THE LITHIUM VOICE
INTERNATIONAL LITHIUM ASSOCIATION (ILiA)
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Lithium and AI

Battery material qualification

In conversation with Anand Sheth, ILiA Founding Chairman

FRICTION FIGHTER

How lithium grease keeps the world moving



Image: Shutterstock

ILiA Connections



The ILiA team (Robert Carruthers, Martin Ma and Danyi Feng) meeting Diana Fu at the Sichuan Union Shine New Energy Sci-Tech Co Ltd both during the China International Battery Fair in Shenzhen, China.



During Benchmark Mineral Intelligence's GIGA US event in Washington DC ILiA held a networking dinner for members and guests, hosted by Austin Devaney, ILiA's North American Representative Director.



In July ILiA's Tom Drabble visited the Farnborough International Air Show in the UK to discover the latest developments in electric aircraft. Shown here is the Vertical Aerospace eVTOL, which made history by performing the first public electric vertical take-off, flight and landing demonstration. (Image: ILiA)



Roland Chavasse visited Dr David Boutt and Dr Bendan Moran, two of ILiA's Honorary Fellows and world-leading salar hydrogeology experts, at the University of Massachusetts Amherst in the USA. (Image: ILiA)



ILiA's Martin Ma and Conor Fincham visited Zimbabwe to attend the Chamber of Mines's annual meeting. They were supported by EcoBank Zimbabwe and our thanks to Managing Director Moses Kurenjekwa and Mining Specialist Isabela Nyoka. (Image: ILiA)



In April Jorge Mora, ILiA's Operations Director, had the privilege to visit SQM's Salar del Carmen plant, close to Antofagasta, Chile. The plant is the world's largest lithium refinery. (Image: SQM)

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Chair's WELCOME



Welcome to the 15th edition of *The Lithium Voice*.
Lithium is best known today for its role in batteries, but this edition is a timely reminder of just how diverse and important its applications have become. Our cover story looks at one of lithium's longest-established uses: lubricating greases. For more than 80 years, lithium greases have helped keep bearings, gears and machinery moving across both domestic and industrial situations, including the wheel bearings of most of the cars we drive. While batteries now account for the majority of lithium demand, specialised lithium greases continue to demonstrate the remarkable versatility of this element.

At the other end of the technology spectrum, we explore lithium's growing role in powering artificial intelligence. AI data centers require enormous amounts of reliable, uninterrupted electricity, and lithium-ion batteries are increasingly being deployed both in large energy storage systems and as backup units within server racks (ESS+BBU=UPS!). It is particularly interesting that AI is also helping our own industry, with applications ranging from mineral exploration and mine planning to battery development and recycling. These two transformative industries are increasingly supporting each other.

Another important feature examines battery material qualification. As the battery industry matures, qualification is becoming much more than a technical exercise. It can influence market access, supply-chain resilience, innovation and ultimately competitiveness. As a specialty chemical, lithium presents particular challenges and understanding these requirements will become increasingly important as new sources of lithium enter the global supply chain.

Our regional contributors also highlight how quickly the industry continues to evolve. New supply is emerging in Africa, ownership of lithium resources is changing, European battery hubs are driving increased imports, and energy storage is becoming an increasingly important source of demand in North America. Together, these developments demonstrate an industry that is becoming broader, more global and more sophisticated.

Finally, I am delighted that this edition has allowed me space to reflect on ILiA's own beginnings and the journey our Association has taken over the last 5 years. As our industry continues to evolve, ILiA plays a key role in bringing together the global lithium community, sharing knowledge and providing a strong, independent voice for the entire value chain.

I hope you enjoy this edition of *The Lithium Voice*.

Anand Sheth
Founding Chairman

Feature

LITHIUM IN LUBRICATING GREASES

FROM ALL-ROUND WORKHORSE TO DELIBERATE CHOICE

By Dennis Eijdenberg

Ask anyone where lithium is used, and most will answer: "batteries". Ask an engineer or a maintenance manager, though, and the answer might also be: "in lubricating greases". Since the 1940's, lithium has quietly kept the world's machines turning, as the basis of the soap thickeners in greases that protect the bearings, gears and joints we never think about until they fail.

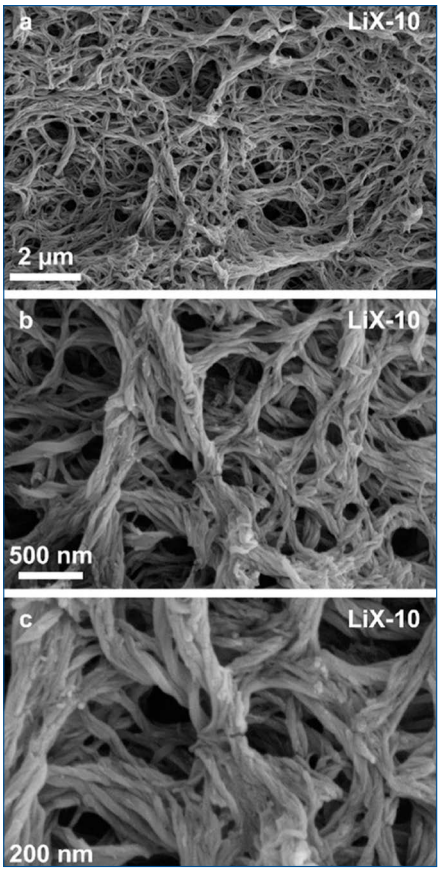
Grease is easy to overlook. Grease is only about 3% of finished lubricants by volume; oil dominates. Yet grease is the lubricant of choice for many rolling and plain bearings, earning its place where oil would leak away or be flung off: it stays put, helps exclude dirt and water, and keeps working where oil cannot.

