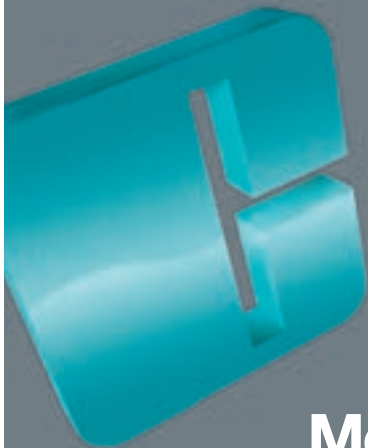


BREZZA

by CLARIND

The only line of **bespoke** laboratory gas generators, that **grows with your lab.**





More than 30 years of history

Since its incorporation in 1979, Claind has pursued a path towards its current status of European leader and one of the top manufacturers of gas generators in the world.

The offering of the Italian company is expressed in a series of products and services designed to fulfill essential requirements associated with hydrogen, nitrogen and zero air.

The gas generators in the range are based on exclusive patents registered after years of research carried out by Claind engineers in collaboration with internationally renowned universities in Italy and other countries: for example, the Prague Academy of Science, which helped to develop the first electrolytic multilayer electrode hydrogen cell, and Politecnico of Milan, which conducted research into the air purifier and assisted with the creation of the nitrogen generator.

Claind was recently selected as the technical partner for the creation of the new "Nanotechnologies" area in the National Museum of Science and Technology in Milan, having supplied a hydrogen generator and a nitrogen generator to feed an innovative project conducted by the Physics Department of the University of Milan.

All the plant engineering and analytical solutions were created by Claind in compliance with the ISO 9001 set of standards and quality procedures, and the company's comprehensive range of generators meets the needs of the many areas of industry the units are designed to serve.

The production plant is at Lenno, on the shore of Lake Como to the north of Milan. The main production facility has now been joined by the new "Claind Research Center" where new projects under way are investigating the use of hydrogen for the renewable energy sources sector.

Claind operates in Italy through its own sales network, while business in the rest of the world is conducted through sister companies and local Dealers and Distributors aided by qualified after sales service centers.

Thanks to the safety and reliability of its generators and purifiers, Claind is the chosen partner for the supply of gas generators in all UK Universities and a preferred partner of top Italian and international Industrial Manufacturers.

In order to get closer to the application needs of its customers, since 2002 the all-Italian management team embarked on a radical change in direction by breaking the company's operations down into 4 Business Units:



Analytical
laboratory applications



Food & Beverage
use of nitrogen as a food additive



Technology
use of nitrogen for laser cutting and heat treatment of metals



Energy
hydrogen utilised as a renewable energy source

BREZZA

The Brezza line

The new Brezza line is composed of hydrogen generators, nitrogen generators, zero air generators and gas purifiers, plus a comprehensive range of accessories and complementary components.

Brezza by Claind is **the market's only line of generators that are tailored to match the needs of each individual laboratory with:**

flexible structure composed of independent modules:

- that can be freely assembled
- that are capable of delivering different gas types for each individual analytical application
- that are integrated in a single electronic control system that can be remotised and is able to manage up to 32 modules, with the facility to monitor the operation of each module via Ethernet/Internet
- that can be stacked vertically to reduce the footprint
- that can be located in separate areas with the air compressor that can be removed to a technical area (to reduce the already low noise levels within the laboratory environment)
- that can use an existing compressed air source in the laboratory
- with the facility to monitor times and maintenance tables and the operating log

extensive application experience

the experience built up over the years makes it possible to address individual requests with a **global solution** that is appropriate in relation to **each application line in the analytical environment:** Gas Chromatography, LC-MS, TOC, ICP, ELSD, Thermal Analysis, Sample Preparation and more besides

- **Hydrogen generators**
- **Nitrogen generators**
- **Air generators**
- **Accessories**

