

Eco-Friendly

Liquid Nitrogen Generator EMP Series

With EMP Series,
 LN2 is available anytime.



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●The content of this catalog is subject to change without notice for improvement of the products.

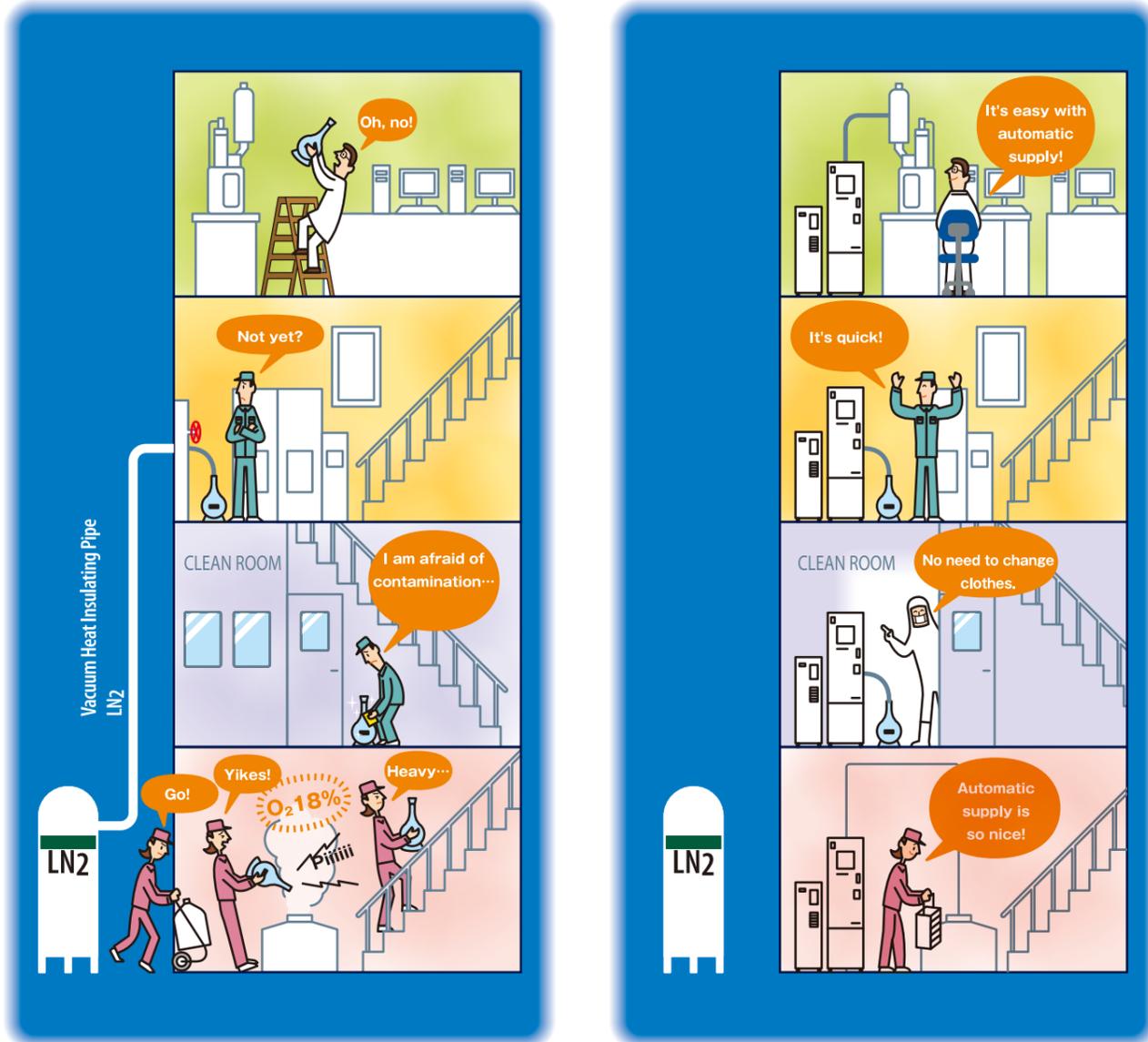
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EMP Series Liquid Nitrogen Generators improve your working environment!!

Eco-Friendly

Before introducing EMP...

After introducing EMP...



The Advantages of EMP Series Liquid Nitrogen Generators

- ADVANTAGE 1** No need to purchase LN2
- ADVANTAGE 2** No need to monitor the amount of remaining LN2
- ADVANTAGE 3** Improved safety thanks to less work
- ADVANTAGE 4** No need to supply LN2 to analytical instruments, etc.

Optimal for

• Semiconductor Factories • Analysis Centers • Universities • Research Firms, etc.