So what actually is a grease? It is a thickened oil, which is fundamentally different from a thicker, more viscous one. It combines a base oil, which does most of the lubricating, with additives that provide properties such as wear, corrosion and oxidation protection, and a thickener. This thickener forms a three-dimensional matrix that holds the oil and additives in place and gives the grease its consistency. Most greases today are soap-thickened: when a metal hydroxide such as lithium hydroxide reacts with a fatty acid, it forms a metallic soap: a sponge-like structure.

Grease is the lubricant of choice for many rolling and plain bearings, earning its place where oil would leak away or be flung off, and keeps working where oil cannot.

To make the sponge analogy more tangible, think back to a Sunday morning spent washing the car. Lift a big, open-pored sponge from the bucket and the soapy water pours straight out; tug at its sides and it tears without much effort. A dense industrial sponge behaves quite differently: the water stays put until you squeeze it, and it retains its shape when you pull at it.

Grease structures behave in much the same way. An open structure gives up its oil quickly, but is soft and struggles with the constant kneading inside a moving component. A denser, more strongly reinforced structure releases oil more slowly but can withstand mechanical working better, and offers greater thermal resistance. In simplified terms, this is the difference between a simple soap and complex soap: not better or worse, but suited to different jobs. The real behaviour is more intricate, but the analogy captures how structure influences oil release, mechanical stability and application suitability.



When a lithium-based grease is viewed through a scanning electron microscope the sponge-like structure becomes clear. (Image: Cropped from Figure 3 in Larsson et al., Wear 490–491 (2022), 204192, CC BY 4.0.)

A patent that changed lubrication

Lubricating greases have been known since ancient times, though those early versions, based on animal fats and simple lime soaps, were far cruder than the soap greases we now use. It was on 3 March 1942 that the American chemical engineer Clarence E. Earle was granted US Patent No. 2,274,675, which shaped the way we lubricate components today.

Before that date, choosing a grease meant choosing which compromise to accept.



Sodium greases offered very good high-temperature performance but failed in the presence of water. Traditional calcium greases had excellent water resistance but a very low maximum working temperature. Aluminium soap greases offered good water resistance and adhesion but a limited temperature range and poor mechanical stability, losing its structure in rotating equipment.

Clarence's patent can be seen as the birth of lithium greases, which make up more than 60% of all greases used worldwide today.

Lithium greases were among the most cost-effective options available per kilogram, and once their versatility is taken into account, arguably the most cost-effective of all.

Lithium did not take over because it was the best at any single property. It took over because it was good at many of them at once. Lithium greases are a reliable all-rounder, the industry's jack-of-all-trades, offering a useful balance across water resistance, a wide temperature range, mechanical stability, load-carrying capacity and pumpability. Individual formulations can be optimised to excel in particular areas.

Affordable, available and all-round

The rise of lithium greases can be summarised in three words: affordable, available and all-round.

For decades, lithium as a raw material was predictable and accessible enough to support production at scale. Plants were built around lithium chemistry, and a simple lithium grease could deliver broad performance without elaborate formulation. For much of that period, lithium greases were among the most cost-effective options available per kilogram, and once their versatility is taken into account, arguably the most cost-effective of all.

Availability meant more than supply alone. Formulators understood the chemistry, equipment makers wrote lithium into their specifications, and maintenance teams knew the products. Each decade of use added data, approvals and confidence.

Above all, lithium grease is all-round. It can be produced in many variations, combined with mineral or high-performance synthetic oils and a broad range of additives, giving formulators considerable freedom to adapt it to different operating conditions.

The global use of lithium-containing greases is clear from the survey of the National Lubricating Grease Institute (NLGI). The survey is voluntary, so the figures are best read as a trend indicator rather than a full census. In the 2020 data, more than 70% of the grease produced globally contained lithium.



Lubricating greases based on lithium are widely available to the public. *(Image: Interflon)*

continued on page 6

Some lithium grease applications



High speed trains



Vehicle wheels



Marine vessels



Industrial machinery



continued from page 5

A victim of its own success

The very element that made such a versatile grease also turned out to be ideal for batteries. As recently as 2007 to 2008, greases claimed about 16% of the world's lithium and batteries around 20%; today those figures stand at 2% and 88% respectively, a near-complete reversal in a single generation of the metal's use, according to USGS estimates. The grease industry has become a minor player in a rapidly growing lithium market.

In the past decade, battery demand has driven periods of shortage, oversupply and price correction in the lithium market. The grease industry, by contrast, is fragmented and takes only a very small share of that market, giving it little influence over lithium's price or supply. A humble multipurpose grease now leans on a raw material of strategic global importance. That invites an honest question: does every grease truly need lithium, or is it specified simply because it always has been?

A second cloud is gathering on the horizon: a European proposal to classify certain lithium salts as toxic for reproduction. One of them, lithium hydroxide, is the salt most commonly used to make lithium greases. It is not yet law, it is being contested, and it is no blanket ban: much depends on how much classified material remains in the finished product. But even softened, it would weigh most on the lower-tier, high-volume commodity greases, precisely the segment already under pressure.

Between 2020 and 2025, lithium-containing greases dropped from around 70% of total market volume globally to around 60%, a clear if gradual decline. Total grease production volume worldwide has held steady for the past fifteen years, so lithium's falling share reflects a real shift in preference, not a shrinking market.



From default to deliberate choice

These developments do not spell the end of lithium greases, though; they point to a changing role. Simple-soap lithium greases have traditionally served moderate-duty applications, where their balanced performance made them an effective general-purpose choice. The standardised nature of this market also leaves it exposed to price-driven purchasing. Losing part of this high-volume commodity market is not a defeat.