Hi tech

- CLAIND technology, based on exclusive patents and strengthened by liaison with highly experienced partners, makes it possible to provide the market with a all-new solutions that are always at the technological edge, like the recently signed agreement with Proton Energy Systems, **a US leader in hydrogen self-generation systems and in HT Proton Exchange Membrane (HT PEM) technology**
- absolute reliability that has always been recognised by the academic world and by research institutions, with more than 18,000 installations in Europe and worldwide

dedicated technical assistance

in all parts of the world in which the generators are distributed; with spare parts in stock for fast supply and trained and qualified technical personnel for prompt resolution of possible system outages

innovative design

from the world fashion capital, Milan, Claind delivers styling that, in full compliance with application and functional requirements, is aesthetically refined and offers high visual impact when positioned in an analytical laboratory





The Brezza line for Gas Chromatography

The new Brezza range includes specific generators for gas chromatography, delivering Hydrogen, Nitrogen, Zero air and also gas purifiers.

HyGen

HYDROGEN GENERATORS

- available in three models for gas flows of **200-400-600 Nml/min**
- thanks to the guaranteed high purity (>99.9995%), HyGen can be used both to supply Detectors and to supply carrier gas (up to 15 FIDs or up to 4 S/S GCs + FID)
- hydrogen delivery pressure of up to 8 bar which allows Brezza units to be used also for "FAST GC"
- equipped with the **innovative HT PEM cell**, with reliability certified by Proton Energy Systems
- extreme safety guaranteed also by the innovative controller software, which can be interfaced with the CPU or PCs for remote control
- prolonged operating time without interruptions
- extreme ease of filling the removable water tank
- accessory to allow replacement of the final filter element without contaminating the hydrogen outlet line with air

NiGen GC

NITROGEN GENERATORS

- capable of delivering **500 Nml/min with purity > 99.9995%**
- available in a **standard version and the HC version** which ensures 100% removal of hydrocarbons (< 0.1 ppm for applications with high-sensitivity detectors)
- very high purity nitrogen guaranteed by the PSA system with the exclusive CLAIND "Fast Purity" patent
- facility to serve up to 12 FIDs/NPDs with makeup gas or up to 7 ECDs or 5 S/S
- high performance available with an extremely competitive purchase price
- facility for integration with a dedicated air compressor



AirGen GC

ZERO AIR GENERATORS

- capable of supplying **3000 Nml/min, complete with dryer and catalytic reactor for hydrocarbon removal < 0.1 ppm**
- very high purity air guaranteed by the exclusive **CLAIND PSA system (-50°C Dew point)**
- able to serve up to 8 FIDs/NPDs
- high-efficiency **Palladium-Platinum HC system for removal of HCTs < 0.1 ppm** for an absolutely stable and disturbance-free baseline
- high performance available with an extremely competitive purchase price
- facility for integration with a dedicated air compressor



BREZZA

AirComp

COMPRESSED AIR GENERATORS

- delivers 20 NI/min of compressed air from a full oil-free compressor, at a pressure of 8 bar
- able to supply up to 2 Brezza modules
- highly compact and complete with all the necessary controls for constant unmanned operation
- extremely quiet thanks to special sound-proofing and antivibration measures



For this application the natural **configuration** is the “**tower**”, which is composed of four generators (hydrogen, nitrogen, air and compressor) stacked one on top of the other to minimise space requirements; the units can be used individually as stand-alone modules or combined in the 2 or 3 modules version.

ZeroAir

PURIFIERS

- in the dual Bench-top/Wall-mounting version with outputs of 5 and 20 NI/min
- high-efficiency Palladium-Platinum HC system for removal of HCTs < 0.1 ppm for an absolutely stable and disturbance-free baseline
- able to serve from 14 to 55 FIDs
- high performance available with an extremely competitive purchase price
- facility for integration with a dedicated air compressor



NiGen HF

NITROGEN GENERATORS

- capable of delivering **3 NI/min with purity of 99.9995%**
- very high purity nitrogen guaranteed by the PSA system with the exclusive CLAIND “Fast Purity” patent
- high performance available with an extremely competitive purchase price
- HF-1 version with special built-in full oil-free compressor
- extremely quiet thanks to special sound-proofing and antivibration measures





Brezza line for LCMS

NiGen LCMS

NITROGEN GENERATORS

For the LC-MS analysers line, the Brezza series offers **dedicated “NiGen LCMS” Nitrogen Generators.**

The LC-MS analysers made and marketed by various manufacturers do not all share the same requirements in terms of type, flow rate, pressure and purity of the gases needed for their operation. That's why the NiGen LCMS series of generators in the Brezza line was created to meet the needs of all LC-MS analysers on the market.