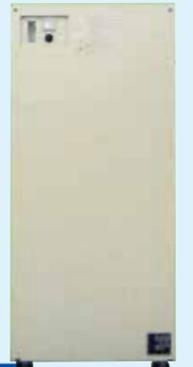
Features of EMP Series

- Start operation simply by pressing a button.
- Supply LN2 anytime and as much as needed.
- Can keep operation during the nights or on holidays.
- Supply LN2 automatically to wide variety of equipments.

How to supply nitrogen gas to EMP

① Nitrogen Gas Generator (PSA type)

	For EMP-07A · W For EMP-14A · W	For EMP-20W
N2 Generator	Type: GN-10T	Type: GN-15
N2 Max. Flow Rate	10Nℓ / min	15Nℓ / min
Purity of Produced Gas	Oxygen: ≤ 1.2%	Oxygen: ≤ 1.2%
	Dew Point ≤ -60°C	Dew Point ≤ -60°C
	Pressure: 0.2 MPa	Pressure: 0.2 MPa
Dimensions (W×D×H)	400×400×915mm	470×620×1226mm
Weight	Approx. 60kg	Approx. 135kg
	100VAC 1 phase	100VAC 1 phase
Power Supply	Approx. 0.4kW (50Hz / 60Hz)	Approx. 0.8kW (50Hz / 60Hz)
	Capacity: ≥15A	Capacity: ≥20A



Nitrogen Gas

Nitrogen Gas

Nitrogen Gas Generator (PSA method)

Compressed Air

② User's System (Air Supply type)

Model	IM-120
Type	Common for all types
Pressure	0.2MPa
Flow Rate	5~20Nℓ / min
Oxygen	≤ 1.2%
Dew Point	≤ -50°C

Pressure	0.5~1.0MPa
Flow Rate	≥120 Nℓ / min
Dew Point	Under atmospheric pressure: ≤ -17°C (With refrigerator type dryer)
Condition of Air	Oil-free

*With air supply type, additional space to install nitrogen gas generator (membrane separation) is necessary. The dimensions are W150 x D300 x H800 mm, and the weight is 19kg.

EMP Series Optional Products

Option ① Automatic Supply System



LN2 Dewar (From other suppliers)

*EDS, Cryopreserve containers, etc.

Option ② Oxygen Density Alarm



*Can be run in conjunction with Mini P

Option ③ Cooling Water Circulator



• Unit Type
• Separated Type

*The picture shows the unit type

Option ④ LN2 Storage Vessel



*The picture shows CRIC-10 (From other supplier)

*Please refer to page 5 for the detailed specifications.

New "Eco-Friendly Mode" Added!

With previous models, nitrogen gas generators keep running all the time.

With this mode, gas generators are turned off when the amount of remaining LN2 is sufficient.

Reduced Energy Consumption

EMP-07A · 7W	EMP-14A · 14W	EMP-20W
2,000 kwh/year reduced (Cost reduction of 30,000 yen / year)	2,500 kwh/year reduced (Cost reduction of 38,000yen / year)	6,000 kwh/year reduced (Cost reduction of 90,000yen / year)

*Calculated with 1 kWh=15 yen. *The above calculations assume annual operating ratio of 15% (Compared to our previous models).

Extended Maintenance Intervals

The maintenance intervals will be extended depending on the operation of nitrogen gas generator.

Cost Reduction!

Model EMP-07A / EMP-07W

LN₂ Production Capacity 8ℓ / day (60Hz)
6ℓ / day (50Hz)

Typical Usage

- Vacuum Evacuation Device LN₂ Cold Trap EMP-07A
- Material Analyzing Device EMP-07A / EMP-07W
- Electron Microscope EDS (EDX) Detector EMP-07A / EMP-07W
- Biological Cryopreservation Container EMP-07W

	EMP-07A	EMP-07W
LN ₂ Production Capacity	8ℓ / day (60Hz) , 6ℓ / day (50Hz)	
LN ₂ Storage Capacity	40ℓ	
Dimensions	W600×D750×H1628mm	
Weight	Approx. 220kg	Approx. 230kg
Power Supply	100VAC 1 phase Approx. 1.2 / 1.4 kw (50 / 60 Hz) Breaking capacity 20A	
Cooling Water	Not needed (Air cooled)	Entrance: 5 - 35 °C Flow rate: 2 - 5 ℓ/min Pressure: < 0.8 MPa Water quality: Tap water equivalent

Nitrogen gas generator: GN-10T



EMP-07A

EMP-07W

Model EMP-20W

LN₂ Production Capacity 20ℓ / day (60Hz)
19ℓ / day (50Hz)