> ***Lithium-containing greases are not the only option able to serve this more demanding, developing market. They do, however, deserve a place at the table, and nowhere is that clearer than in wind energy.***

Eight decades have proved that lithium can make an excellent all-round grease. Lithium already makes excellent high-performance specialised products too, and that is increasingly where its future lies.

The more sophisticated versions each bring a specific strength: lithium-calcium typically boosts load-carrying capacity and

performance in the presence of water, lithium complex lifts the upper working temperature and mechanical stability under shear, and multi-complex greases combine these strengths in a single product.

Honesty matters here. Lithium-containing greases are not the only option able to serve this more demanding, developing market. They do, however, deserve a place at the table, and nowhere is that clearer than in wind energy.

Where lithium can deliver more

Wind energy illustrates this next chapter particularly well and closes a satisfying loop. Lithium already supports the storage of renewable energy through batteries. In a wind turbine, lithium-containing greases can also help keep the machinery that generates this energy turning. The same element therefore supports the energy transition in two ways.

A turbine is a demanding host, combining high and variable loads, oscillation, moisture, cold starts and long relubrication intervals with awkward access. The demands also differ sharply by machine component: the main bearing turns very slowly under very high load, the pitch and yaw bearings make small, oscillating movements, and the generator bearing runs at high speeds. No single grease is ideal for all of them, but the breadth of the lithium family, from complex to multi-complex, makes it a versatile platform for these very different challenges.



High-speed rolling bearings form another growth area. Electric motors, fans, pumps and machine tools all require reliable, long-term lubrication. Here lithium complex greases can withstand the constant working, resist elevated temperatures and offer a very long service life. Polyurea greases compete strongly here, especially in sealed electric-motor bearings, but their manufacture requires extra controls for reactive raw materials that limit production in some markets.

For decades, lithium's success rested on being affordable, available and all-round. The age of lithium as the automatic answer may be ending, but the age of lithium as a deliberate technical choice may only be beginning.



Lithium complex greases, by comparison, benefit from broad manufacturing familiarity and wide availability.

Less volume, greater purpose

For decades, lithium's success rested on being affordable, available and all-round. Affordability and availability now answer to markets far larger than grease. The third remains as relevant as ever.

So the future may divide more sharply. In routine, moderate-duty applications, other thickeners will keep gaining ground.

In demanding ones, lithium remains among the most versatile tools a formulator has. This is not a retreat but a more mature use of a valuable material, whose next chapter looks more selective, more specialised and, in the end, more valuable.

It is worth remembering what all this protects: the bearings, gears and joints we never think about until they fail. A small quantity of the right grease, applied at the right place, at the right time, safeguards machinery worth many times its value, and that, in the end, is lithium's greater purpose.

The age of lithium as the automatic answer may be ending, but the age of lithium as a deliberate technical choice may only be beginning.