- available in 3 models:
 - 40.1 version with output of 40 NI/min and integral compressor*
 - 40.0 version with output of 40 NI/min without compressor*
 - 100 version with output of 100 NI/min without compressor*
- able to supply up to 4 LC-MS analysers
- **purity up to 99.9%**
- **no HC in the outlet nitrogen**
- high purity nitrogen guaranteed by the PSA system with the exclusive CLAIND “Fast Purity” patent: unlike conventional hollow fibre membranes, the Carbon Molecular Sieves (CMS) utilised in PSA technology allow almost total adsorption of hydrocarbons, thereby limiting analytical interference on samples and spectrum
- the **50 litre Nitrogen storage tank** and the internal compressed air accumulator mean less frequent air compressor starts, thereby reducing noise levels and maintenance requirements
- high performance available with an extremely competitive purchase price
- **also the 40-1 version, which is equipped with a special built-in full oil-free compressor, features minimum noise levels thanks to a series of sound-proofing and antivibration features, while compressor servicing is only necessary after 14,000 hours of duty**

- facility for connection to the factory compressed air line in the -0 version (without compressor)
- facility for interface with a PC and/or Ethernet network using a special accessory





PSA “Fast Purity”

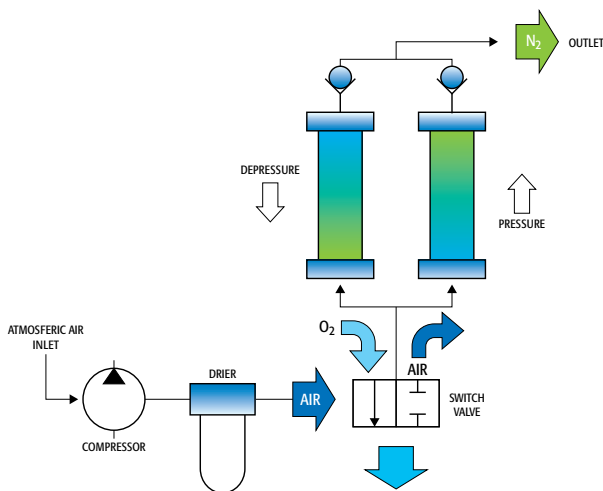
Thanks to **Pressure Swing Adsorption (PSA)** technology the generator produces nitrogen from the compressed air inlet by separating the nitrogen molecules from the other molecules present in ambient air by means of filtration performed by carbon molecular sieves.

Inside the CMS columns, oxygen, moisture, hydrocarbons, CO₂ and other “contaminants” are adsorbed, allowing the nitrogen to flow into an accumulation tank.

From the accumulation tank the nitrogen is brought to the required pressure and then transferred to the generator outlet.

Alternatively, the CMS columns are regenerated by expelling the previously absorbed compounds and then prepared for a new filtration stage by means of flushing with a reverse flow of nitrogen to ensure thorough cleaning.

The “Fast Purity” process, composed of several stages, makes it possible to maintain constant minimum pressure in the CMS columns in such a way as to avoid peak flows on the molecular sieves for complete utilisation of CMS performance and consequent delivery of the maximum purity of nitrogen in minimal times.



