



Liquid Nitrogen Dosing

System Solutions for LN₂ Service

DOSERS | SYSTEM DESIGN | MANUFACTURING | TRAINING | INSTALLATION | CONSULTING



NitroFresh® Dosers
Product & Services Catalog
www.chartdosers.com



Innovative Design, Technology & Reliability

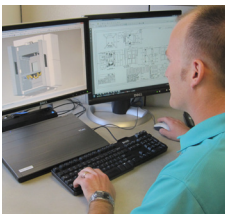
Across Chart, we pride ourselves on designing innovative products with advanced technology and high reliability to enhance customer value. Our understanding of our customer's business needs and end-use applications has helped us achieve a wide product portfolio of solutions. We provide the right product for the application – driving a competitive advantage for our customer and our company.

We offer the following comprehensive solutions to meet your needs:

Dosing The World One Drop At A Time



Chart offers complimentary use of this LN₂ logo on your packaging.



Full Engineered Solutions

Our team of cryogenic experts work closely with you to provide the best solution for your application. A Chart cryogenic system is designed and engineered to specifically match the project requirements, insuring maximum return on your investment capital.

Chart Bulk Storage Systems are manufactured to ISO 9001:2008 and 14001:2004, insuring quality of the highest standards. Leveraging 50+ years of cryogenic experience, lean manufacturing practices and project management oversight insure your system will be delivered on schedule.



On Site Demonstrations

"How do I know it will work with my production line?" is the number one question we are faced with from potential customers. We prove it will work on YOUR production line by bringing the system and our trained staff to install the equipment for a real-time demonstration.



Quality Manufacturing

Our experience ensures that your order is completed to high quality standards and on schedule. Each and every system goes through rigorous quality control and assurance before shipping.

When you choose Chart, you get single-source accountability from the engineered solution through post-installation service.

LN₂ Dosing Applications

Chart Inc. has been mastering liquid nitrogen (LN₂) dosing applications for over 25 years. Based on the physical characteristic that one part of liquid nitrogen warms and expands into 700 parts of gaseous nitrogen, Chart dosing systems are primarily used to pressurize and/or inert (N₂ flush) products and its packaging. As new packaging technologies and products evolve, so has a demand for refined dosing results. Chart has met these challenges with innovation, key partnerships and detailed application analysis.

How it works

LN₂ is supplied to the doser by a vacuum insulated hose and flows into the dosing head. A sensor detects the speed of the line (encoder compatible for higher speeds), and a second sensor detects the presence of a container. When a container is detected, the dosing head actuated valve opens and dispenses the exact amount of pure LN₂. A PLC (Programmable Logic Controller) is the brains behind integrating the sensors, controls and human interface via a touch-screen display.

Pressurization in Packaging Applications

A precise dose of liquid nitrogen is delivered immediately before capping or seaming. The trapped LN₂ quickly vaporizes, pressurizing the container. In hot fill applications, the nitrogen pressure counteracts the vacuum created when a hot product cools.

Key Benefits:

- Package Rigidity
- Eliminate Package Paneling
- Ease of Labeling
- Lighter Weight Packaging
- Glass to Plastic Transition
- Oxygen Reduction

Proven Applications:

- Bottled Water
- Energy Shots
- Flax Seed Oil
- Juices (Hot & Ambient Fill)
- Teas
- Vinegar



Case Study: Lighter Weight Packaging

Documented 9 gram reduction in PET bottle weight using Chart's MicroDose™ technology. This equates to ~\$2.64MM annual savings for one production line running at 700 bottles/minute; assuming the cost of PET resin to be \$0.80/lb.

Preservation Applications

An exact dose of liquid nitrogen is introduced seconds before the seamer or capper. The small dose of liquid nitrogen gasifies, 700 times its volume, in the process. The large volume of gaseous nitrogen pushes the oxygen out of the container.

Key Benefits:

- Oxygen Reduction
- Extended Shelf Life
- Efficient Nitrogen Consumption
- Stabilizing Organic Products

Proven Applications:

- Automobile Oil
- Beer
- Condiments
- Wine



Case Study: Oxygen Reduction

Documented extended shelf life studies show a 90-95% reduction in headspace oxygen content and a 59% reduction in total package oxygen when compared to a traditional gaseous nitrogen purge of headspace.