About Dennis

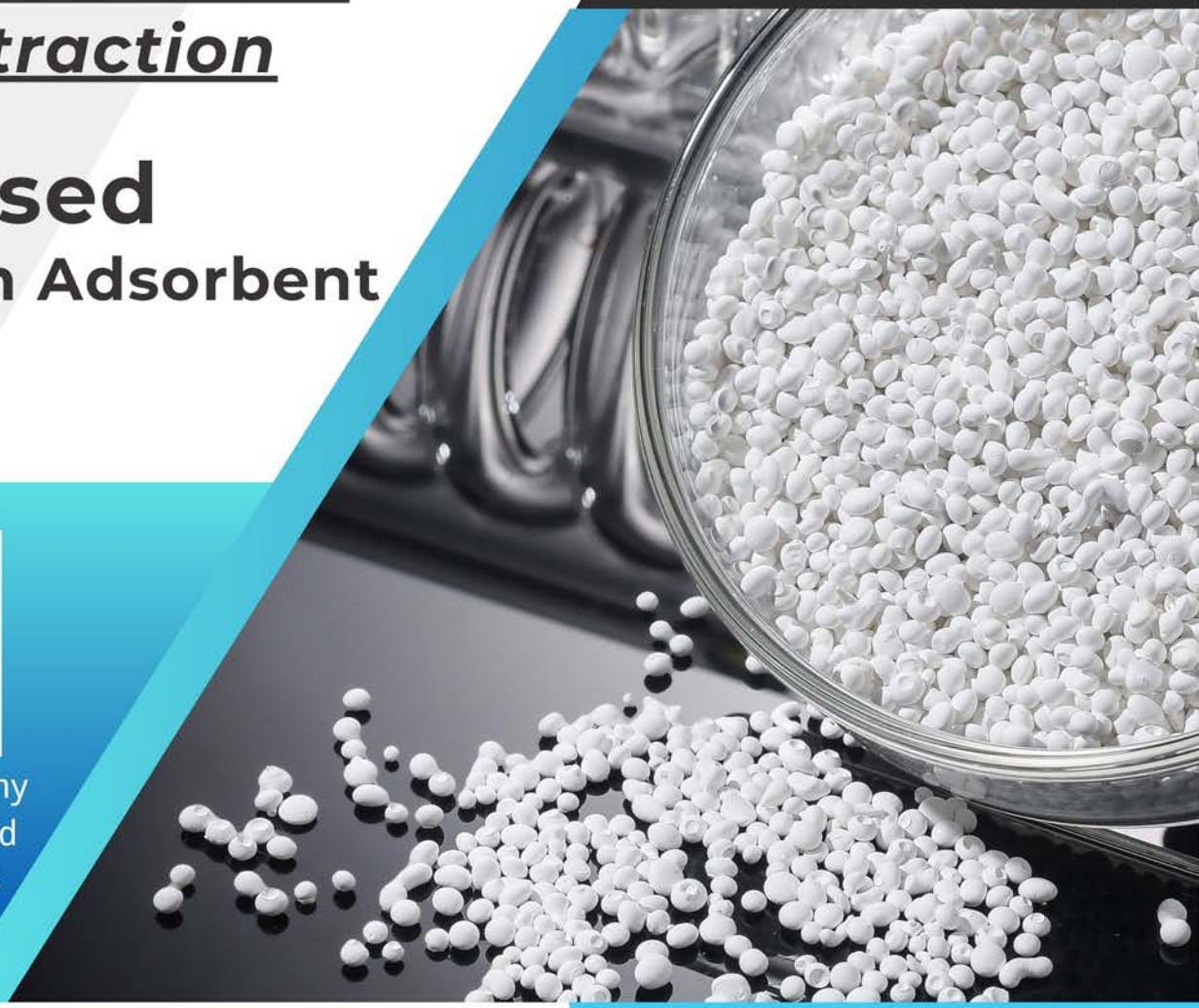


Dennis Eijdenberg is Technical Manager at Interflon's global headquarters, where he supports technical development, application expertise and lubricant product positioning across the company's international operations.

港烽新材
GANGFENG

Direct Lithium Extraction

Ti-based
Lithium Adsorbent



Scan for Company Introduction and Adsorbent TDS

Product Application

- Salt Lake Brine
- Oilfield Brine
- Geothermal Brine
- Battery Recycling
- Lithium Salt Production
- High magnesium-lithium ratio brine

- *High Selectivity & Stability*
- *Wide Application Compatibility*
- *Low Dissolution Rate*

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BATTERY MATERIAL QUALIFICATION

Where technical decisions become commercial strategy

By Tom Van Bellinghen, LiThink

The battery industry often talks about qualification of material as if it were merely a technical process. In reality, qualification has become one of the most complex commercial mechanisms in the entire battery value chain. It determines not only whether a material meets technical requirements, but also who gains market access, who captures value, and ultimately who holds the negotiating power.

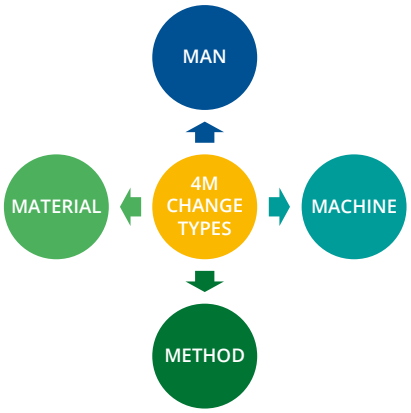
Why battery materials qualification is so challenging

Introducing a new battery material into mass production is far more complex than qualifying a conventional automotive component. The reason is simple: the consequences of failure are enormous.

The Chevrolet Bolt recall alone resulted in a compensation payment of approximately USD 1.8 billion from LG Energy Solution to General Motors. Similar quality incidents have affected several Asian battery manufacturers, placing additional pressure on already thin operating margins.

Against this background, it is understandable that organisations have become increasingly conservative. Any modification to an existing production process whether it concerns raw materials, equipment, manufacturing methods, production sites or even supply chain configuration is viewed through the lens of risk mitigation.

This has resulted in an extensive reliance on the well-known 4M change management process (Man, Machine, Method and Material), where even relatively small



A 4M change is any change that affects one of the four key elements of a production process.

modifications often trigger lengthy qualification procedures. In addition, the impact of certain impurities and especially the interaction between multiple impurities adds another layer of uncertainty to specification setting and change assessment.

Ultimately, qualification takes place in a landscape of rapidly evolving technologies and multi-billion-dollar stakes, where small technical uncertainties can translate into disproportionate commercial and strategic consequences across the entire value chain.

Qualification is more than a technical process - it is a power game

Qualification is frequently presented as a structured technical process with predefined milestones. In practice, however, the reality is less orderly: a closer look reveals a "sprinkle of chaos" across several steps of the supply chain. Qualification has become a strategic lever in the broader "power game" shaping the industry.

A clear example is raw material sourcing. Several automotive OEMs have secured contractual rights to directly procure lithium, nickel, precursor materials, or even cathode active materials. On paper, this gives OEMs greater control over their supply chains.

In reality, however, the battery cell manufacturer still controls the qualification process. It decides when testing starts, how quickly samples move through validation and when production approval is granted. Any attempt by an OEM to intervene tends to trigger the "liability card": if you step in, quality responsibility may no longer be guaranteed. The contractual right may belong to the OEM, but the operational power often remains with the cell manufacturer.

Qualification therefore determines much more than product acceptance. It influences supplier competition, market access, negotiating leverage and ultimately the balance of power throughout the battery ecosystem.

The cost of getting qualification wrong

Qualification is both lengthy and expensive.

For a new cathode material, the complete qualification process typically takes 12 to 18 months, starting from the submission of a successful 4M request until final approval for mass production. Full-cell validation programmes can easily exceed one million dollars in direct manufacturing costs alone, excluding engineering resources, laboratory work and OEM validation activities.

The financial consequences of poor qualification decisions can be even greater. There have been cases where companies securedcenterhundreds of millions of dollars of raw materials before

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discovering that the material could not be successfully integrated into their specific battery manufacturing process.

There are still widespread misconceptions that raw materials, or even intermediates such as precursors or cathode active materials can be treated as commodities. They are not. A deep understanding of the processing capabilities and constraints at each step of the supply chain is essential to make informed qualification decisions.

Reflecting this increasing complexity, OEMs and cell manufacturers have recently begun recruiting experienced professionals to support these decisions, including geologists, hydrometallurgists, and chemists.

Why is lithium qualification particularly complex?

Lithium qualification is fundamentally more complex than nickel or cobalt qualification because lithium is a direct raw material in cathode active material (CAM) synthesis, whereas nickel and cobalt are typically first converted into highly purified sulphate solutions before entering the precursor (pCAM) process.