gas supply for
CURTAIN & CAD
EXHAUST
NEBULIZATION & AUXILIARY

APPLIED BIOSYSTEMS
all models

gas supply for
CURTAIN & CAD
EXHAUST
NEBULIZATION & AUXILIARY

APPLIED BIOSYSTEMS
Q & 2/3000

to interface
Jet Stream

AGILENT models

to interface

THERMO, WATERS, SHIMADZU,
VARIAN, BRUKER models



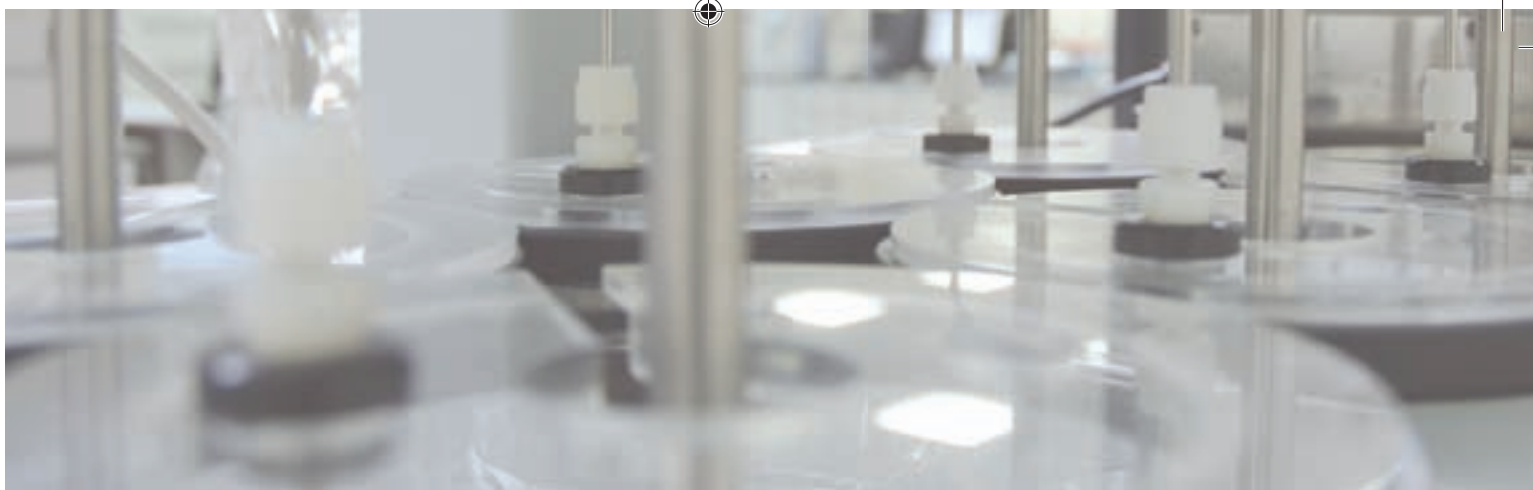
The Brezza line for TOC

AirGen TOC

ZERO AIR GENERATORS

- capable of delivering **3000 Nml/min with removal of hydrocarbons < 0.1 ppm and CO₂ < 1 ppm**
- high purity air guaranteed by the exclusive CLAIND PSA system for combined removal of H₂O and CO₂
- high-efficiency **Palladium-Platinum HC system for removal of HCTs** for a stable and interference-free baseline
- high-efficiency final filter for removal of residual CO₂
- high performance available with an extremely competitive purchase price
- facility for integration with a dedicated air compressor





The Brezza line for other applications: **ICP, ELSD, Thermal Analysis, Sample Preparation**

NiGen MICRO

NITROGEN GENERATORS for THERMAL ANALYSIS and ELSD

- capable of delivering up to 5000 Nml/min with purity of up to 99.5%
- high purity nitrogen guaranteed by the PSA system with the exclusive CLAIND "Fast Purity" patent
- high performance available with an extremely competitive purchase price
- facility for integration with a dedicated air compressor
- for ELSD, Applied Biosystems LCMS and Thermal Analysis



AirComp

COMPRESSED AIR GENERATORS also for ATOMIC ABSORPTION

- deliver 20 NI/min of compressed air from a full oil-free compressor, at a pressure of 8 bar
- able to supply up to 2 Brezza modules
- highly compact and complete with all the necessary controls for constant unmanned operation
- noise levels reduced to minimum by means of special sound-proofing and anti-vibration measures



NiGen LCMS 100

NITROGEN GENERATORS for SAMPLE PREPARATION

- capable of delivering up to 100 NI/min with purity of up to 99.5%
- high purity nitrogen guaranteed by the PSA system with the exclusive CLAIND "Fast Purity" patent
- high performance available with an extremely competitive purchase price
- facility for interface with a PC and/or Ethernet network using a special accessory

NiGen HF

NITROGEN GENERATORS for ICP

- capable of delivering **3 NI/min with purity of 99.9995%**
- very high purity nitrogen guaranteed by the PSA system with the exclusive CLAIND "Fast Purity" patent
- high performance available with an extremely competitive purchase price
- HF-1 version with special built-in full oil-free compressor
- noise levels reduced to minimum by means of special sound-proofing and anti-vibration measures





Complete range of accessories & consumables

The Brezza series makes use of an innovative additional component: the CPU (Central Processing Unit).