Case Study: Extended Shelf Life

Documented extended shelf life studies show an increase from 63 to 80 days providing larger batching flexibility at production runs, which improves overall costs.



LN₂ Dosing Applications

Freezing Applications

A dose of liquid nitrogen is introduced to “lock in” and surface freeze the product (novelty ice cream) before it’s transferred to a traditional tunnel or spiral freezer. Recently, Chart has been partnering with retail ice cream shops to fast freeze customized desserts with liquid nitrogen to enhance the taste and texture.

Key Benefits:

- Maintain Product Integrity
- Aid in Packaging/Labeling
- Enable New Products to Market
- Enhance Flavor and “Smoothness”

Proven Applications:

- Dipped Ice Cream Cone
- iCream Café



Case Study: *Maintain Product Integrity*

Documented account of better overall aesthetics of the dipped ice cream cone due to liquid nitrogen flash freezing as it provides stability and support throughout the packaging process.

Modified Atmosphere Packaging (MAP) Applications

A large dose of liquid nitrogen is introduced into the package seconds before the seamer or capper. The dose of LN₂ gasifies, 700 times its volume, in the process. The large volume of gaseous nitrogen pushes the oxygen out of the container.

Key Benefits:

- Oxygen Reduction
- Extended Shelf Life
- Reduce Nitrogen Consumption
- Stabilizing Organic Products

Proven Applications:

- Baby Formula
- Coffee
- Nuts
- Trail Mix



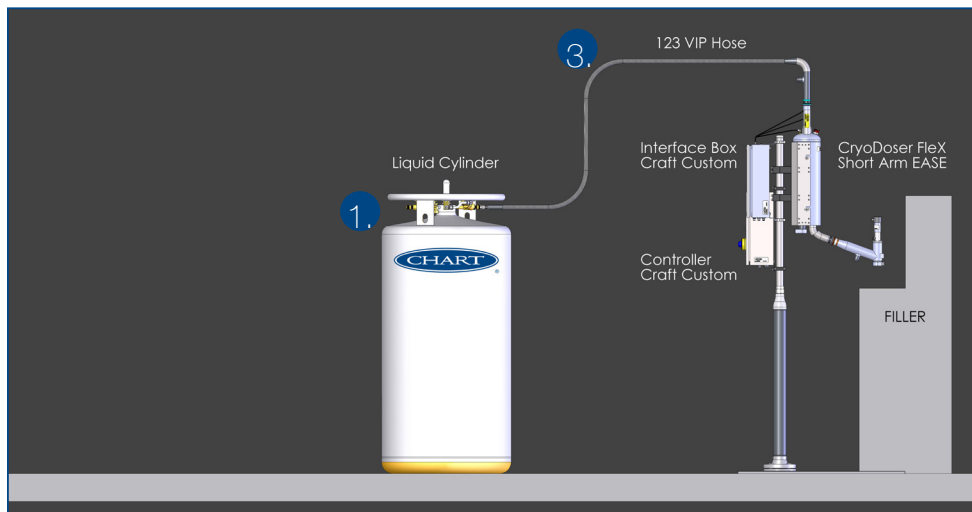
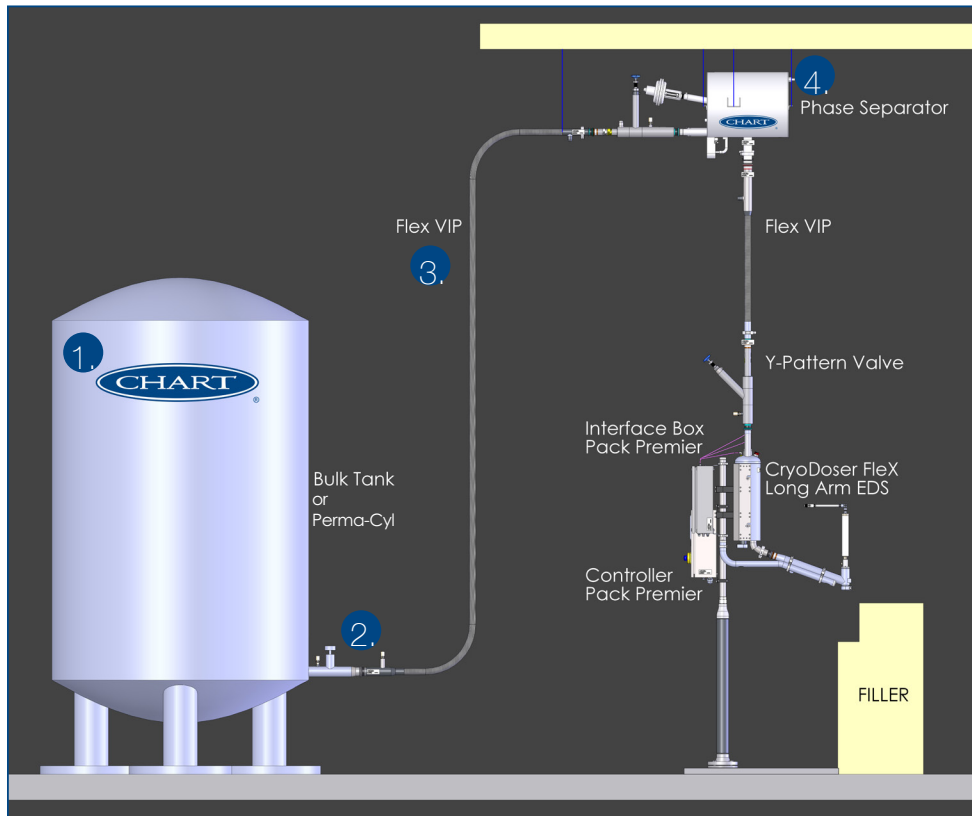
Case Study: *Reduce Nitrogen Consumption*

