



# CRYOGENIC PRODUCTS & SERVICES

Design

Installation

Service

Inspection

THAMES CRYOGENICS LTD

Total Cryogenic Solutions



## LN2 DISPENSING SYSTEM #900

LN2 is supplied without any pressure and filling an application is like a teapot filling a teacup. The flow is variable and can be optimised to the application. Flow control is on the system itself or by remote signal. With one and the same system the flow range is from dripping for e.g. maintaining a certain subzero temperature to full flow for filling e.g. a small Dewar. The majority of our systems find use in the field of scientific instruments, physical laboratories, research centres etc. where precise control over subzero temperatures is required or where a LN2 flow of approx. 1 L/min is sufficient. Industrial systems with 15 L/min based on the same principle are also available.

### Key Features

- The pump is software driven and many control modes are already built-in Like 1-point level control, 2-point level control, timer based control, subzero temperature control, flow control by 0-5V Input, control by RS232 line, etc.
- The system delivers LN2 without any pressure. This means without noise, vibration, excessive waste, etc.
- There is a very low thermal mass to cool down in the pump LN2 comes out within 10 to 40 seconds, depending on the level in the Dewar. Filling efficiency is better than 90%, due to minimal loss for cooling down pump parts.
- P.E.D. 99/36/EC (Pressure European Directive) for pressurized vessels does not apply for this system. The maximum possible pressure is lower than 300mBar. Therefore this system can be used inside the lab, near your working place, without danger.

### Applications

Our autonomous cooling systems are designed for use in an instrumentation environment (e.g. scientific instruments) and/or in processes that require perfect control over the "cold" required. Liquid Nitrogen (LN2) is used as the cooling medium and is taken from a storage vessel by a static pump and delivered through a fill line to the application in a micro-dosing way. One may view our technique as a cold generator with a temperature range from ambient to -196°C and with a controllable capacity. This capacity (= flow) can be adjusted by hand directly on the pump or by remote signal. The system is designed to overcome the drawbacks of LN2 under pressure in which a solenoid valve is used to switch the supply ON / OFF. Our system instead delivers LN2 like tea out of a teapot: without any pressure.

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# LN2 DISPENSING SYSTEM #455



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## Software included

With each system software is included to display "what's going on inside the system". Although each system works autonomously, a PC screen is great to understand and to see "what's going on", and to write history.

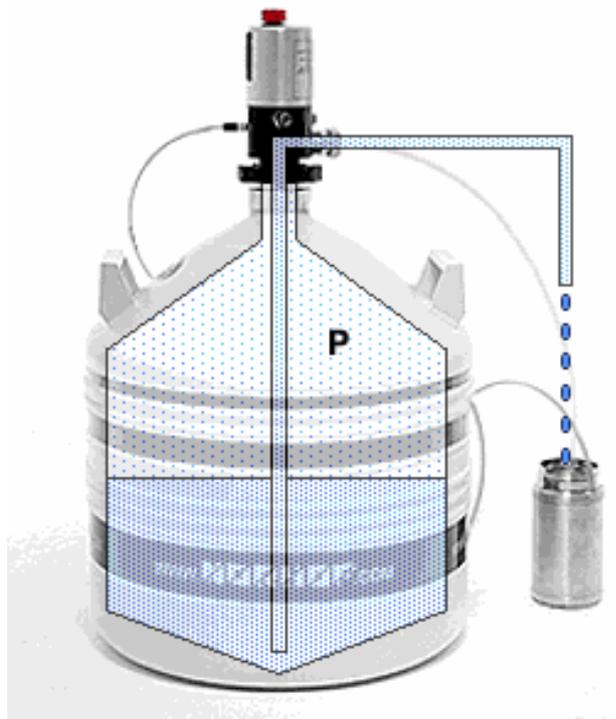
## Technical Specifications

Static evaporation rate	< 0,5 litres per day		
Flow rate	Dripping up to 2 Litres/minute (not adjustable)		
Maximum working pressure	< 200 mBar		
Protection	Overpressure valve 150 mBar		
Reaction time	10-40 seconds (depending on level in Dewar)		
Power connection	115V / 230V AC with supplied power supply or 12 Volt AC/DC		
Power consumption	average 10 Watts, during pumping 50 watts		
Storage container volume	25 Litre	35 Litre	50 Litre
Outside dimensions (round)	395	480	500 mm
Height dimensions	736	643	727 mm
Weight (empty/full)	10 / 31	13 / 41.5	17 / 51.5 kg
Options	Transport trolley 5 wheels (12 cm high)		

## Working principle

The pressure above the liquid level inside the Dewar is built by heating a small amount of liquid in the bottom of the Dewar. With only up to 100 mBar of overpressure, the liquid will gently rise out of the pipe and fall into the fill hose. Because we evaporate some LN2 to build pressure, there is no adding of ice inside the Dewar, such as with manual systems which use air from the Environment. In these LN2 cooling systems Liquid Nitrogen is stored in pressure-less Dewars. When LN2 is required, a small overpressure is generated by a small heater element in the LN2, and liquid flows out of the system like water from a tap, without spilling, noise, vibrations etc.

\*(#900 pump model shown on this picture)



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