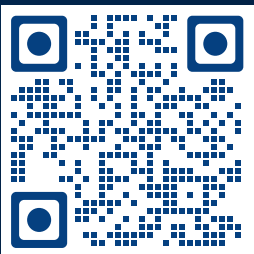




Acme Cryogenics Capabilities

A Leading Provider of Precision Engineered Cryogenic
Solutions for The Hydrogen Economy and Other Dynamic,
High Growth End Markets



For more information on
Acme Capabilities scan
the QR Code above

Acme Cryogenics Capabilities

Focusing on the Liquid Hydrogen & Helium Economies, Bio-Cryo, Space Launch Services, Satellite Constellation Expansion, Niche Food Beverage, Specialty Manufacturing, and Electronics industries.

- **Highly Customizable**
- **Expert Service**
- **Top Quality Value**
- **Parts For Every Need**

Providing comprehensive gas solutions for all your gas and liquid handling needs, including LIN/LOX/LAR/LCO2/LNG/LH2/LHe.

We specialize in unique solutions that can be developed without putting pressure on engineering resources.

Products

Mission critical products and services that facilitate the production, storage, and distribution of Cryogenic liquids and gases.



Vacuum Jacketed Pipe



Cryogenic Valves



Cryogenic Manifolds



Vaporizers



Vacuum Jacketed Piping Systems (VJP)

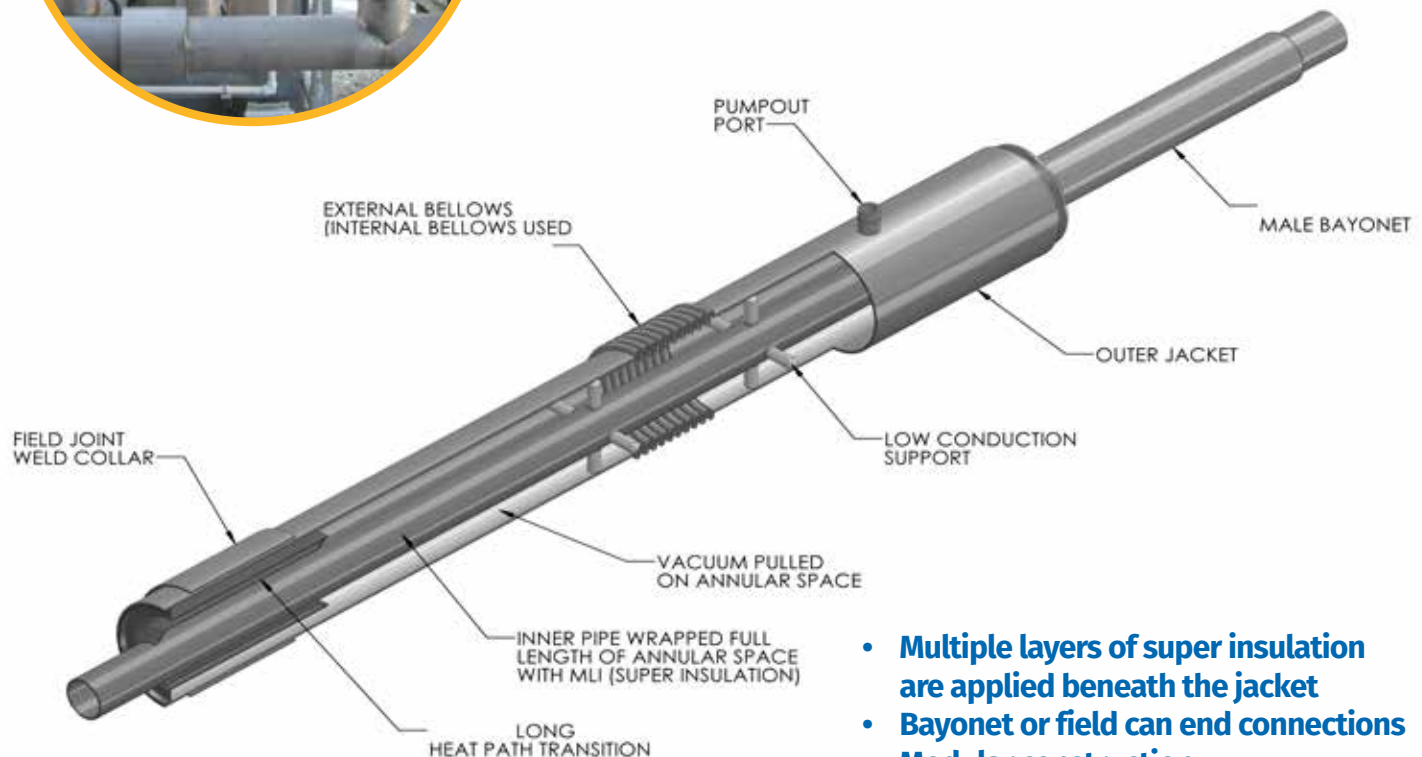
The most cost-effective way to transfer cryogenic liquids, Vacuum Jacketed Pipe (VJP) also known as Vacuum Insulated Piping (VIP) is the preferred piping solution for the safe, reliable, cost-effective transfer of cryogenic liquids. We make vacuum jacketed pipe for the following cryogenic liquids: Nitrogen, Oxygen, Argon, Helium, Natural Gas, Carbon Dioxide, Hydrogen.

