



Taylor-Wharton
Since 1742

**The Original Innovators
of Cryogenic Equipment**

MicroBulk Solutions

*Next Generation Solutions for
Safe and Efficient Delivery for
Gas and Liquid Applications*



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MicroBulk System

- **Engineered to improve the filling process:**

- *Safely*
- *Efficiently*
- *High Quality*

- **Suitable for:**

- *Manufacturing*
- *Laboratories*
- *Food Processing*
- *Health Care*

- **Minimizes:**

- *Handling and Storage*
- *Time Loss Change-Over*
 - *vs. Liquid Cylinders*
 - *vs. High-Pressure Cylinders*





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• MicroBulk System

• On-Site Filling

- *Provides Uninterrupted Gas Supply*
 - Piped directly to source of use
- *Eliminates Possible Run-Outs*
 - telemetry options
- *Eliminates Contamination*
- *Eliminates Residual Losses*

• Automatic Shutoff Devices

- *Safe*
- *Efficient*
- *Minimal Product Loss*



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• Mode Change Analysis

• *MicroBulk supply can benefit you:*

≥ 2 Liquid Cylinders per month

≥ 10 HP cylinders per month

Tube Trailer, Bulk

TT	45,100 / 181,155	SCF
Bulk	1500 – 100,000	Gallon
	46,500 – 1.2 mm	SCF

MicroBulk

240 – 3,000	Liter
65 - 775	Gallon
4,734 – 47,847	SCF

Liquid Cylinders

180 / 240	Liter
48 / 61	Gallon
4,428 / 5,658	SCF

High Pressure Cylinder

220 / 300	Size
228 / 304	SCF

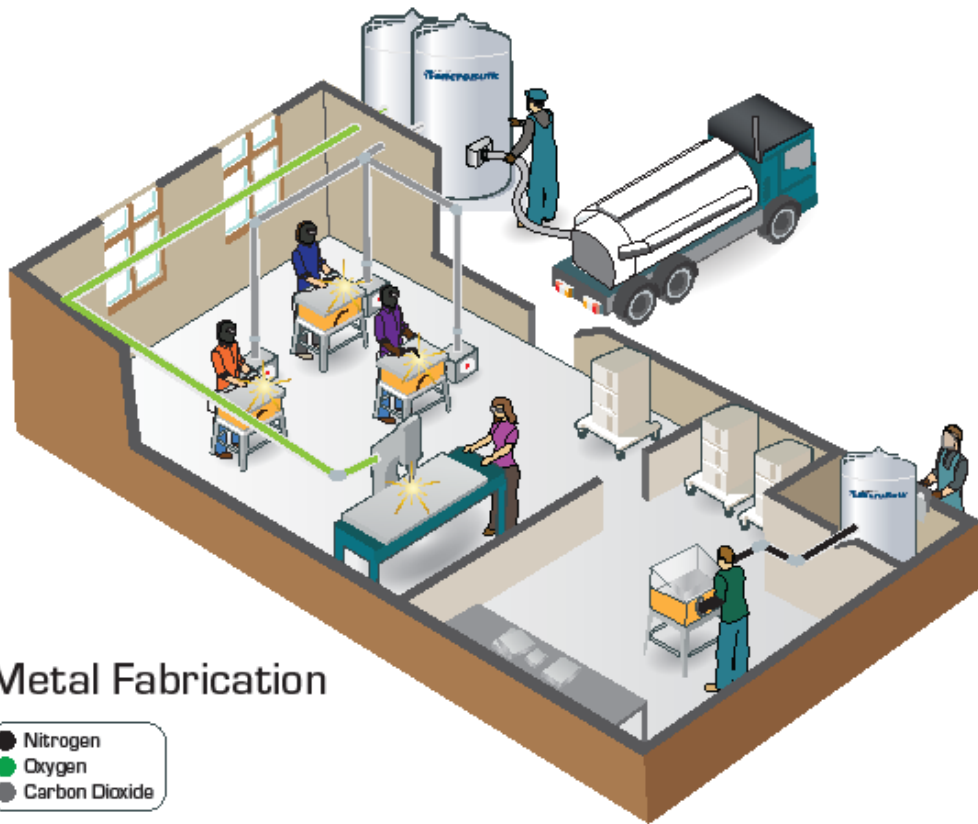


Note: SCF expressed in nitrogen volumes



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MicroBulk In Industry



Metal Fabrication

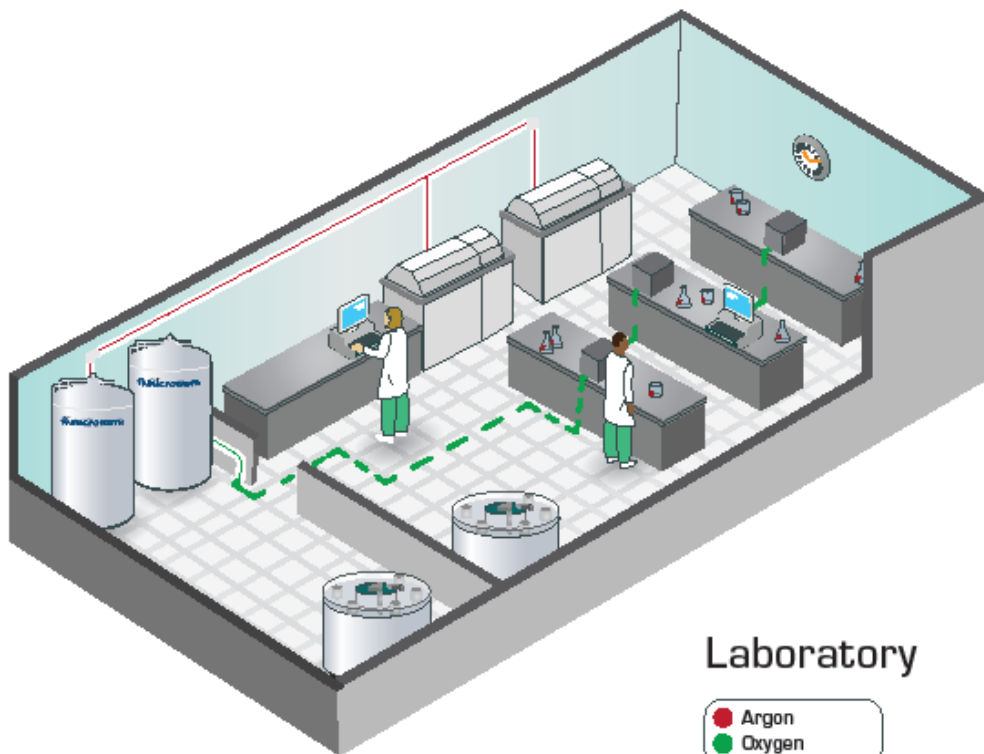
- Nitrogen
- Oxygen
- Carbon Dioxide

Primary Applications	Gas	Typical State
Cryogenic Cooling and Freezing	Nitrogen	Liquid
Purging / Inerting	Nitrogen	High Pressure
Cutting	Oxygen	High Pressure
Oxidation Process	Oxygen	High Pressure
High Speed Cutting	Nitrogen	High Pressure
Laser Cutting/Welding	Argon	High Pressure
Laser Cutting/Welding/Blanketing	CO2	High Pressure
Laser Cutting	Nitrogen	Very High Pressure
Carbon emission control; Foundry process control	Co2	Very High Pressure
Specialty Steel & Metal Processing	Argon	High Pressure
Specialty Chemical production	Nitrogen	High Pressure



