

Air Products

Industrial Gases Are
Advancing Lithium-Ion
Battery Production

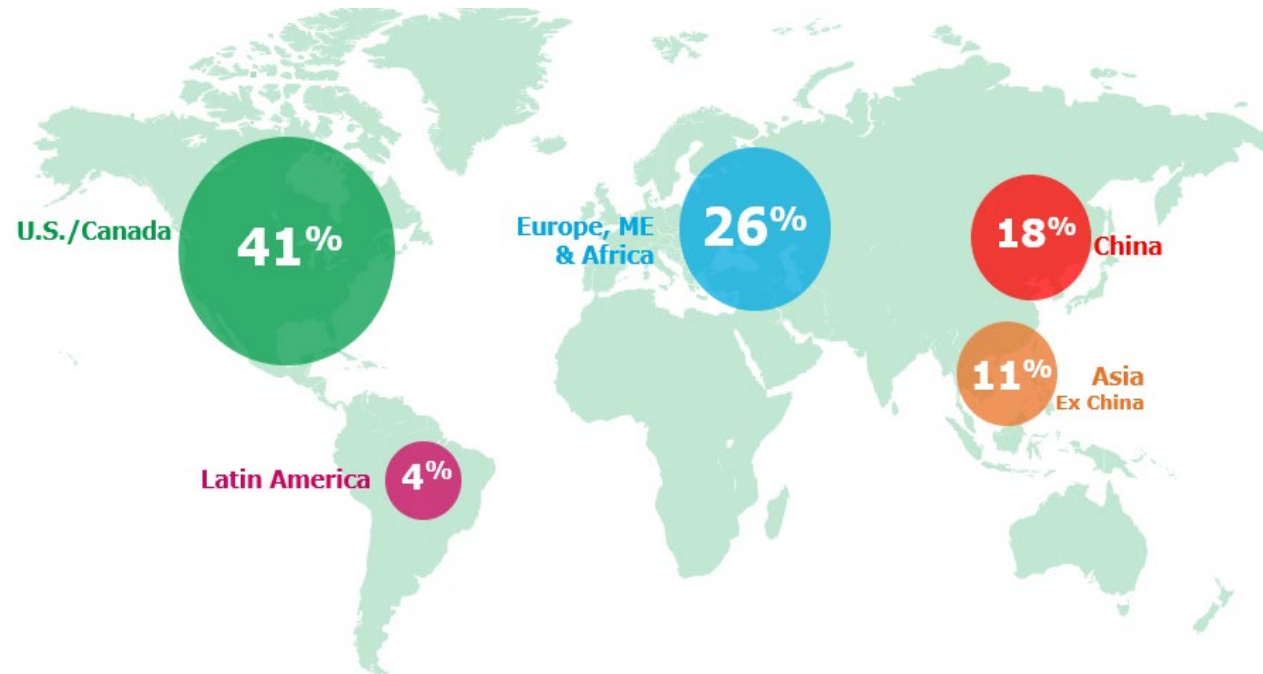
Lisa Mercado

Moving forward



Air Products Global Presence

Innovating for our customers and responding to environmental challenges are the heart of an \$10.3B business and critical to our growth strategy