Documented nitrogen savings show a 46% reduction in nitrogen spend when using Chart’s liquid nitrogen dosing system compared to traditional gaseous nitrogen purging.



Engineered for Efficiency—Built to Last

Chart engineers work closely with our customers to ensure that the total system is designed properly, making the dosing system as effective as possible. Chart's solutions approach ensures consistent, quality liquid to keep your doser operating at peak efficiency. Built for long-term integrity and industry leading efficiency, these systems give our customers the highest performance at the lowest operating cost, while having a single point of contact.





Choices of Liquid Supply:
Bulk Tank, Perma-Cyl® or Liquid Cylinder

1. Vacuum Insulated Storage

Chart offers the most comprehensive line of liquid nitrogen storage systems available today. From bulk tank storage to Perma-Cyl® MicroBulk Storage Systems (MicroBulk.com) to Dura-Cyl® Liquid Cylinders, we have the right LN₂ supply solution for your dosing needs. Our equipment is thermally efficient with reliable controls for long-term trouble-free operation.



2. Vacuum Insulated Withdrawal

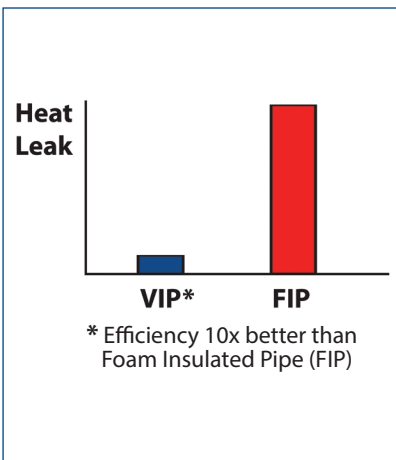
Cryogenic pipe systems often require valves to properly control the liquid flow to the application. Strategically located valves control flow to a branch of the system or into a use-point. A vacuum insulated valve has the benefit of extremely low heat leak for minimum gas boil-off, and it eliminates unsafe ice build-up and dripping water issues.