Provided that the chemical specifications of the nickel and cobalt sulphate solutions remain unchanged, different upstream feedstocks such as briquettes, powders, mattes or mixed hydroxide precipitates (MHP) are largely interchangeable provided they are purified to the same level in the pCAM flowsheet.

Lithium, however, is introduced directly into the final solid-state reaction that forms the cathode material. Differences in lithium source, impurity profile, particle characteristics or reactivity can directly influence phase formation, residual lithium levels, morphology and ultimately electrochemical performance. Consequently, changing the lithium source is generally regarded as a much more significant process change and will always lead to a lenghty 4M change.

Rethinking 4M for chemical manufacturing

The automotive industry's 4M framework has served manufacturers well for decades. However, these principles were originally developed for mechanical assemblies, not for advanced chemical products such as battery materials. Battery materials behave fundamentally differently. Production is better understood as a continuous process output rather than a series of clearly bounded batches, and in some cases the very definition of a "batch" can be ambiguous.

Too often, specifications are defined based on historical sample data rather than on the actual performance boundaries of the next step in the supply chain. This can lead to overly conservative interpretations of what constitutes a "change" or a "risk," and in turn to requalification efforts that are not always aligned with the real technical impact.

A more effective approach focuses on understanding end-to-end process capability and defining specification limits that reflect the true functional requirements of each downstream process step, rather than replicating past data distributions.

Towards a different qualification mindset

The battery industry should avoid applying century-old qualification philosophies designed for mechanical components to one of the world's fastest evolving chemical industries. There is much to learn from the agility often demonstrated by Asian battery manufacturers, where continuous process improvement is embedded within daily operations without compromising product quality. Rather than viewing every change as a threat, qualification should increasingly become a structured framework for managing innovation.



For more information ILiA and Tom recently hosted a webinar "The Qualification of Lithium". The recording can be viewed on ILiA's website.

Qualification should create value

The objective of qualification should extend far beyond approving a new material. An effective qualification strategy should accelerate technology adoption, strengthen supply chain resilience, reduce total cost of ownership and encourage healthy supplier competition.

Companies that continue to treat qualification solely as a quality gate, risk slowing innovation and limiting supply flexibility. Those that recognise qualification as a strategic capability will be better positioned to reduce costs, improve resilience and create lasting competitive advantage.

Ultimately, qualification is no longer just about validating chemistry. It is about shaping the future competitiveness of the entire battery supply chain.

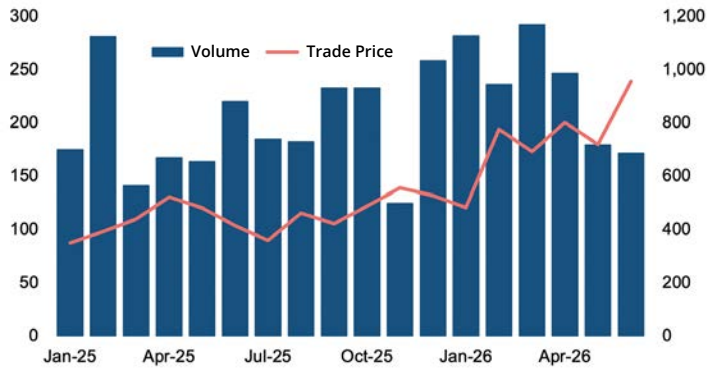
About Tom



Tom Van Bellinghen is the Founder of LiThink. LiThink helps companies navigate the increasingly challenging waters of product qualification by bridging deep materials science expertise with practical industrial decision-making. Prior to LiThink, Tom has over a decade of experience in the battery market at Umicore where part of his work was spent in lithium sourcing.

View from AFRICA & MIDDLE EAST

From Cameron Hughes and Fernando Sulca of CRU



Huayou Cobalt snaps up the Ewoyaa project in Ghana

In May, Huayou Cobalt signed a binding scheme implementation deed to acquire Atlantic Lithium, the owner of the Ewoyaa project in Ghana. It also agreed to buy Elevra Lithium's remaining 22.5% stake in the project for USD 71 million. The transaction would bring one of Africa's few lithium projects without existing Chinese ownership under Chinese control, further extending Chinese investor presence in the region's lithium supply.

By equity share, Chinese companies will contribute ~40% of global primary output in 2026, up from 25% in 2020, and this is expected to continue to extend for the remainder of the decade. Ghana's government ratified Ewoyaa's mining lease in March, allowing development work to resume after months of parliamentary delays. Huayou's greater access to lower-cost capital could support a faster project-development timeline, subject to deal completion and regulatory approvals.

Chinese imports from Zimbabwe decline sharply in May and June

Following the Zimbabwean government's implementation of a lithium export halt in late-February, trade data indicates Chinese imports from Zimbabwe have decreased significantly. In May, volumes decreased by over 50% month on month, and declined again marginally in June. However, they have not stopped entirely.

Chinese imports from Southern Africa remain above the region's production capacity, excluding Zimbabwe, suggesting some of this material may be Zimbabwean concentrate routed through other countries. Such flows are estimated to account for over 8% of Chinese concentrate imports in 2026 year-to-date.

Lower trade volumes have had an impact on refiners. Feedstock shortages have pushed Sinomine's refinery in Jiangxi, China, into care and maintenance, while Huayou has reportedly reduced production at its Guangxi plant.

Looking ahead, exports are expected to return to normal levels, or higher, as inventories built up during the export halt are shipped. However, the government continues to maintain a firm stance on the planned 2027 concentrate export ban, recently rejecting petitions from miners seeking a delay. With limited sulphate capacity currently installed domestically, further disruptions to supply appears likely.