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MicroBulk In Laboratories

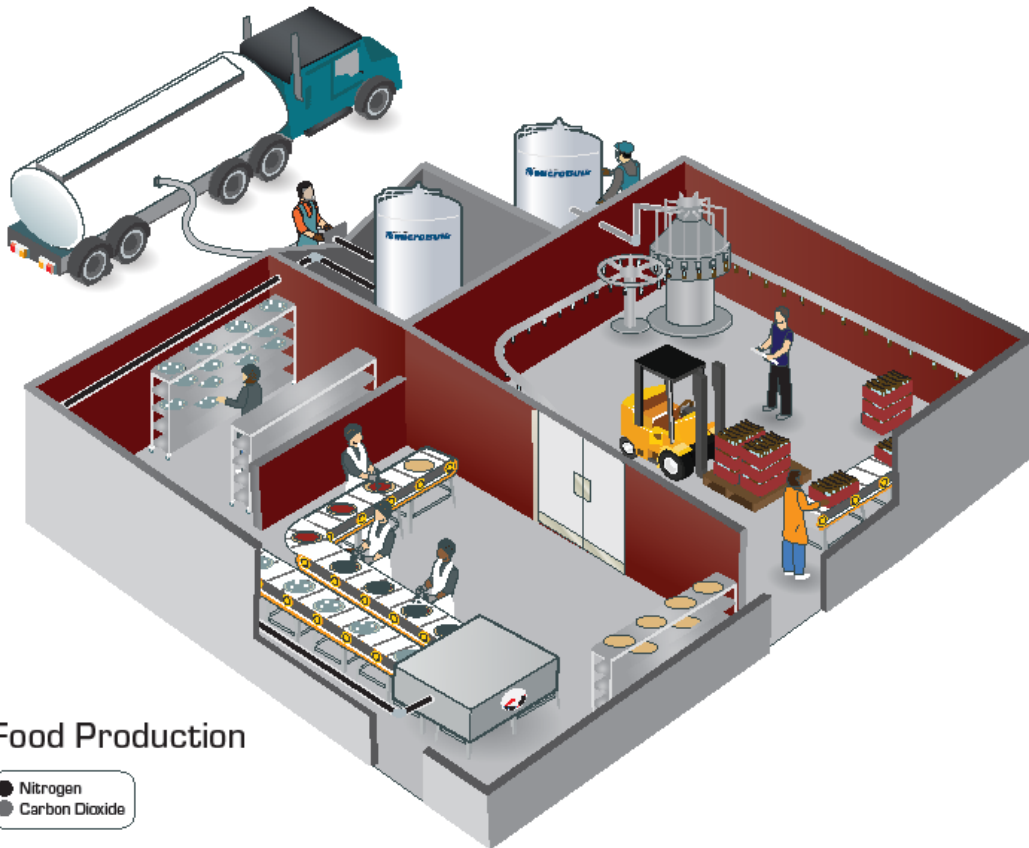


Primary Applications	Gas	Typical State
Oxygen enrichment	Oxygen	High Pressure
ICP-MS, ICP-OES	Argon	High Pressure



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MicroBulk In Food Production

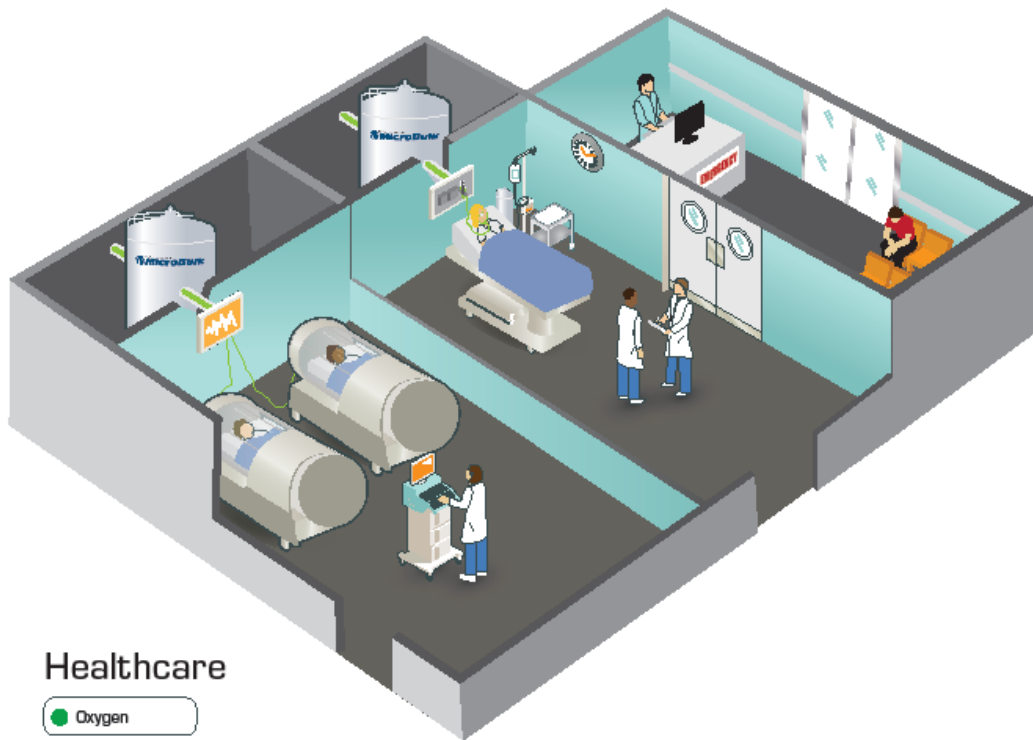


Primary Applications	Gas	Typical State
Packaging	Nitrogen	High Pressure
Beverage Carbonation	CO ₂	High Pressure
Freezing	Nitrogen, CO ₂	Low/Med Pressure
Packaging	Nitrogen, CO ₂	Medium Pressure



