



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

High Pressure Cylinder

220 / 300 Size
228 / 304 SCF



Liquid Cylinders

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



MicroBulk

450 – 7,500 Liter
120- 1,981 Gallon
8,876 – 147,938 SCF



Tube Trailer, Bulk

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

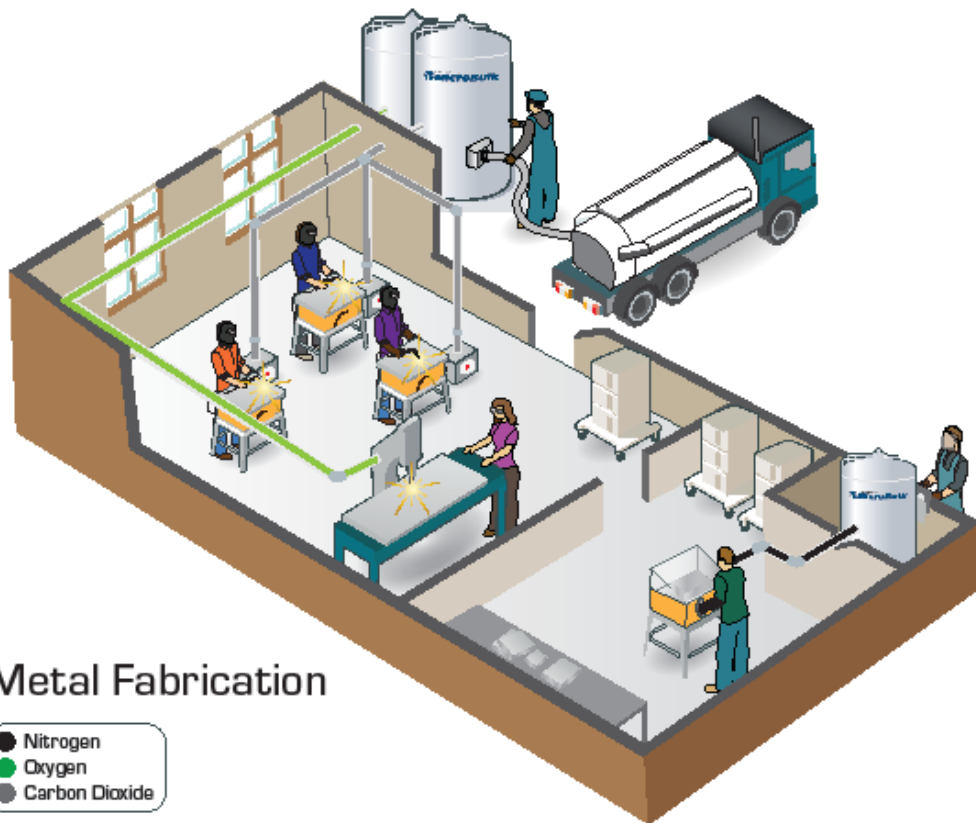


Note: SCF expressed in nitrogen volumes



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MicroBulk In Industry



Metal Fabrication

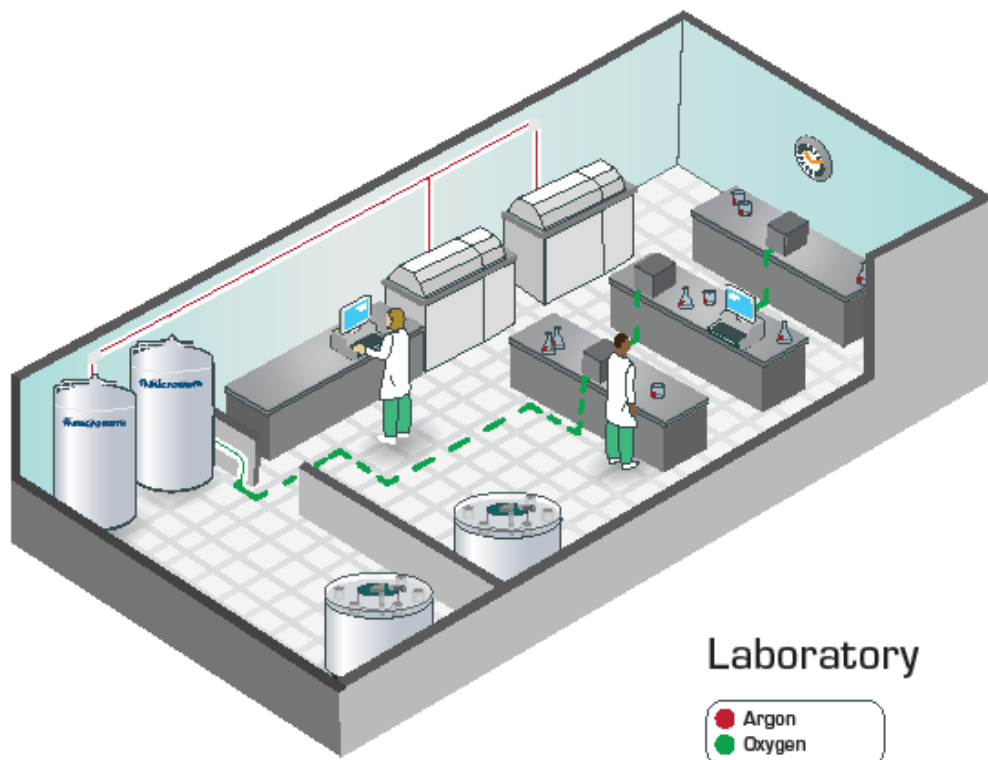
