Cryotron G

LN_2 Generator

The Cryotron series provides a cost-effective solution for enhancing operational safety and efficiency. By eliminating the need for elevated access, it reduces fall hazards and installation costs. Its integrated ventilation and monitoring systems mitigate asphyxiation risks and improve operational efficiency by maintaining safe gas levels and moisture control. Additionally, an advanced security system safeguards equipment from unauthorized access, ensuring seamless and reliable operation.

Applications

- Semiconductor wafer fabrication
- Semiconductor chips assembly and test
- Material research
- Superconducting magnet
- Synchrotron
- Biomedical
- Cryopreservation

> Cryotron G comes with CSM renowned customer service, from conceptual design to implementation, and are backed by a 5-year warranty

Operation

Cryotron G cools and liquefies GN_2 by reaching absolute cryogenic temperatures (-196 °C or 77 K). It operates through compression and expansion cycles, extracting heat from nitrogen gas and gradually lowering its temperature until it condenses into liquid form. Cryotron eliminates reliance on bulk LN_2 deliveries, providing a cost-effective and reliable supply for critical applications.

Key Features and Benefits

- **Feasible LN_2 Production** – Suitable for small scale LN_2 production, where traditional bulk LN_2 supply is impractical
- **Fully Automated Operation** – Minimal user intervention for seamless performance
- **Compact & Space-Saving Design** – Optimized for easy integration into any facility
- **Energy-Efficient**– Uses a closed-cycle refrigeration process for precise LN_2 generation
- **Cost-Effective Solution** – Reduces long-term LN_2 procurement and transportation costs
- **Reliable & Consistent Performance** – Delivers ultra-low temperatures with precision for critical applications
- **Dynamic Real-Time Information** – Provides real-time pressure, level, and alarm data

Safety Enhancements

- **Safety and Leak Containment** - Prevents exposure to cryogenic media leaks for operation safety
- **Leak Detection** - Integrated O_2 sensors with safety alarm and ventilation system prevents asphyxiations
- **Pressure Safety Relief** – Equipped with a safety valve and continuous pressure monitoring
- **Humidity & Condensation Detection** – Integration with moisture sensor provides early warning of vacuum insulation deterioration, triggering for preventive maintenance
- **Audible & Visual Alerts** – Alarms and indicator lights for quick hazard response
- **Emergency Shutdown** – Single-switch operation for immediate system halt
- **Physical Security** – Lockable swing door prevents unauthorized tampering with the equipment
- **Operational Protection** – HMI with multi-level password security

CRYOGENIC SPECIALTY MANUFACTURING
Email: info@csm-cryogenic.com

Cryotron G Specifications

Model	CTG.10	CTG.20	CTG.50
LN_2 Production Rate	10 L/day	24 L/day	50 L/day
LN_2 Purity	Dependent on GN_2 Purity		
GN_2 Feed Rate Requirement @ -60°C, 0.8 MPa	1 m^3/h	2 m^3/h	4 m^3/h
MAWP	150 psi (10.3 bar)		
Target LN_2 Dewar Size	15 L	50 L	100 L
Room Size Requirement	> 5 m^3	> 6 m^3	> 10 m^3
Foot Area	1 m^2	1.5 m^2	3 m^2
One metre of noise	< 60 dB		
Power Consumption	2 kW	4.5 kW	7.5 kW
Cooling Method	Air Cooling		
Insulation	Dynamic (DV6R-Gauged)		
System Utilities	Electricity: 100-240 VAC; GN2: 116 psi (8 bar)		
Materials - Body - Cabinet	Stainless Steel 300 Series Galvanized Sheet (Epoxy Powder-Coated)		
Cleanliness Level	Cleaned, oil and grease-free		
Accessories	Oxygen sensor, Moisture sensor, Door open alarm, Castor wheel with stopper, and Ventilated roof		
Standard Testing	Dimensional Check He Leak Checked @ 1 x 10^{-9} cc/s		
Standard Certification	NEMA 4X, CE		
Optional	Test: Pneumatic Pressure, Vacuum Retention, LN2 Cold Shock Cert.: Pre-material cert. Services/Inspections: CFOS Cleaning for O2 Application, X-ray, ASME-coded (BPVC Section VIII Pressure Vessel)		

Cryotron G Dimensions

Model	CTG.10	CTG.20	CTG.50
Dimension (mm)	750*850*1000	1150*850*2000	1250*2000*2000

All dimensions provided are for indication purposes only and may not accurately represent the actual product dimensions. Please contact us for updated and actual measurements.