Typical Usage

- Biological Cryopreservation Container
- Electron Microscope EDS (EDX) Detector

	EMP-20W
LN ₂ Production Capacity	20ℓ / day (60Hz) , 19ℓ / day (50Hz)
LN ₂ Storage Capacity	80ℓ
Dimensions	W930×D740×H1661mm
Weight	Approx. 340kg
Power Supply	200VAC 3 phase Approx. 3.3 / 4.1 kw (50 / 60 Hz) Breaking capacity 30A
Cooling Water	Entrance: 10 - 30°C Flow rate: 3 - 6ℓ/min Pressure: < 0.8 MPa Water quality: Tap water equivalent

Nitrogen gas generator: GN-10T



EMP-20W

Model EMP-14A / EMP-14W

LN₂ Production Capacity 14ℓ / day (60Hz)
14ℓ / day (50Hz)

Typical Usage

- Biological Cryopreservation Container EMP-14A / EMP-14W
- Cooling Down Samples EMP-14A / EMP-14W

	EMP-14A	EMP-14W
LN ₂ Production Capacity	14ℓ / day (60Hz) , 14ℓ / day (50Hz)	
LN ₂ Storage Capacity	40ℓ	
Dimensions	W600×D750×H1688mm	
Weight	Approx. 235kg	Approx. 230kg
Power Supply	200VAC 3 phase Approx. 1.7 / 2.0 kw (50 / 60 Hz) Breaking capacity 20A	200VAC 3 phase Approx. 1.6 / 1.9 kw (50 / 60 Hz) Breaking capacity 20A
Cooling Water	Not needed (Air cooled)	Entrance: 5 - 35 °C Flow rate: 2 - 6 ℓ/min Pressure: < 0.8 MPa Water quality: Tap water equivalent

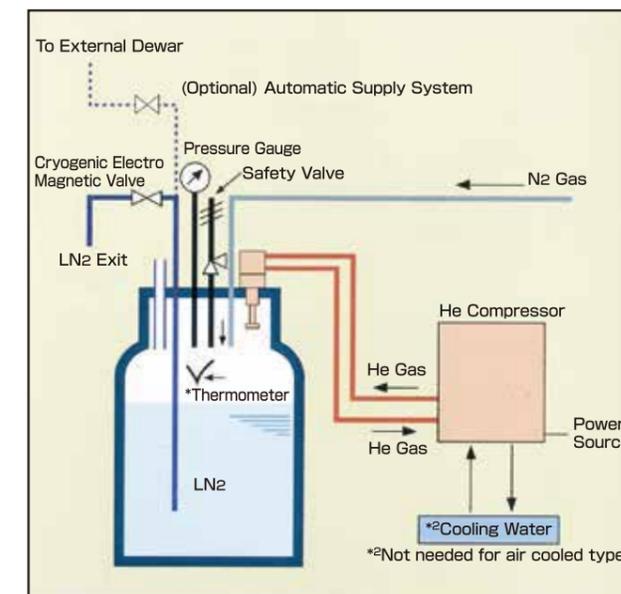
Nitrogen gas generator: GN-10T



EMP-14A

EMP-14W

Flow Diagram inside EMP



* A thermometer is needed in some cases.

OPERATING PRECAUTIONS

- When installing EMP in a room without appropriate size windows, a ventilating fan of above 1,000 m³/h (2,000 m³/h or above for EMP-20W) must be furnished to prevent oxygen shortage. It is recommended to install an oxygen alarm as well.
- LN₂ is ultra low temperature liquefied gas. Always handle with care.
- Touching LN₂ or cryogenic part like LN₂ exit may result in low temperature burns. Make sure to wear protective gloves such as leather gloves.
- EMP must not be operated in organic solvent atmosphere.
- Maintenance is necessary according to the time used.

Optional Products

① Automatic supply system

Configuration

- Capacitance Type Liquid Level Detector
- Adaptor for Supply Container
- Level Indicator Box
- Liquid Level Detector Cable (Max. 10 m)
- Annealing Tube with Simple Insulation (Max. 10 m)

* Capacitance type liquid level detectors and the adaptors will be designed to fit users' containers.

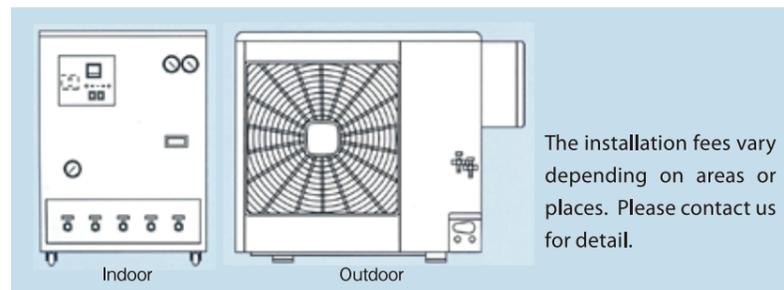
* Automatic supply system cannot be attached to some types of containers or places.