Separately, in July, state owned Mutapa Energy Resources secured USD 300 million in financing from a consortium, including Zhejiang Huayou Cobalt and Tsingshan Holding Group. The investment is for the development of the Sandawana mine, one the country's most promising resources, which currently has a 600 kdmt/y expansion plant in construction.

New supply comes online in the DRC and Nigeria

Following Zijin's commissioning of its Manono operation in the DRC, the first shipment left the port of Dar es Salaam in late June. However, the material is not expected to arrive in China until late September, or later, as Zijin continues to work through logistics and customs processes.

In Nigeria, first production was achieved at the Ogapa concentrator in Nasarawa State, a joint venture between Tianhua New Energy and Jiangxi Juiling Lithium Industry. Although construction was completed in October 2025, the 30 kt LCE plant only began production in early July 2026. The ramp up of these new operations, alongside growing production elsewhere, is expected to push Africa's share of global supply above 20% in 2026 for the first time.

View from Africa & the Middle East represents the opinions of CRU Group and does not reflect the opinions of ILiA.

CRU

View from ASIA (outside China)

From Shiyue Zhao at Fastmarkets

Korean battery makers expand LFP ambitions beyond its high-nickel roots.

Long known for traditional portfolios on high-nickel chemistries, South Korean battery makers are further accelerating their push into LFP (lithium iron phosphate) batteries this year, addressing booming energy storage system (ESS) demand, US supply-chain localization efforts and intensifying competition from Chinese producers.

Battery giants deepen LFP localization in domestic Korea and the US

Samsung SDI emerged as the most aggressive Korean battery maker in the LFP segment during the first half of 2026, primarily targeting the rapidly expanding grid-scale energy storage market and AI-related infrastructure applications, including UPS (Uninterruptible Power Supply) and BBU (Battery Backup Unit).

In March, the company signed a three-year KRW 1.6 trillion (USD 1.13 billion) LFP cathode supply agreement with South Korea's L&F, to support planned prismatic LFP battery production in the US, highlighting its "domestic Korea-based supply chain" for the North American market.

In the first half of 2026, LG Energy Solution settled more than KRW 3 trillion in new ESS orders, while ESS revenue increased more than 4 folds year on year and accounted for the high-20% range of total revenue.

LG Energy Solution has begun mass production of LFP cells at its Ultium Cells plant in Tennessee (a joint venture with General Motors) and the L-H Battery plant in Ohio (a joint venture with Honda), repurposing part of its North American electric vehicle battery footprint to applications beyond electric vehicles.



Samsung SDI's lithium batteries. (Image: Samsung SDI)

The shift extends beyond battery makers. POSCO Future M, one of South Korea's leading cathode producers and a long-time specialist in high-nickel materials, officially announced to its entry into LFP cathode business in August, by reaching a large-scale, long-term supply agreement with a major Korean battery maker.

POSCO has converted existing high-nickel cathode lines at its Pohang facility to LFP production and is currently undergoing prototype certification, with commercial supply expected to start by the end of the year.

The agreement expects POSCO Future M to supply more than 190,000 tons of LFP cathode materials to the battery maker over six years, from next year through 2032, according to the company's announcement.

Responding to China's LFP lead

For years, Korean battery makers differentiated themselves as world leaders through high-nickel NCM (nickel-cobalt-manganese) technologies, which command higher margins and offer superior energy density for premium electric vehicles. Koreans' recent investments in LFP suggest their focus shifting to how quickly to narrow the gap with Chinese competitors, who have overwhelmingly established strong positions the global LFP supply chain.

According to the report by International Energy Agency (IEA) in 2025, over 98% of global LFP cathode material and LFP battery cell production is concentrated in China. Chinese companies such as CATL and BYD have built up competitive market share in utility-scale energy storage projects, supplying low-cost LFP batteries to customers across North America, Europe and Asia. Against this backdrop, Korean battery makers increasingly view LFP not as an alternative technology, but as a strategic necessity in ESS where cost, safety and cycle life are prioritized over energy density.

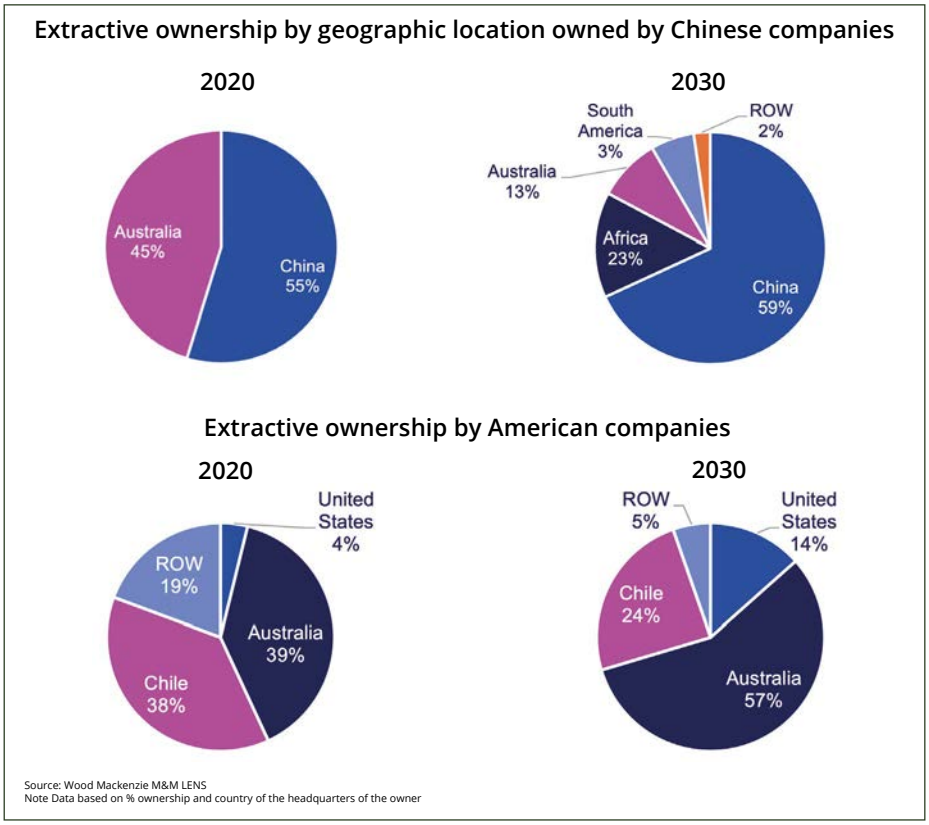
"The shift is particularly notable given that the rapid expansion of global storage market has changed the dynamics of battery chemistries," an analyst source based in Shanghai, China, said.