- **Standard size VJP (½" - 6")**
- **Large-bore VJP (> 6")**
- **VJP Bayonets & Components**
- **VJ Filters**
- **Phase separators**
- **Subcoolers**



Capabilities

The VJP system consists of two 300 series stainless steel pipes: an inner pipe through which the cryogenic liquid flows, and an outer pipe that seals the annular space and forms a "vacuum jacket." Multiple layer insulation (MLI) between the pipes coupled with a vacuum ensures optimal thermal efficiency. Vacuum Jacketed Pipe efficiently transfers liquids at high pressures. These systems minimize heat leak to maximize efficiency and savings over time.



- **Multiple layers of super insulation are applied beneath the jacket**
- **Bayonet or field can end connections**
- **Modular construction**

Cryogenic Valves - Acme Model Cv

Our patented vacuum jacket technology, which is incorporated into our specially designed cryogenic valve lines, helps to minimize product loss due to conductive heat transfer.

- **Designed for all cryogenic services, including hydrogen and helium, our valves exceeds the industry's highest standards for reliability and performance.**
- **With the shortest lead times in the industry, our cryogenic valve lines are available in both jacketed and non-jacketed models to meet your specific needs.**
- **Industry standard for hydrogen applications.**

All our cryogenic valves are designed for the lowest heat leak and quickest cool-down times. The top entry design allows maintenance without disturbing the vacuum space.

Rigorously tested to ensure long life. We've developed over 800 different distinct valves for our customers.



Cryogenic Gas Manifold

We offer a complete line of cryogenic gas manifolds and associated accessory equipment, to fit the needs of your gas handling system. Our reliable, cost-effective manifolds are customizable for every application and will fit the needs of your specific job. Pair our manifolds with accessory equipment and our outstanding support for quick integration into your gas handling system.

- **Cryogenic Gas Manifolds**
- **Gas Blenders**
- **Ultra High Purity Gas Systems**



Vaporizers

Vaporizers are an important part of the cryogenic system when the end use application is gas service. Vaporizers can add the energy necessary to change the state or phase of the cryogenic liquid to a gas. This added energy can be introduced either from heat exchange with air using our ambient or forced convection vaporizer product lines. This added energy can also be introduced with external power utilizing our direct to process electric vaporizer product lines.

Product Lines

- **Ambient**
- **Forced Air Ambient**
- **Electric Direct to Process**

Capabilities

We are a leading provider of engineering, designing and configuring vaporization systems for your specific project application.



CGA Fittings

Acme offers a wide array of Cryogenic Liquid Transfer Connections for LIN/LOX/LAR, CO₂, Nitrous Oxide and LNG which are designed for safe and reliable cryogenic liquid transfer, fully compliant with CGA V6. Acme carries the world's largest inventory of Liquid Transfer Fittings.