* Capacitance type liquid level detectors might cause noise depending on containers. Please contact us about the container's specifications.



② Oxygen Density Alarm

Model	MG-1000
Measurable Range	0~25% O ₂
Alarm Output	Alarm Density Fixed to 18% Contact (2 circuits) and buzzer
Operating Conditions	Ambient Temperature 0 - 40°C Relative Humidity 30 - 80 % (no condensation)
Dimensions	W120×D55×H120mm
Weight	Approx. 500 g
Power Supply	AC100V 13VA



③ Cooling Water Circulator Unit Type

[For All Models]

Model	RKE1500B1-V
Measurable Range	0~25% O ₂
Dimensions	W400×D850×H966mm
Weight	96kg
Power Supply	200 VAC 3 phase 2.3/2.4kW (50Hz/60Hz) Capacity: above 15A

Separated Type

[1] EMP-07W, EMP-14W

Model	KCW-2S
Dimensions	Indoor: W600×D550×H880mm Outdoor: W792×D300×H600mm
Weight	Indoor: 87kg Outdoor: 52kg
Power Supply	200 VAC 3 phase approx. 2.38/2.69kW (50Hz/60Hz) Capacity: above 30A

[2] EMP-20W

Model	KCW-3S
Dimensions	Indoor: W600×D550×H880mm Outdoor: W1000×D315×H800mm
Weight	Indoor: 87kg Outdoor: 70kg
Power Supply	200 VAC 3 phase approx. 3.33/3.82kW (50Hz/60Hz) Capacity: above 30A



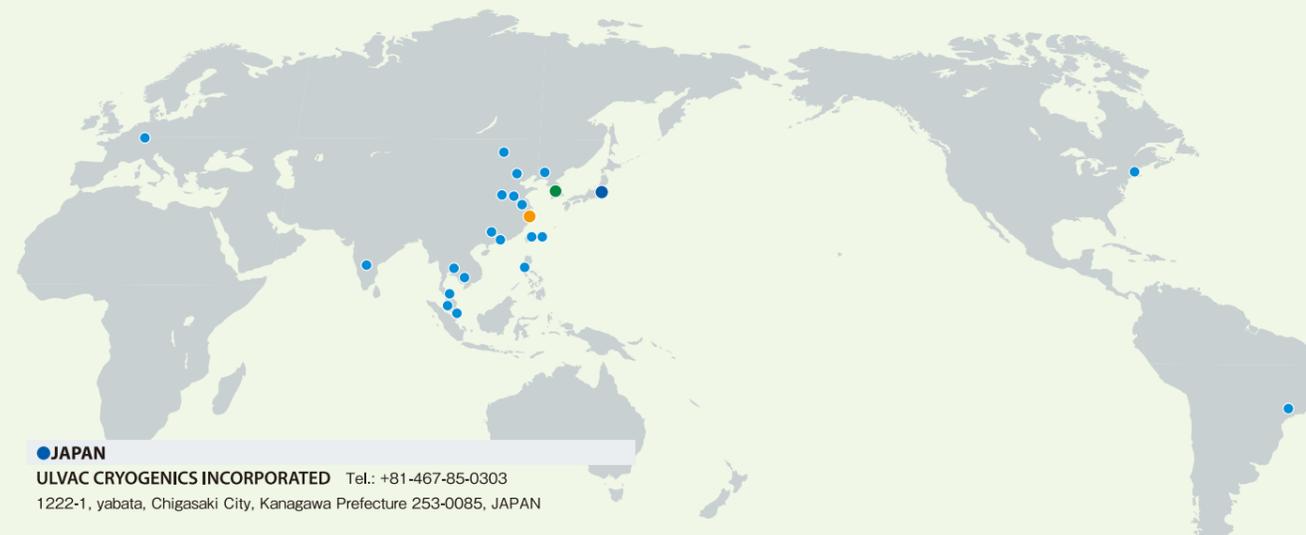
④ Liquid Nitrogen Storage Vessel CRIC Series

Model	CRIC-5	CRIC-10	CRIC-25
Capacity (ℓ)	5	10	25
Dry Weight (kg)	3.5	6	13.5
Weight When Filled (kg)	7.5	14.1	34.2
External Diameter (mm)	265	335	435
Internal Diameter of Filler Port (mm)	24	24	24
Height (mm)	460	550	650
Evaporation Losses	0.32ℓ / day (6.4%)	0.36ℓ / day (3.6%)	0.5ℓ / day (2.0%)

OVERSEAS NETWORK

We provide support services on a global basis.

ULVAC Group has built the sales and production base as a quadrilateral structure including Japan, North America, Europe and Asia to provide best solutions to our customers.



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