

# Air Products Advanced Materials Processing segment capabilities



## More than just an Oxygen supplier

By working closely with our customers for over 75 years, Air Products has accumulated a wealth of expertise that enables us to offer a wide range of application services and solutions to answer your toughest challenges.

Li-ion batteries show the unmatched combination of high energy and power density, making it the technology of choice for portable electronics, power tools and hybrid/full electric vehicles. The research is carried out with a focus on various materials, however, the major focus until 2026 is projected to be on NCA and NMC (higher safety).

Air Products would like to be a partner in your process improvements to make your business more successful or seek new energy and environmental solutions where we can help. Among our services you can find computational modelling (i.e. CFD), thermodynamic calculations and safety training. Air Products can also provide engineering consulting services during project design, start-up, and ongoing operations. Additionally, we have a dedicated "Li-Battery-Team" including R&D which can look after site services for your plant and process. All services are provided with the aim to help you improve process efficiency, optimize product quality, control risks and meet legislative requirements.

We have seen many examples that process improvements unlock potential savings for our customers. As a leading industrial gas and material company with a culture of innovation Air Products is a global leader in advanced materials processing and combustion segment. Air Products is formed by experience in existing and new operations. We can help with control of the atmosphere composition and consumption used in your furnaces. Air Products has technology in development which offers lower cost and builds on more than 70 years' experience of implementing advanced technology.

### How it will work for you

The reactive atmospheres used in the production processes of Rechargeable Batteries are often developed by a 'trial and error' approach. These are still not fully understood & developed for other industries because they are relatively new production process. At Air Products, we have indicated an optimization potential and room for improvements where technology teams would work together with the same objectives.

Efficiency improvement gains of more than 20% are not the exceptions. If you are interested in the idea of optimization of your process, we can offer a confidentiality statement around the gas supply at any time if needed- just let us know.

### We see trends on the NMC material technology development

- Increment in Ni amount and thereby the need of oxygen usage
- Improvement of material stability and safety
- Optimization of production process and production cost

### Air Products partnerships for the battery industry

We have been members of battery associations- i.e. 'RECHARGE' for conferences & research. Air Products also participates in conferences for the battery industry and is in direct relationship with other OEMs for this industry segment. On top of this, we have a strong partnership with Universities & Research Centers connected to the industry which we are looking to expand even further.

### Brochures and information

As an attachment to this information we have provided two documents for more information:

- Metal Process Solutions
- Gas Supply Solutions for Lithium-ion Battery Production

Our support is priceless but free for you.

For more information, please contact us at:

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GENERATING A CLEANER FUTURE