Product Lines

- **Brazed & Threaded Hose End**
- **Fixed End Integral Flange Head Plug Assemblies**
- **Pressure Cap Assemblies**
- **Copper Clad Gaskets**
- **Head Pieces**
- **Dust Cap Assemblies**
- **Tail Plug Assemblies**
- **Fixed End Clamps**
- **Fixed End Assemblies - Rail Car**
- **Forged Brass Flanges**
- **And more...**



Markets



Hydrogen Economy



Specialty Electronics



Space Launch Services



Niche Food & Beverage



Cryogenic Gas Production



Alternative Fuels & Energy



Cryobiology & Healthcare

Complete Value Chain Flow Control Leader In Clean Energy, Compliance, And Safety Applications

Clean Energy Applications

Hydrogen

Supply, transport and
storage infrastructure
Hydrogen-powered
mobility applications

LNG

LNG-powered trucks
CNG-powered transport
Fueling stations
LNG supply chain

Cryogenic

Air separation units
Plant infrastructure
Distributed piping
systems

Space Launch

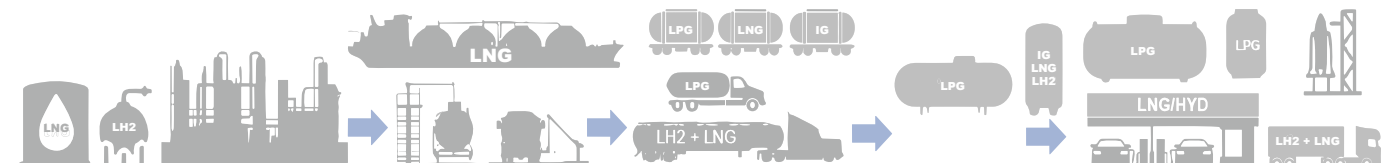
Fuel supply
Launch pad
infrastructure
Component testing

Food & Beverage

Carbonated beverages
Flash freezing /
preservation
Food processing

Specialty Electronics

Semicon manufacturing
Server farms
High performance and
quantum computing



Space Technology

Cryogenic engineered systems are critical to launch pad infrastructure, vehicle development and testing, and oxygen life support systems.

Product Applications

- **Launch Pad Fuel Supply**
- **Launch Pad Infrastructure**
- **Component Testing**
- **Rocket Launch Vehicle Development**

Capabilities

Furnishing vacuum jacketed pipe in sizes up to 12"x16" and pressures up to 5,000 psig. Our VJP systems serve liquid hydrogen, liquid helium, liquid oxygen, liquid nitrogen, and liquid methane.

Space Launch Services

For over 30 years, Acme Cryogenics has delivered the high-quality, safe, precise equipment and services. Space Launch Services consists of a series of activities related to the manufacture, preparation, and launch of space vehicles and satellites. Acme Cryogenics is capable of furnishing vacuum jacketed pipe in sizes up to 12"x16" and pressures up to 5,000 psig. Our VJP systems serve liquid hydrogen, liquid helium, liquid oxygen, liquid nitrogen, and liquid methane.

Product Applications

Cryogenic liquids, such as hydrogen and oxygen, are often used as rocket propellants because they have a high energy density and can be stored and transported at very low temperatures.

In a launch pad fuel supply system, cryogenic fluids are typically stored in insulated tanks or tank trailers and are piped to the launch vehicle through a series of cryogenic distribution piping systems referred to as VJP. These systems are designed to insulate and maintain the low temperature of the liquids to prevent evaporation during the fueling process. Acme Cryogenics designs manufactures and installs the entire vacuum jacketed piping systems needed to deliver cryogenic liquids as rocket fuel in the safest and most efficient manner possible.

Capabilities

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"The increasing adoption of space launch services for satellites and testing probe application is one of the most significant factors driving the growth of the market. Furthermore, the introduction of space tourism is expected to provide lucrative growth opportunities."



Component Testing

Testing components is critical to ensure performance is maintained when facing the harsh environmental conditions that are experienced in space. Acme Cryogenics has the experience and expertise in a diverse range of component testing applications that utilize cryogenic liquids including the use of HALT and HASS chambers (Highly Accelerated Life Test (HALT) and Highly Accelerated Stress Screening (HASS))

When working with cryogenic liquids, safety is paramount. Acme Cryogenics provides emergency shut-off valves, control panels, and oxygen sensors to ensure the safety of workers in the presence of cryogenic liquids that are potentially dangerous.