"The growing importance of LFP does not signal the end of high-nickel batteries. Instead, it reflects the reality that battery makers can no longer ignore a chemistry that dominates the global ESS market", the analyst added.

View from Asia (excl. China) Fastmarkets *represents the opinions of Fastmarkets and does not reflect the opinions of ILiA.*

View from AUSTRALIA

From Allan Pedersen, Research Director for Wood Mackenzie



Ownership of lithium extraction is evolving as the industry grows

The lithium industry has undergone a fundamental transformation since 2020. Global extraction volumes are now roughly four times what they were six years ago, with growth forecast to continue through 2030, albeit at a more moderate rate.

This expansion has brought a notable shift in both the geography and the ownership of supply.

In 2020, Australia, Chile, and China collectively accounted for 90% of global lithium extraction, reflecting a highly concentrated supply base. By 2030, that combined share is expected to decline to 64% as more countries have established meaningful extractive operations.

China is forecast to overtake Australia as the world's largest producing nation by 2030.

Chinese companies: The defining force behind geographic expansion

Wood Mackenzie's ownership-level data reveals that the story of lithium supply is not simply one of geography — it is equally one of corporate control.

Chinese companies were already the world's largest owners of lithium extraction in 2020, holding a 33% share of global output, with 55% of that from domestic operations. By 2030, Chinese-owned companies are expected to account for 39% of global extraction, reflecting both continued domestic production growth and sustained international investment.

The geographic composition of Chinese-owned supply will also shift materially.

By 2030, 59% of output owned by Chinese companies will originate in China, while African assets — increasingly targeted by Chinese capital — are expected to account for 23% of their global portfolios. Chinese-owned extraction in Australia will account for 13%, a decline partly attributable to Tianqi Lithium's partial divestment of its stake in Greenbushes to IGO and partly reflecting more modest volume growth from other Chinese-owned Australian assets.

American companies: Building domestic supply

The United States has made strategic diversification of critical mineral supply chains a policy priority. In 2020, American-owned extraction was concentrated in Australia and Chile, with Albemarle holding a significant position through its interests in the Greenbushes mine and the Atacama brine operations. Only 4% of American company-owned output originated within the United States itself.

By 2030, the domestic share is projected to rise to 13%, supported by the ramp-up of the Thacker Pass clay project in Nevada alongside the legacy Silver Peak asset. Australia will remain the dominant geography for American-owned supply, with its share rising to 57% following Albemarle's addition of the Wodgina mine.

Exposure to Chile is expected to decline as the pipeline of growth projects there remains limited. Taken together, these dynamics will position the United States as the third-largest owner of global lithium extraction by 2030, behind China and Australia.

View from Australia represents the opinions of Wood Mackenzie and does not reflect the opinions of ILiA. ILiA member benefits include exclusive quarterly webinars with Allan Pedersen regarding the lithium market. Contact ILiA for details.

Feature

Li FOR AI

How lithium is helping power artificial intelligence data centers

By Ivan Castano & ILiA (not AI)



A server aisle at an AI data center showing racks of computers. (Image: Shutterstock)

Artificial intelligence (AI) data centers require enormous amounts of uninterrupted electricity to function and lithium-ion batteries can provide the solution.

The number of new data centers is growing exponentially and the current generation are larger and far more powerful than those built to support the internet and cloud-based storage a decade or two ago.

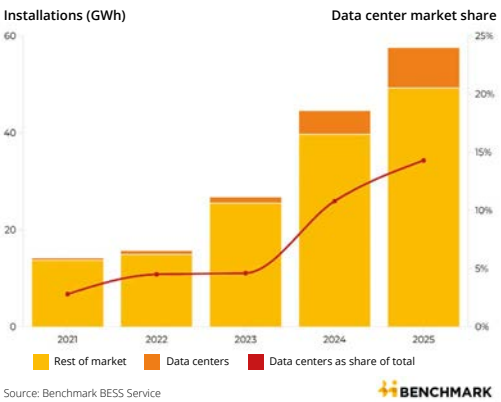
Demand for AI computing power is driving this development. AI data centers require considerably more electricity and have a lower tolerance for power interruptions than their pre-AI ancestors.

Historically, the legacy data centers that have been built to host the internet and cloud storage over the last thirty years would typically require 14kW of power per rack. However, the new sites that are being designed will hold 130 kW to 140 kW per rack, with that threshold expected to increase further in the near future, according to Paul Charles, founder of Full Stack Data Centers. By 2029, a single rack could carry 400 kW to 1 MW, he added. The increase in demand is already being felt in national electricity grids, with the IEA estimating that global data center electricity consumption could exceed 1,000 TWh this year, more than double 2022 levels.

