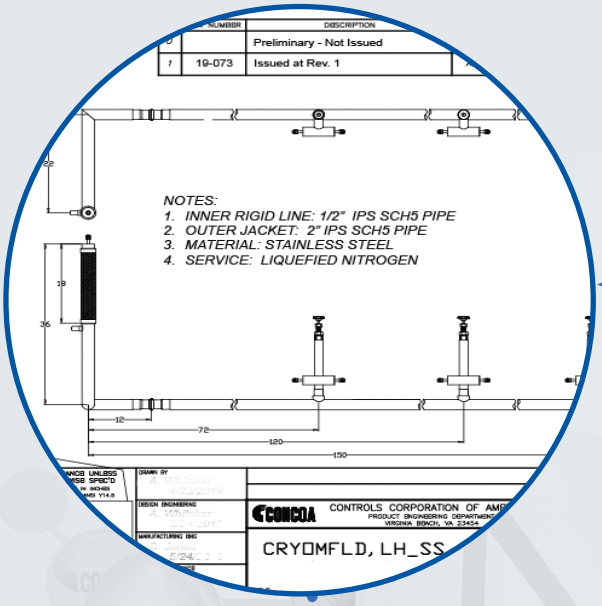
CRYOGENIC SOLUTIONS

for Liquid Nitrogen in Laboratory Applications



From concept to project delivery, CONCOA specializes in designing and manufacturing the most advanced and cost-effective cryogenic solutions for liquid nitrogen in laboratory applications. Vacuum-jacketed piping, engineered for maximum thermal efficiency, provides the foundation for long-term performance. At the core of the system, CONCOA's CryoWiz™ Cryogenic Switchover optimizes liquid nitrogen delivery to storage and control-rate freezers. Whether designing a new laboratory or retrofitting an existing one, CONCOA's cryogenic solutions simplify implementation and streamline project timelines.

Call CONCOA for a total package solution tailored to meet the specific needs of your cryogenic laboratory applications.

CONCOA®
PRECISION GAS CONTROLS

Total System Solutions

Advanced System Technology

Designing a liquid nitrogen (LN_2) supply system is challenging due to extreme temperatures, phase changes, and the necessity to minimize heat transfer. Effective insulation, temperature regulation, and flow control are essential to reduce boil-off and LN_2 loss. CONCOA is the only manufacturer offering a true single-source solution. From vacuum-jacketed (VJ) piping and the advanced CryoWiz™ Switchover to comprehensive system controls and monitoring, CONCOA designs, manufactures, and supports a total system solution, delivering reliable, end-to-end performance tailored to the unique demands of cryogenic applications.

Customized Piping Layout

CONCOA's approach for custom-tailored VJ piping begins with a thorough evaluation of site drawings or an on-site visit to confirm measurements, identify spatial constraints, and define specific system requirements. In-house engineers then design the most efficient layout possible, minimizing excess pipe length from source to point-of-use to reduce heat loss and avoid unnecessary cost. Each VJ piping system is precision fabricated to exact customer specifications, ensuring the highest efficiency and optimized liquid nitrogen usage. The completed system is then shipped in pre-assembled sections, simplifying installation for local contractors.

Superior Thermal Performance

CONCOA's VJ piping features super-insulated technology that minimizes the effects of conduction, convection, and radiation. Each section is evacuated, sealed, and tested to prevent heat ingress, while superior getter materials inside the annular space maintain the vacuum and insulation integrity for long-lasting thermal performance. Precision-engineered, thermally efficient bayonet fittings provide secure, leak-tight connections while simplifying installation and making system modifications or expansions easier to manage. Cryogenic-rated components, including in-line venting, isolation valves, and transfer hoses, ensure full system compatibility and facilitate future scalability as application demand increases.

For Liquid Nitrogen

Optimal Supply Management

The CryoWiz Cryogenic Switchover is the core of CONCOA's total system solution. Using proprietary software, it seamlessly transitions between primary and reserve sources to maintain a continuous supply of cryogen with virtually no change in temperature. Pneumatically actuated valves eliminate heat transfer, while integrated control algorithms enable intelligent venting and two modes of operation: On-demand and Keep-full. This coordinated functionality allows the CryoWiz to efficiently manage cryogenic fluid in response to real-time application demands.

Heat Transfer Rates by Hose/Pipe Type

Heat leak is the unwanted transfer of heat into a cryogenic piping system under ambient conditions. All cryogenic lines experience some level of heat transfer, whether specified or not. A lower heat transfer rate and overall heat load are essential to maintaining efficiency, reliability, and cost-effectiveness in a cryogenic delivery system. The table below compares heat transfer rates and total heat loads across various cryogenic hose and pipe types, clearly demonstrating the superior thermal performance of CONCOA's VJ hoses and pipes.

Hose/Pipe Type	Heat Transfer Rate (BTU/hr/ft)	Total Heat Load (BTU/hr @20 ft)
Traditional Foam-Insulated Hoses	10.00 – 20.00	200 - 400
Traditional Flexible VJ Hoses	2.00 – 4.00	40 - 80
Traditional Rigid VJ Pipes	2.00 – 3.00	40 - 60
CONCOA's Ultra-Flexible VJ Hoses	0.74 – 2.14	15 - 43
CONCOA's Semi-Flexible VJ Hoses	0.32 – 0.70	6 - 14
CONCOA's Rigid VJ Pipes	0.42	8

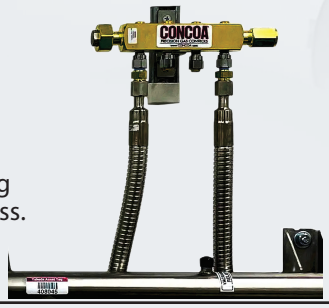
CUSTOM CRYOGENIC PACKAGES
from Source to Point-of-Use

577 Series CryoWiz™ Cryogenic Switchover

The CryoWiz intelligently manages LN_2 sources to deliver a continuous supply with no temperature change.

52L Series Vent MicroManifold

Modular vent manifold system allows even withdraw of cryogen, maximizing flow capacity with minimal product loss.



57V Series Cryogenic Header

Single- or double-sided manifold header with two to four stations permits increased supply capacity.

551 Series Semi-Flexible VJ Hose

Semi-flexible VJ hose ensures low-loss delivery of cryogen from cylinder source to the distribution system.

551 Series Ultra-Flexible VJ Hose

Ultra-flexible VJ hose is engineered for enhanced flexibility, making it ideal for point-of-use connections.

Custom Cryogenic Piping System

Built-to-order VJ piping system engineered for streamlined layout and optimal thermal efficiency.

551 Series Cryogenic Valves

Vacuum-insulated valves and connectors reduce heat loss for efficient delivery of cryogenic liquid throughout the VJ pipeline.

551 Series Cryogenic Vapor Vent

Cryogenic vapor vent automatically vents the boil-off gas to ensure a consistent supply of LN_2 at the point-of-use.

Integrated Safety and Monitoring Solutions

CONCOA offers a full suite of safety and monitoring devices to protect personnel and ensure regulatory compliance.
All devices integrate seamlessly with a facility's building management system for centralized monitoring and control.

Partner with CONCOA for a complete cryogenic solution evaluated and designed from a total system perspective to maximize efficiency and minimize long-term operating costs.
CONCOA makes it simple. Call today.

CONCOA
PRECISION GAS CONTROLS

1501 Harpers Road • Virginia Beach, Virginia 23454
1.800.225.0473 • www.CONCOA.com

SCAN ME
CONCOA.com/cryo