- Nitrogen
- Oxygen
- Carbon Dioxide

| 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



Laboratory

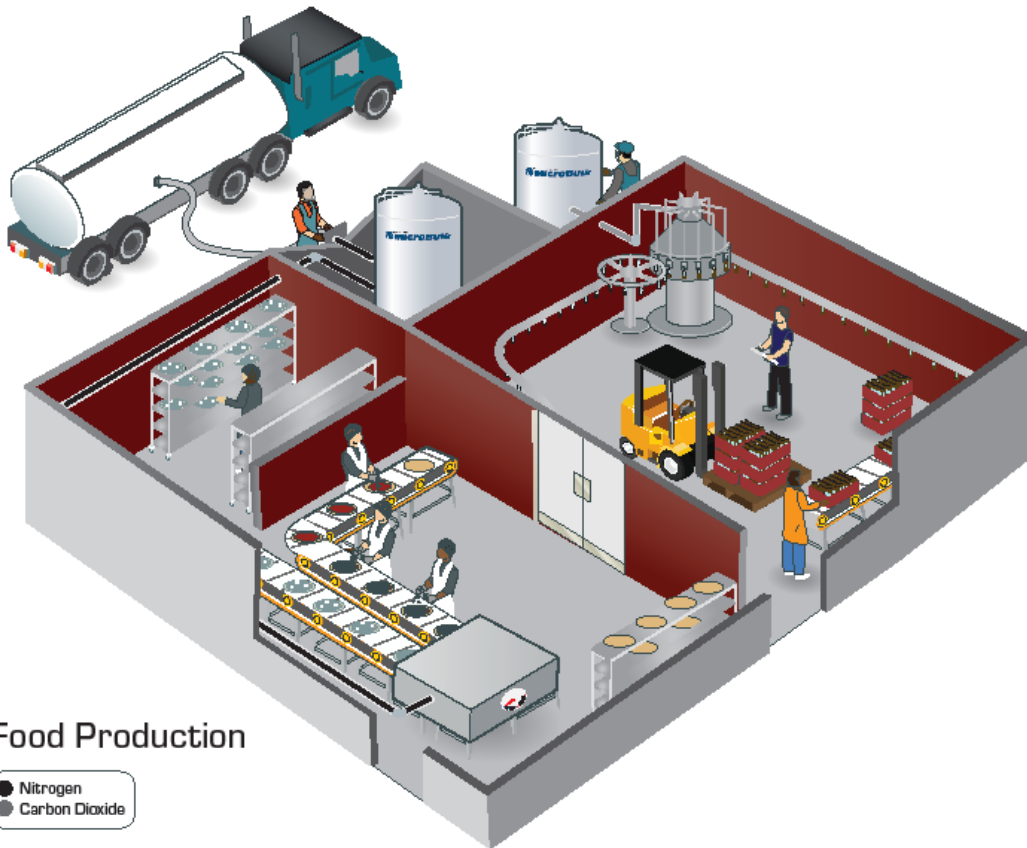
● Argon
● Oxygen

| 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



Food Production

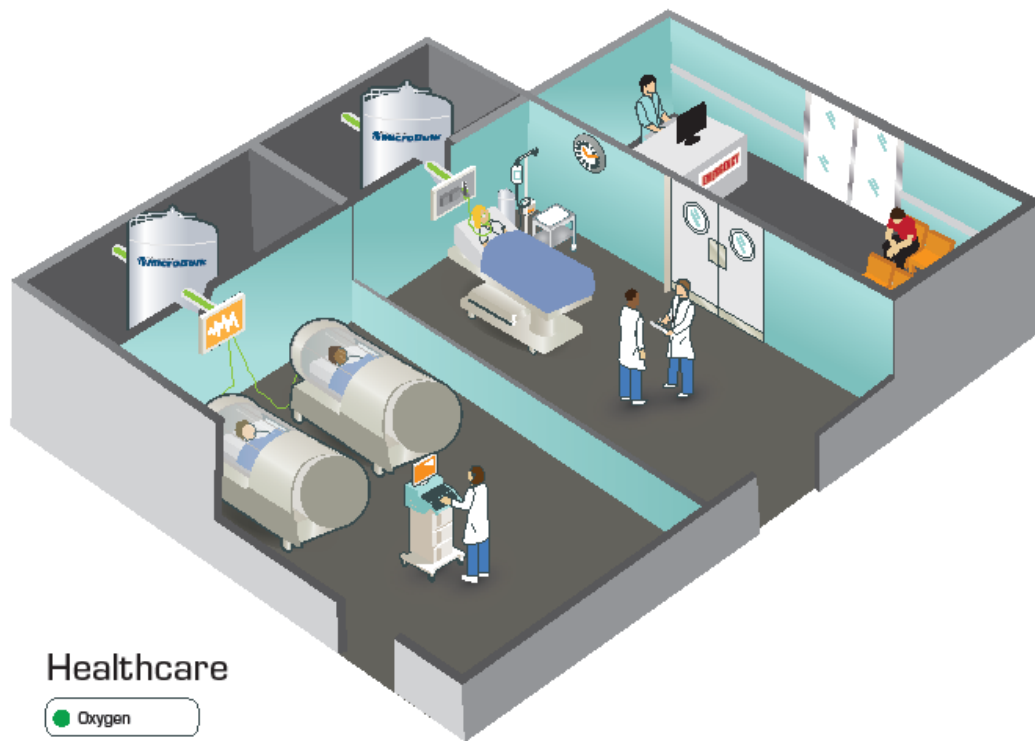
● Nitrogen
● Carbon Dioxide

| 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



| 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:

- 450, 1000, 1500, 2,000, 3,000, 5,000 and 7,500-liter
 - medium pressure (250 PSI), 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