Bulk tank with vacuum insulated liquid withdrawal

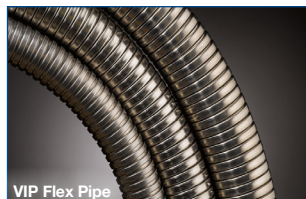


Perma-Cyl with vacuum insulated liquid withdrawal



3. Vacuum Insulated Pipe

Vacuum insulated pipe (VIP) is the foundation for a system's heat loss efficiency and long-term integrity. Chart offers a complete line of both Engineer to Order flexible and rigid vacuum insulated pipe that provides the most efficient and diverse method of transferring quality liquid nitrogen to ensure peak doser performance. See more on pages 20 & 21 or visit ChartVIP.com.



VIP Flex Pipe



VIP Rigid Pipe



4. Phase Separator

Chart's vacuum insulated Phase Separator provides extremely high quality, low pressure liquid nitrogen on demand. The level of liquid nitrogen inside is controlled automatically. The reservoir is vented to atmosphere at all times ensuring the pressure inside is equal to atmosphere. This results in a continuous supply of unsaturated liquid nitrogen at a precise pressure to the doser. See more on page 21.

International Alliances

Chart has aligned itself with strategic regional partnerships worldwide to provide knowledgeable, immediate service to our customers.



American Region

Joy Can Solutions LLC

33 S Delaware Ave., Suite 101A
Yardley, PA 19067
Phone: 267-536-2990
Mobile: 267-229-4329
james@joycansolutions.com
www.hellojoycan.com | @hellojoycan



Tochem d.o.o.e.l.

Atinska 10, 1020 Skopje
Macadonia
Phone: +389.2.321.55.88
ribarski@tochem.com
www.tochem.com



Vibgyor International Pvt. Ltd.

904, Pragati Tower,
26, Rajendra Place
New Delhi – 110 008
India
Phone: +(91) 99.9978.8346
info@vibgyorinternational.com
www.vibgyorinternational.com



Mexico / Central American Region

Vision Trade International, S.A. de C.V.

Cerro del Ajusco No. 100 Desp. 101
Col. Los Pirules
Tlalnepantla, Estado de Mexico C.P. 54040
Mexico
Phone: +(52) 55.5370.8726
ventas@visiontrade.com.mx
www.visiontrade.com.mx



CRYOGENIC Flow Controls Co., Ltd.

Floor 9, CT Building, No 56 Yen The Street,
Ward 2, Tan Binh District, Hochiminh City
Vietnam
Phone: (+84) 28.5449.2068
hung.nguyen@cfc-vietnam.vn
www.cfc-vietnam.vn



Middle Eastern Region

Marmara Makina Kimyevi Maddeler Sanayi Ve Ticaret Ltd Sti

Nispetiye Mah Gazi Guclar Sok
Uygur Is Merkezi No:4A
34340, Zincirlikuyu, Istanbul
Turkey
+90.212.337.8806
olgaybayatli@marmaramakina.net
www.marmaramakina.net



Australian Region

iMove ENTERPRISES Pty Ltd.

PO Box 2167
Regency Park SA 5942
Australia
Phone: +61.8.8162.9666
info@imoveenterprises.com.au
www.imoveenterprises.com.au



Opsys L.L.C.

P.O. Box 333 777
Al Serkal Avenue-A1, Al Qouz Ind. 1
Dubai, United Arab Emirates
Phone: +971.4.341.5963
info@opsys.ae
www.opsys.ae



Sub-Sahara African Region

KPE Engineering (Pty) Ltd.

10 Goud Crescent
Brackenfell Industria, Brackenfell 7560
South Africa
Phone: +(27) 21.982.0516
info@kpe.co.za
www.kpe.co.za



South American Region

MCPack Equipamentos

Rua Antonio Jose Borges, 470
Chacara Santo Antonio
Sao Paulo – SP, 04715-030
Brasil
Phone: +55 (11) 5044.4535
mcpack@mcpack.com.br
www.mcpack.com.br





www.chartdosers.com

American Location

LN2dosers@chartindustries.com

Center of Excellence - Americas

USA

Sales 800.400.4683

Service 800.253.1769

European Location

LN2dosers@chartindustries.com

Center of Excellence - Europe & Middle East

Phone (0)1386 556622

©2025 Chart Inc. P/N 20624665