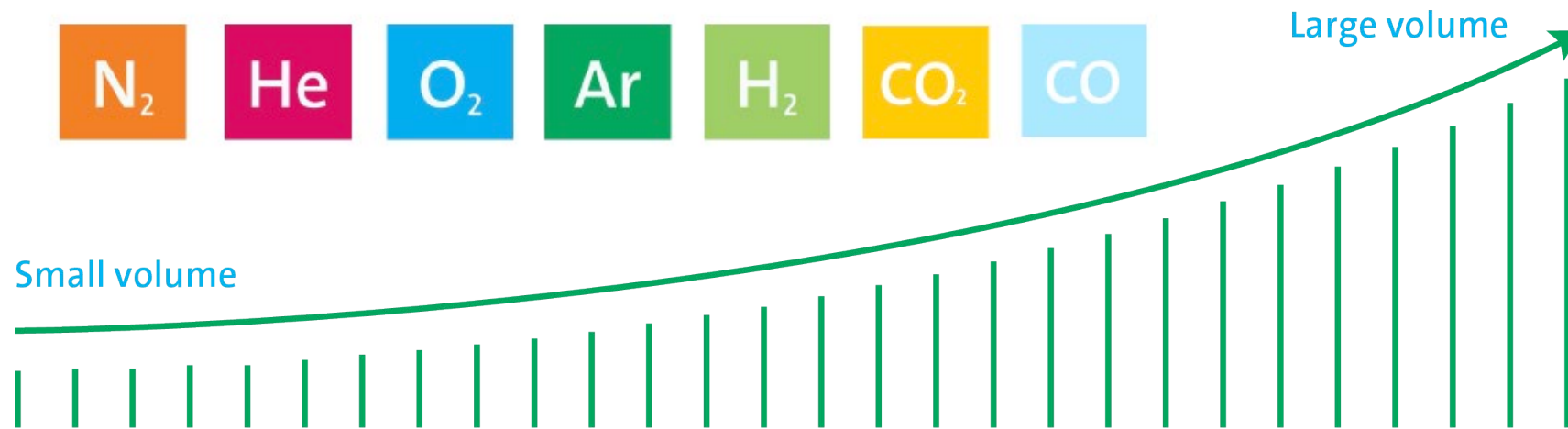
Our **Higher** Purpose

Bringing people together to **collaborate and innovate** solutions to the world's most significant energy and environmental sustainability challenges

Established **leading positions** in diverse end markets, including energy, chemicals, metals, manufacturing and electronics

Flexible Supply Options for Different Volumes

Gases, equipment and services to help you succeed



Cylinders/dewars



CryoEase® Service



Liquid bulk



On-site gas generation

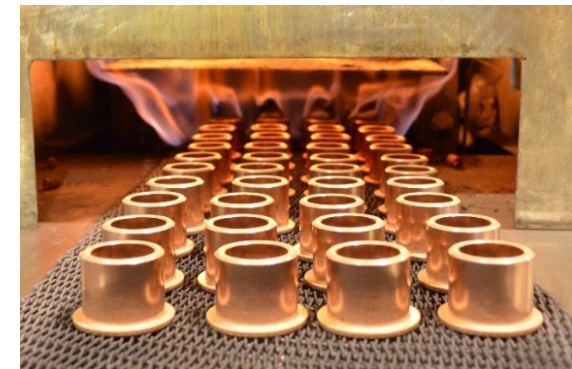


Large air separation unit and pipeline system

Creating Value Beyond Supplying Gases... Innovative Differentiation

Technical expertise and technology provides a competitive advantage for our customers

- Enhancing safety & sustainability
- Improving product quality
- Reducing operating costs
- Increasing production yields
- Working with our technical experts
- Optimizing operations via remote data - (Air Products Process Intelligence)
- Assuring high-value product reliability



Gas Solutions for Lithium-Ion Batteries

High quality industrial gases backed with a 99.99% delivery record to keep your operation up and running

- High quality gases, applications technologies, equipment, and services to meet lithium-ion battery production requirements.
- As a world leader in industrial gases, we have the experience and know-how to help you reduce cost and improve productivity, product quality and safety.



We have industrial gases, technologies and services for all stages of the lithium-ion-battery production process.

