

CUSTOMIZED PROCESS SOLUTIONS



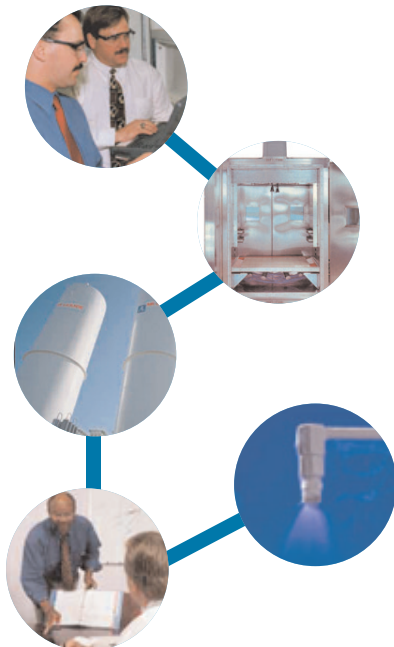
Environmental Testing Using Liquid Nitrogen

Reduced chamber downtime and maintenance, superior productivity and lower cost of equipment ownership are the key advantages of using liquid nitrogen, or LN₂, cryogenic cooling. Effective management of operational cost and nitrogen use are crucial to obtain the full benefits of this process.

In order to ensure maximum efficiency and save on LN₂ and energy:

- The nitrogen storage equipment, chamber connection, distribution network and exhaust system must be properly designed and installed.
- The testing process and use of LN₂ must be continuously monitored and adjusted.

Whether you are considering conversion to a LN₂ process or currently performing testing with LN₂, Air Liquide offers unique expertise and capabilities to optimize your process and reduce your costs.



Customize your solution.

Air Liquide will assist you from project planning to start-up, and consistently throughout entire life of your environmental test chamber. Through a variety of products and services offered by Air Liquide and our partners we will help you select the solutions that best suit your needs.

N₂ Supply and Storage:

- Customized storage and delivery
- Total supply reliability

NITROCOOL™ Retrofit Kit:

- Convert from mechanical-cooling to LN₂ cooling
- Complete kit includes LN₂ injection system, controls and software adjustments
- 70° C minimum ramp rate reduces cycle time and increases productivity

Process Expertise / Optimization Services:

- Efficiency audits by LN₂ environmental testing experts
- Solutions to optimize processes and reduce costs
- Reduce LN₂ use and energy by up to 50%

Local Customer Support:

- Air Liquide employees located at your site to handle chambers logistics and maintenance
- Continuous productivity improvements delivered
- Focus on your core competencies and strategic initiatives

N₂ Recycling System:

- Patent-pending solution allows the reuse of nitrogen in other plant applications
- Minor modifications to the process produces significant efficiencies
- Optimize heat transfer and costs

Environmental Test Chambers:

- Air Liquide and its partners offer the most energy efficient chambers on the market
- HALT/HASS chamber uses 25% less N₂ than comparable equipment
- Optimize resources and operational costs

Vacuum Insulated Piping, Valves, Accessories:

- Design and construction of critical infrastructure requirements
- Single-source supplier maximizes process efficiency

Safety and Training:

- Partnering for all aspects of process safety
- Training, audits, seminars, atmosphere monitoring available

About Air Liquide

Air Liquide is the world's leading producer of industrial gases and nitrogen with operations in more than 60 countries. Air Liquide sells gases and strives to provide associated, innovative technologies and services to optimize your electronic manufacturing processes while delivering superior value. Find your local Air Liquide subsidiary at www.airliquide.com or email us at electronics.manufacturing@airliquide.com.



In the U.S.A.: AIR LIQUIDE AMERICA CORPORATION • 2700 Post Oak Boulevard, Houston, Texas 77056-8229 USA
Phone: (800) 820-2522 • Fax: (877) 715-4799 • www.us.airliquide.com
Global: www.airliquide.com

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