Hydrogen Economy

Cryogenic solutions are mission-critical to help accelerate the expansion of liquid hydrogen as a clean and sustainable energy source for transportation, industrial, and Residential/ commercial fueling applications.

Product Applications

- **Hydrogen Supply Infrastructure**
- **Hydrogen Mobility**
- **Ecologically-Friendly Industrial Production**

Capabilities

Custom-engineered systems and components to deliver liquid hydrogen with minimum product loss.





Alternative Fuels & Energy

Cryogenic solutions easily and safely facilitate the non-pressurized storage and transportation of LNG and CNG, vital energy sources utilized extensively in both industrial and residential applications.

Product Applications

- **LNG Production and Transportation**
- **CNG Production and Transportation**
- **Natural Gas Pipeline Supply for Peak Shaving**
- **Hydrogen transportation and distribution include mobile high-pressure supply equipment, manifold systems for hydrogen fuel cell technology, and complete fueling stations.**

Capabilities

Acme Cryogenics is a technical leader with over 40 years of experience engineering and fabricating VJP systems which serve as critical technologies for LNG facilities. As uses of liquefied natural gas and Hydrogen increase and change, Acme Cryogenics has stayed ahead of the curve. The global use of LNG as an alternate fuel to diesel and other refined petroleum fuel products continues to increase as an alternative transportation fuel.

Cryobiology & Healthcare

Acme Cryogenics is the leading provider of equipment, installation services, and maintenance to the Cryobiology/Cryopreservation markets. Our specially-designed Vacuum Insulated Pipe, Automatic Fill Systems, and Freezer Installation offer the precise and high-quality systems required by this market. Dewars and Control-Rate Freezers provide effective and accurate cooling of biological specimens or samples at the optimum temperature for preservation. With Liquid Nitrogen temperatures, specimens like blood cells can be preserved almost indefinitely.

Product Applications

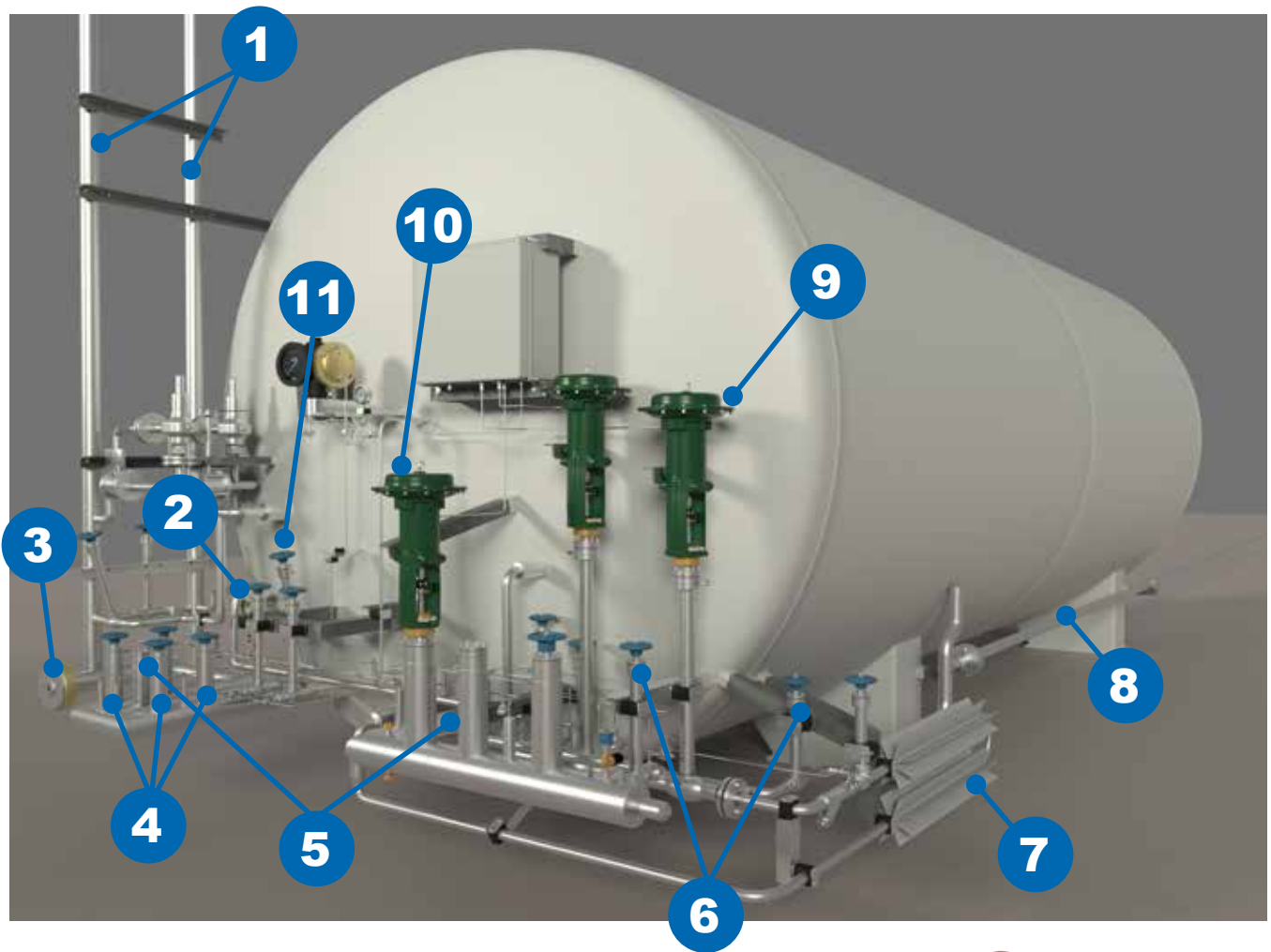
- **Blood / Cancer Therapies**
- **In Vitro Fertilization**
- **Medical Oxygen**
- **Pharmaceutical Freeze Drying**
- **Tissue Transplant / Preservation**
- **Biotech Research**
- **Cryopreservation of Cells and Tissues**
- **Cryosurgery**