The CPU makes it possible to:

- combine up to 32 Brezza modules, also located in different production areas, in a single electronic control system (also with remote control capabilities)
- monitor operation of each module via Ethernet/Internet
- enjoy simple and intuitive interactive functions thanks to the practical 4" touch screen
- consult maintenance / autonomy tables and operational log file
- set up parallel connections of modules, on which also controlled output gas production can be set so that scheduled service operations can be staggered

In addition, the Brezza series can be equipped with a comprehensive range of accessories, including:

- complete range of UHP filters for purification of O₂, CO₂, HCT, H₂O from the inlet gases
- bench-top or wall-mounting pressure and flow regulators
- oil-free air compressors
- air filters with automatic condensate discharge
- automatic switches for 2 sources for redundant back-up gas feeding
- connection unions and gas lines
- oxygen analysers



Services

Pre-sales assistance

The qualified sales organisation can provide potential customers with valuable **pre-sales assistance**, guiding them in the choice of the optimal solution for their laboratory needs.

Efficient after-sales service worldwide

Claind supplies qualified assistance for the installation, maintenance and repair of its generators all over the world, thanks to a network of certified dealers and service centers throughout all territories in which the generators are distributed; technical staff are provided with constant training to ensure they are able to provide efficient maintenance services and rectify any technical problems rapidly, to guarantee the shortest possible system outages. In Italy, service operations are managed both by the Claind headquarters in Lenno (Como), and also by means of a far-reaching organisation composed of **six service centers** serving different parts of the country and guaranteeing **on-site intervention** at customers' premises and the ready availability of **spare parts and consumables from stock**.

Claind offers its customers **Service Level Agreements** in line with their needs, offering a range of services up to the **temporary replacement** of generators requiring complex repairs **within the 48 hours period** following the service call-out.

Claind also offers a series of **additional services**, namely: **IQ/OQ certifications**, personalised service contracts in accordance with the needs of individual customers, classroom-based and on-the-job personnel **training services**, **warranty extensions**, logistic, economic and procedural support in the stipulation of contracts.

EUROPE:

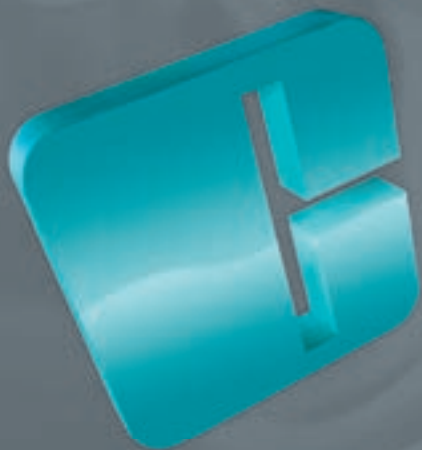
Austria
Belgium
Croatia
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Latvia
Lithuania
Malta
Norway
Poland
Portugal
Romania
Russia
Serbia
Spagna
Sweden
Turkey
UK

FAR EAST & OCEANIA:

China
Hong Kong
India
Indonesia
Malaysia
Pakistan
Singapore
South Korea
Taiwan
Thailandia
Vietnam
Australia
New Zealand

MIDDLE EAST & AFRICA:

Iran
Iraq
Jordan
Lebanon
Qatar
Syria
U.A.E.
Yemen
Egypt
Ethiopia
Ghana
Kenya
Mauritius
Morocco
South Africa



CLAI ND

Via Regina 24
22016 Lenno (CO)
Italy

Ph. +39 0344 56603

Fax +39 0344 56627

e-mail: info@claind.it

website: <http://analytical.claind.it>