Mining/Refining

Ore processing, recovery, and smelting

Chem Processing

Carbonylation | Inerting

Components

Annealing | Carbon fiber or graphite | Inerting | Sintering |

Coil annealing | Extrusion | Non-ferrous melting |

Inerting, stirring and refining | Non-ferrous heating

Battery Assembly


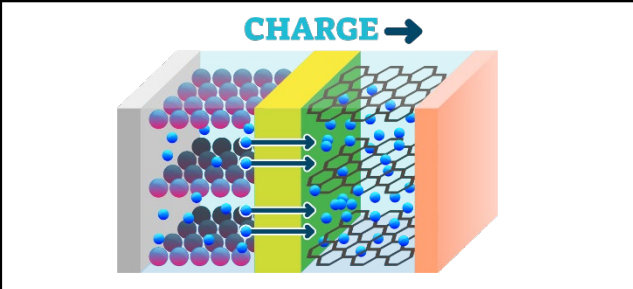



Welding | Leak detection | Inerting

Recycling

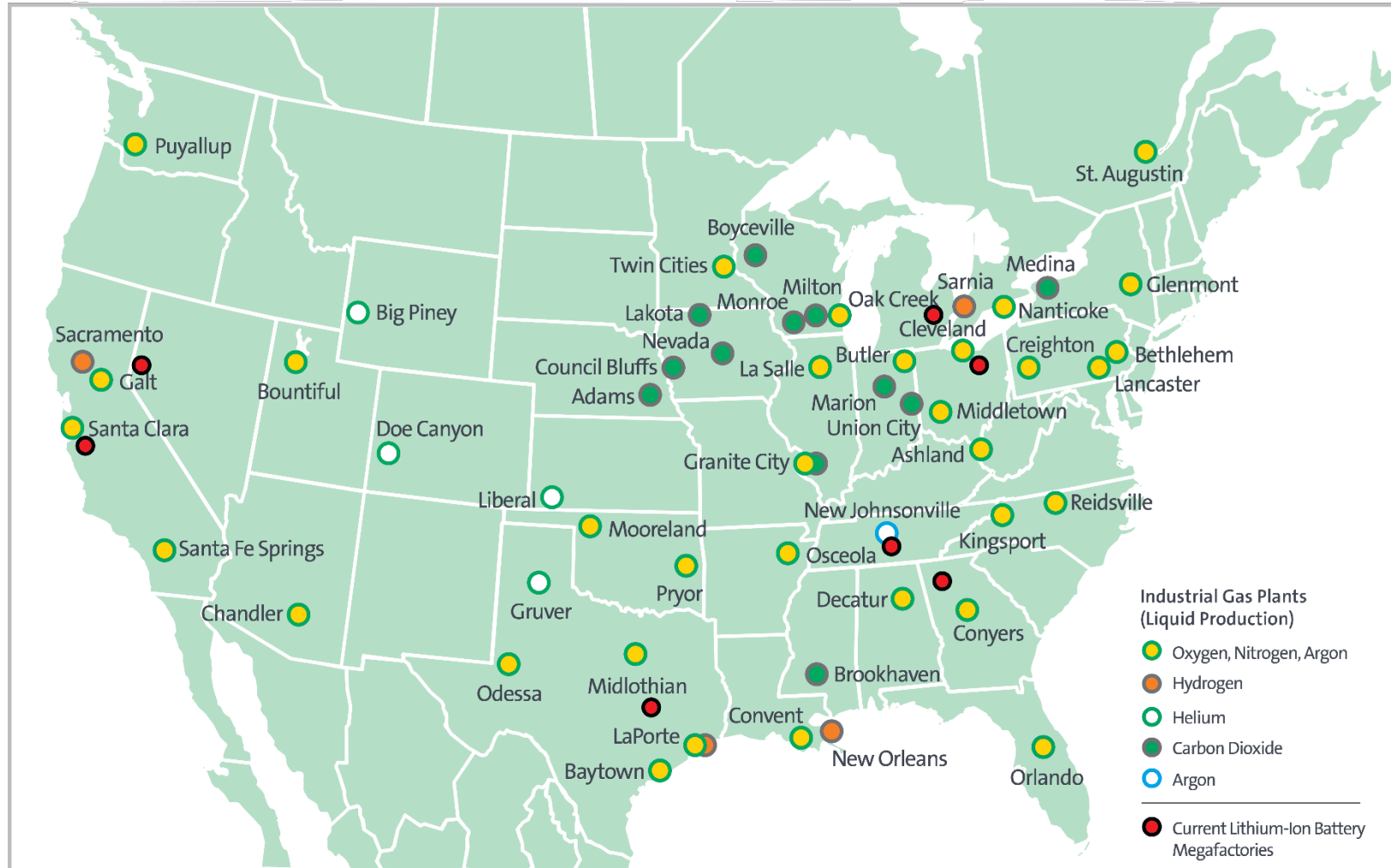
Cryogenic liberation | Ore processing, recovery, and smelting |