Capabilities

Providing reliable, safe, high-purity cryogenic equipment that fulfills standards and requirements for pharmaceutical companies and modern laboratories, especially for Active Pharmaceutical Ingredient (API) manufacturing. Acme Cryogenics' sanitary-grade equipment and service provide the highest level of quality and reliability.



Hydrogen Tank



1. H2 Vent Stack Assembly
2. Full Determination Gauge
3. LH2 Fill Bayonet
4. Manual Vacuum Jacketed Bellows Sealed H2 Valve
5. Jacketed Check Valve
6. Manual Non Vacuum Jacketed Bellows Sealed H2 Valve
7. H2 Pressure Builder Ambient Vaporizer
8. Vent Stack Topworks
9. Actuated Non Vacuum Jacketed Bellows Sealed Fire Control Valve
10. Actuated Vacuum Jacketed Bellows Sealed H2 Valve
11. Manual Vacuum Jacketed Bellows Sealed H2 Valve

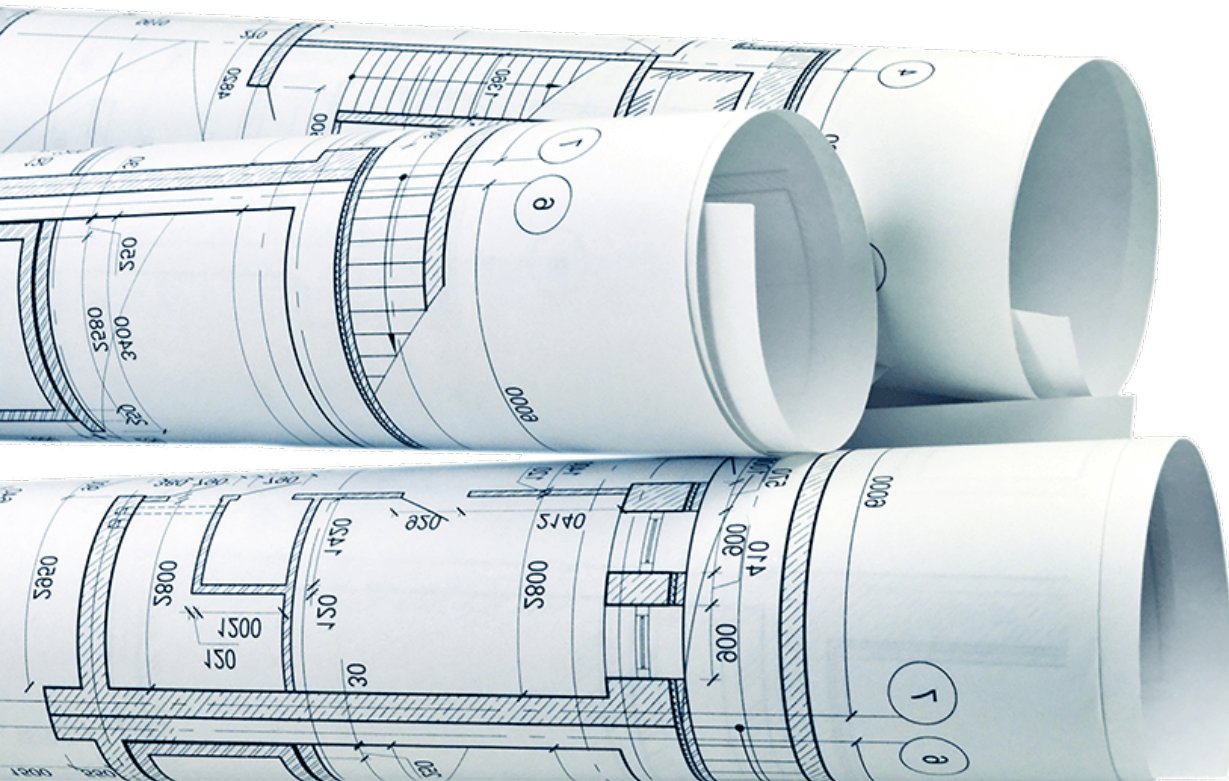


Design & Engineering

The Acme Cryogenics design and engineering team has reliable expertise across a wide variety of industries. Whether your project is large or small, or if your requirements are industry standard or custom, we'll provide you with leading technical capabilities and response times.

Overview

Acme Cryogenics brings industry-leading safety, quality, and reliability to all customers and projects. Our decades of experience provide our customers with the specific expertise needed for effective cryogenic system design and engineering. Our team can provide system level solutions with leading technical capabilities.



