



Air Products

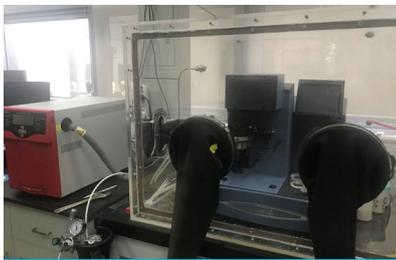
Gas Supply Solutions for
Lithium-ion Battery Production

Comprehensive Technical Support for Lithium-ion Battery Production

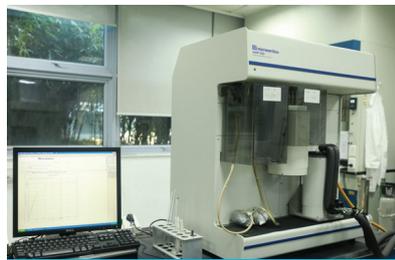
- **Atmosphere detection** for product quality control, production safety and environmental protection
- **Atmosphere control** (including furnace atmosphere control and dew point control) to control the heat treatment process and improve product quality
- **Atmosphere recycle and reuse** (O_2 , N_2 , H_2 , He, Ar) to save resources and reduce cost
- **CFD flow field and thermal field simulation** to effectively optimize parameters, reduce the number of experiments, improve optimization efficiency



Testing Equipment for Lithium-ion Battery Production



TGA



BET



Lab tube furnace
for heat treatment process



Mass spectrometer



Particle size analyzer



Multi-atmosphere box furnace
for heat treatment process

Provided by the Air Products Technology Centers in Asia and USA.

Gas Applications for Lithium-ion Battery Production

As an indispensable component in manufacturing, industrial gases are widely used in various processes in lithium-ion battery production. As a world-leading industrial gas supplier with extensive industry experience, Air Products offers high quality gases, applications technologies and services to meet your requirements on volume and purity, as well as precisely control the water content, to help you reduce cost, improve productivity, product quality and on-site safety.

Our experts also provide on-site process and technical support, including gas equipment safety inspection and training.



	Process	Air Products Solutions
Cathode material (LFP, NMC, NCA, LCO, LMO)	Material production precursor (inert protection)	<ul style="list-style-type: none"> Nitrogen supply: design, supply and installation
	Material production and heat treatment	<ul style="list-style-type: none"> Nitrogen, oxygen and other gas supply: design, supply and installation Process optimization: atmosphere detection, atmosphere optimization, atmosphere control (dew point, carbon potential, etc), atmosphere recycling and reuse
Anode material (Graphite, Si-C, LTO)	Material production and heat treatment	<ul style="list-style-type: none"> Nitrogen supply: design, supply and installation
Conductive agent (Graphene, CNT, carbon black)	Material production and heat treatment	<ul style="list-style-type: none"> Nitrogen supply: design, supply and installation Resource recovery: hydrocarbon condensation recovery and environmental treatment, hydrogen recovery and reuse
Electrolyte	Material production (inert protection)	<ul style="list-style-type: none"> Nitrogen and argon supply: design, supply and installation
Cell production	Cell assembly (inert protection)	<ul style="list-style-type: none"> Nitrogen, argon and helium supply: design, supply and installation
Battery case	Welding	
Battery leakage test	Helium leakage test	
Recycle	Battery disassembly Material regeneration	<ul style="list-style-type: none"> Nitrogen supply: design, supply and installation Technical support: cryogenic grinding, CO₂ super critical extraction, pyrometallurgy Process optimization: atmosphere detection and control during material regeneration process

Flexible Supply Options for Different Volumes

Air Products gas experts will help you determine the most economical supply option for your particular application and geographic location. Industrial gases are typically provided in gaseous and liquid form through a variety of supply systems.

Small volume



Cylinder and cylinder pack



CryoEase® Service



Liquid bulk



On-site gas generation



Large air separation unit and pipeline system

For more information, please contact us at:

België

Air Air Products NV
T +32(0)2 255 28 95
beinfo@airproducts.com
airproducts.be

Belgique

Air Products SA
T +32(0)2 255 28 95
beinfo@airproducts.com
airproducts.be/fr

Česká republika

AIR PRODUCTS spol. s r.o.
T +420 800 100 700
infocz@airproducts.com
airproducts.cz

Deutschland

Air Products GmbH
T +49(0)234 689 300
apginfo@airproducts.com
airproducts.de

España

Carbueros Metálicos S.A.
T +34 902 13 02 02
oferta@carbueros.com
carbueros.com

France

Air Products SAS
T +33(0)800 480 030
frinfo@airproducts.com
airproducts.fr

Ireland

Air Products and Chemicals Inc.
T. 1800 99 50 29
ieinfo@airproducts.com
airproducts.ie

Italia

SAPIO Produzione Idrogeno
Ossigeno S.r.l.
T +39(0)39 8398286
gtm@sapio.it
grupposapio.it

Nederland

Air Products Nederland BV
T +31(0)20-435 3535
ninfo@airproducts.com
airproducts.nl

Polska

Air Products Sp. z o.o.
T (BULK) +48(0)801 081 122
T (PG) +48(0)801 100 801 infopl@
airproducts.com
airproducts.com.pl

Portugal

Gasin II - Gases Industriais
Unipessoal, Lda
T +351 229 998 300
info@gasin.com
gasin.com

Slovenská republika

Air Products Slovakia, s.r.o.
T +421 (0)800 100 700
infosk@airproducts.com
airproducts.sk

United Kingdom

Air Products PLC
T 800 389 0202
apukinfo@airproducts.com
airproducts.co.uk