Inerting, stirring and refining

Industrial Gas Solutions for Lithium-Ion Battery Production

Mining/Refining	Chem Processing	Components	Battery Assembly	OEM	Recycling
					
Material production and refining	Material production	Material production (heat treatment); enclosures	Cell assembly; welding; leak checking	Welding	Battery disassembly; material regeneration
<ul style="list-style-type: none"> • Oxygen, nitrogen and hydrogen supply for inerting, hydrometallurgy, pyrometallurgy, and refining processes 	<ul style="list-style-type: none"> • Nitrogen, oxygen, carbon monoxide and carbon dioxide supply for inerting and chemical production 	<ul style="list-style-type: none"> • Nitrogen, oxygen, hydrogen, and argon for melting, refining, coil annealing and heat treatment • Process optimization: atmosphere detection, optimization and control 	<ul style="list-style-type: none"> • Nitrogen and argon for inerting • Welding process gases • Helium for leak testing 	<ul style="list-style-type: none"> • Argon, carbon dioxide and oxygen for welding 	<ul style="list-style-type: none"> • Nitrogen and oxygen supply for cryogenic grinding & pyrometallurgy • CO₂ supercritical extraction • Process optimization: atmosphere detection and control

Reliable Supply for All Production Needs



Customers. Solutions. Value.

Utilizing core IG competencies to help establish and grow a North America lithium-ion battery supply chain

- **Comprehensive technical support for lithium-ion battery production**
 - **Atmosphere detection** for product quality control, production safety and environmental protection
 - **Atmosphere control:** furnace atmosphere control, dew point control, hydrogen monitoring) to control heat treatment processes and improve product quality
 - **Argon recycle and reuse** to save resources and reduce cost
 - **Pilot-scale combustion lab** with state-of-the-art instrumentation and process control capabilities
 - **CFD flow field and thermal field simulation** to effectively optimize parameters, reduce the number of experiments, and improve optimization efficiency.
- Positioned to win by **strong industry relationships, proven technologies,** and an **innovative spirit** to help customers innovate and grow



Total Safety Philosophy

Maintaining a safe workplace is a
fundamental and moral responsibility.



We take the approach that all accidents are preventable.
The only acceptable goal is **zero** accidents and incidents.
We will strive toward that goal in **every location, every day.**

Focus and Commitment in a Changing World



Enhancing **safety & sustainability**



More than a gas sale...

focusing on the finish line for



emerging growth markets

Stronger together – new applications



for industrial gas with **reliable supply**

Visible **commitment to our customers...**

helping them grow and **succeed**



..our Higher Purpose

Moving Forward



Air Products

High-quality gases with reliable supply for all production needs

Innovative solutions to enable lithium-ion battery industry growth

Technical expertise and technology for a competitive advantage

Equipment and services to help you succeed

Total safety philosophy

Ambition | Ingenuity | Partnership

Why Choose Air Products?

Because we check all the boxes!



Safe & Sustainable Operations at our facility and yours

- **Facility Construction Planning** for expansion or new build production
- **Gases & Equipment Portfolio** to optimize your capital efficiency
- **Operational Readiness Inspections** prior to start up
- **Safe to Deliver Checklist** ensures systems are



Customer Focus is the #1 job for everybody in the company

- **Dedicated Customer Service Team** available 24/7/365
- **MyAirProducts Customer Portal** for instant access to information and transaction processing
- **Air Products Process Intelligence** digital technology to monitor operations, optimize gas use, and provide data trend analysis



Reliable Supply keeps you running and performing your best

- **Fully Integrated Supplier** from cylinders to on-site gas generation
- **24/7 Inventory Management** for supply replenishment plans
- **Network of plants** maintains supply



For peace of mind on your next project, call 1-833-NEED-GAS

Thank you
tell me more



Use the QR code to navigate to
Air Products Lithium-Ion Battery
webpage

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Moving forward