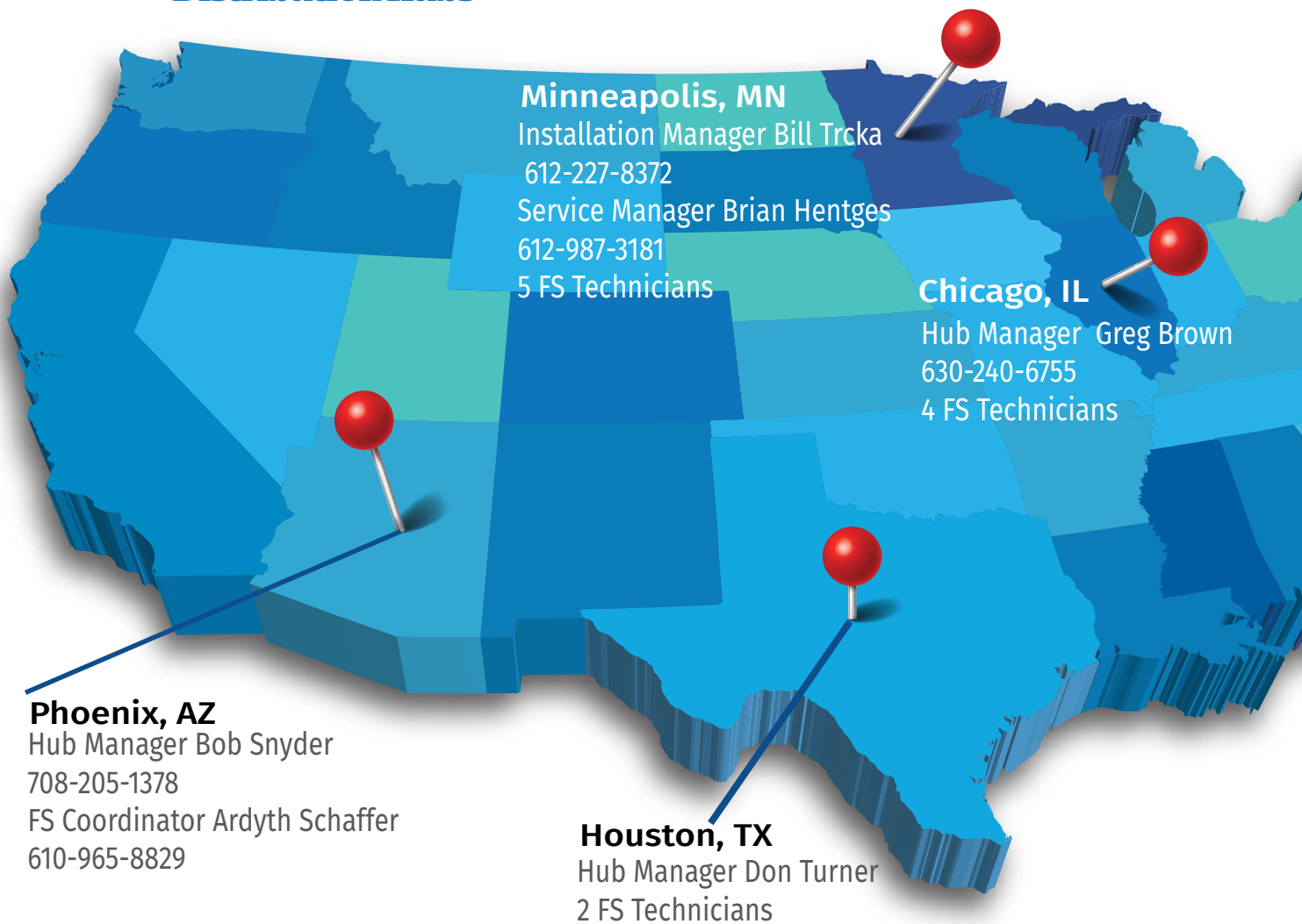
Certifications



- **ASME “U” certificate of authorization**
- **Class 10 & class 100 clean rooms**
- **DOT registration under section 107.503 Title 49**
- **DOT registration as manufacturer of cylinder 49cfr 178.50**
- **National board “r” certificate of authorization**
- **Quality system audited to csa b-51-03 appendix h**
- **Transport canada-certificate of registration**
- **UL & CSA certification for manufacture of control panels**
- **All welding & brazing procedures developed & qualified in accordance to asme section ix**
- **PED, KGSC & TPED in process**



Service & Equipment Distribution Hubs



Techs & Managers are certified to health & safety procedures and are welding, brazing (medical gas) certified.
Trained to work with hazardous materials, are vacuum experts and can troubleshoot and solve complex design issues.

Allentown, PA

Director Bob Snyder

708-205-1378

Hub Manager Scott Crossley

484-223-8254

6 FS Technicians

- Allentown, PA
- Lonsdale, MD
- Oxnard, CA
- Ball Ground, GA
- South Plainfield, NJ

South Plainfield, NJ

Hub Manager

John McLaughlin

908-482-6195

6 FS Technicians

Count On The Acme Team

- At Acme Cryogenics, we pride ourselves on our in-house designs, which are created and manufactured by our highly trained personnel.
- We also have a fully staffed customer service center to provide faster responses to your needs.
- Additionally, we offer unique solutions that are tailored to fit your specific requirements.
- Above all, we strive to deliver the highest quality products and services.

Atlanta, GA

Hub Manager Jody Phillips

484 -538-6202

2 FS Technicians



SITE SURVEY | EQUIPMENT SIZING | LOGISTIC SERVICES

Acme Field Service Solutions

Acme Cryogenics' Field Service Team leads the industry in supporting all industrial gas applications and facilities. Committed to design, engineer and manufacture high quality systems, equipment and components for the industrial gas, medical gas and chemical industries. Safety is our highest priority, both for our employees and our products.

