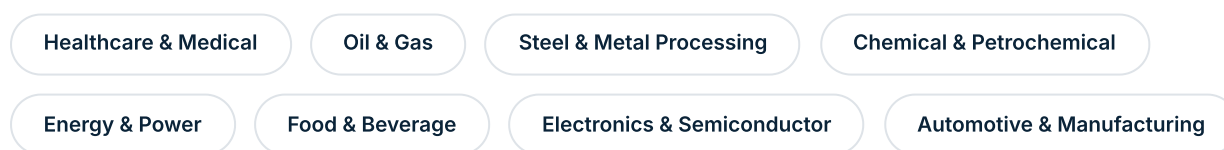
Brise Chemicals Pvt. Ltd. is a technology-driven OEM and industrial gas plant technology owner, founded by professionals with deep experience across turbo-machinery, oil & gas, refineries and the industrial gas sector. From our engineering and fabrication base in Pune, India, we design, engineer, manufacture, 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 Air Separation Unit.


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