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MicroBulk In Health Care



Healthcare

● Oxygen

Primary Applications	Gas	Typical State
MRI Magnet Cooling	Nitrogen	Liquid
Respiratory Oxygen Delivery	Oxygen	Liquid
Hyperbaric Chambers	Oxygen	Low Pressure
Cryosurgery	Nitrogen	Liquid



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Product Features

Quality Materials:

- durable stainless steel
- super insulation
- digital gauges

Automatic Fill Shut-Off:

- compatible with most delivery trucks

Reliable:

- five-year vacuum warranty

Telematics Ready:

- plug into your network
- build-to-suit
- programmable digital liquid level gauge
 - enables you to manage inventory and guard against run-outs

Flexible Site Options:

- outdoor or indoor installation
- engage qualified piping suppliers
- optional wall box for remote filling

Standard Sizes:

- 240, 450, 1000, 1500, 2,000, 3,000 and 5,000-liter
 - high pressure (350 PSI) or very high pressure (500 PSI)



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Specifications

Industries	Applications	Gas	Typical State
Bio-Technology	Sample Freezing	Nitrogen	Liquid
Electronics	Circuit board & component test chambers	Nitrogen	Liquid
Electronics	Semiconductor cleaning	CO ₂	High Pressure
Food	Packaging	Nitrogen	High Pressure
Food	Beverage Carbonation	CO ₂	High Pressure
Food	Packaging/Freezing	CO ₂	High Pressure
High Technology	Instrumentation	Nitrogen	High Pressure
Hotels/Institutions	Beverage Carbonation; Controlling Pools' pH Levels	CO ₂	High Pressure
Industrial	Cryogenic Cooling and Freezing	Nitrogen	Liquid
Industrial	Purging / Inerting	Nitrogen	High Pressure
Industrial	Cutting	Oxygen	High Pressure
Industrial	Oxidation Process	Oxygen	High Pressure
Industrial	High Speed Cutting	Nitrogen	High Pressure
Industrial	Laser Cutting/Welding	Argon	High Pressure
Industrial	Laser Cutting/Welding/Blanketing	CO ₂	High Pressure
Industrial	Laser Cutting	Nitrogen	Very High Pressure
Industrial	Carbon emission control; Foundry process control	CO ₂	Very High Pressure
Industrial	Specialty Steel & Metal Processing	Argon	High Pressure
Laboratory	ICP-MS, ICP-OES	Argon	High Pressure
Laboratory	Oxygen Enrichment	Oxygen	High Pressure
Medical/Health Care	MRI Magnet Cooling	Nitrogen	Liquid
Medical/Health Care	Respiratory Oxygen Delivery	Oxygen	Liquid
Medical/Health Care	Respiratory Oxygen Therapy	Oxygen	High Pressure



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Optional Accessory

Uninterrupted Gas Supply - Optional Telemetry Monitoring

- **Wireless Two-Way Communication**
- **Integral Tank Level Display:**
 - *transmits daily - alarms & fills*
 - *programmable alarm set points*
 - *alarm reporting options*
 - *24-hour internet data access*
- **Telemetry Benefits:**
 - *eliminates process interruptions*
 - *eliminates product monitoring*
 - *eliminates emergency deliveries*
 - *reduce delivery costs*
 - *eliminates phone orders*
 - *predict delivery schedules*
 - *forecast future needs*



**Compatible with DataOnline
C-STIC and Others**



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Economic Benefits

Grow your business

- Gain new accounts by replacing competitors' cylinders.
- Diversify Your base with engaging additional industry segments.

Protect your accounts

- Implement MicroBulk to reduce cylinder handling.
- Lower inventory and order administration time.

Grow your volume

- Increase liquid volume through your operation.
- Improve distribution efficiency.
- Cut delivery costs.



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Thank you