The greatest expansion is being seen in North America (mainly the US) and China, followed by Asia-Pacific and Europe. The bulk of the new facilities are being built in blocks of 50MW to 100MW and cost USD 2 billion to USD 4 billion to build, sources claim. However, recent developments, such as xAIs Colossus complex in Tennessee, are expected to cost up to USD 25 billion, with the bulk of the capex going to computer processing chips, such as Nvidia's Hopper 100 and Blackwell 200s.

BESS for data center applications represented 14% of total US installations in 2025

New US BESS installations by year and market (LHS, GWh) and data centers as % of installations (RHS)



Source: Benchmark BESS Service

BENCHMARK

The need for continuous power

For AI data centers reliable, continuous electricity is mission- critical. As Panasonic Energy explain, AI servers consume large amounts of electricity in short bursts to support processing by multiple GPUs (graphics processing units: the semiconductors that handle AI's many calculations). As a result, peak power levels for such servers can rise and fall rapidly and voltages can often become unstable. If power is lost, even for a fraction of a second, servers lose data and processes are disrupted.

Traditionally electricity has been drawn from the national grid, but it can take several years to connect to a new facility, so many operators are choosing to build their own power-generation "islands" or "microgrids" instead. Often the designs include natural gas generators, but increasingly renewable energy such as wind, solar and geothermal is also used. Energy storage systems (ESS) can be added to stabilise the availability of intermittent renewable energy, provide constant power and to improve project economics.

"Grid operators are more likely to approve a project that adds flexibility to the network than one that just takes power from it," said Shan Tomouk, an analyst with Benchmark Minerals.

Pressure to do this is higher in the US, where most new campuses are being installed, but also in China and to a lesser degree in Europe. Tomouk noted, however, that developers are also keen to install microgrids in the UK to avoid a 5% electricity curtailment rate, which see grid operators deliberately reduce output to industrial users in order to maintain the overall grid stability.

Two sets of batteries

Lithium-ion batteries can be used to support data centers in two ways – with large ESS units adjacent to the data center and as smaller battery backup units (BBU) located on each server rack.

BBUs are physically integrated into the racks and can provide short-duration backup power during peaks, helping to stabilize voltages. The batteries need to be small, yet high-power and high-capacity, with a long lifespan, for example Samsung SDI's 18650 cylindrical batteries that use high-nickel NCA cathode materials .

The use of BBUs is being primarily driven by large-scale cloud service providers known as "hyperscalers," who operate cloud services and data centers on an enormous scale, according to Panasonic Energy, a market leader for data center battery systems.

This combination of ESS and BBU provides the so-called uninterruptible power supply (UPS) system that provides stable power and protects the servers against a voltage spike or power blackout.

In contrast to pre-AI systems, new data center in-rack UPS systems are much more powerful, boosting auxiliary capacity to several hours a day rather than minutes. They can run up to 10,000 cycles (charging and discharging events) compared to older lead-acid systems 1,000 to 1,500 cycles and use 50% to 75% less floor space, experts said.

Co-located ESS, which are contained in 20 to 40-feet shipping containers, typically use large, lithium iron phosphate (LFP) batteries. "ESS battery capacity averaged 3.9MWh a couple of years ago, it has currently risen to 5MWh per 20-foot container," explained Tomouk. These can provide backup capacity of 4-to-8 hours, more than enough for most situations.

A second advantage of installing ESS is that it enables operators to buy energy in the evenings (when prices are low) to then deploy it during the day (when prices are high), cutting their power bill. Simultaneously, by discharging the batteries during the day, operators can avoid heavy utility charges stemming from power demand spikes. This strategy is often referred to as 'energy arbitrage' and 'peak shaving' respectively.



Google installed the first-ever battery-based system for replacing fossil-fuel generators at a hyperscale data center at its plant in St. Ghislain, Belgium. By February 2025 Google had more than 100 million cells deployed in battery packs across its global data centers. *(Image: Shutterstock)*

The advantages are felt by the wider grid too. ESS allows data centers to reduce peak grid electricity demand and participate in grid-balancing markets, improving the resilience of the entire network. By doing so, some ESS facilities effectively act as flexible energy assets rather than simply consumers.

A shifting landscape

Roughly 500 to 800 of the upcoming data centers are slated to come to market in the near-to-medium term as developers or 'hyperscalers' such as US giants Google, Microsoft, or Meta pour billions into new capacity, boosting lithium demand. Most will have ESS; if you are building an AI data center containing computing power worth billions of dollars, then adding ESS for a few million dollars can be an easy decision.

Similarly, in China data center build out is happening at great pace with some of the largest projects in the world being in Inner Mongolia. China has made support for AI a central pillar of its economic and development strategy and in 2025, it released an AI action plan that called for the acceleration of data center construction.

China is also exploring novel new data center design where ESS capabilities will be key; for example, the world's first wind-powered underwater data center has started operations off the coast of Shanghai.

According to Benchmark Mineral Intelligence, AI data center deployments are set to consume 70,000 metric tonnes of LCE by 2035, up from 15,000 in 2025.

"If you have a 100MW AI data center with 4 hours of BESS, it will use the equivalent of 200 metric tonnes of LCE," said Charles, whose company is installing AI data centers on offshore infrastructure like decommissioned oil rigs. "This will really drive additional lithium demand," he added.

The way forward

It is worth noting that the relationship between AI and lithium does not see all the benefits flow in one direction. While ESS supports AI data centers, so too AI is helping the lithium industry in a multitude of ways. From improving mineral exploration and mine planning to improved battery technology and recycling processes, these two iconic industries are reinforcing each other's growth.

Lithium is well known as the element behind electric vehicles, but increasingly it plays a critical role underpinning the global AI revolution too. Few other metals can claim such a critical purpose in two of the twenty-first century's most transformative industrial transitions.

View from NORTH AMERICA

From Adriana Carvalho, Associate Director, Metals Pricing, Americas, S&P Global Commodity Insights

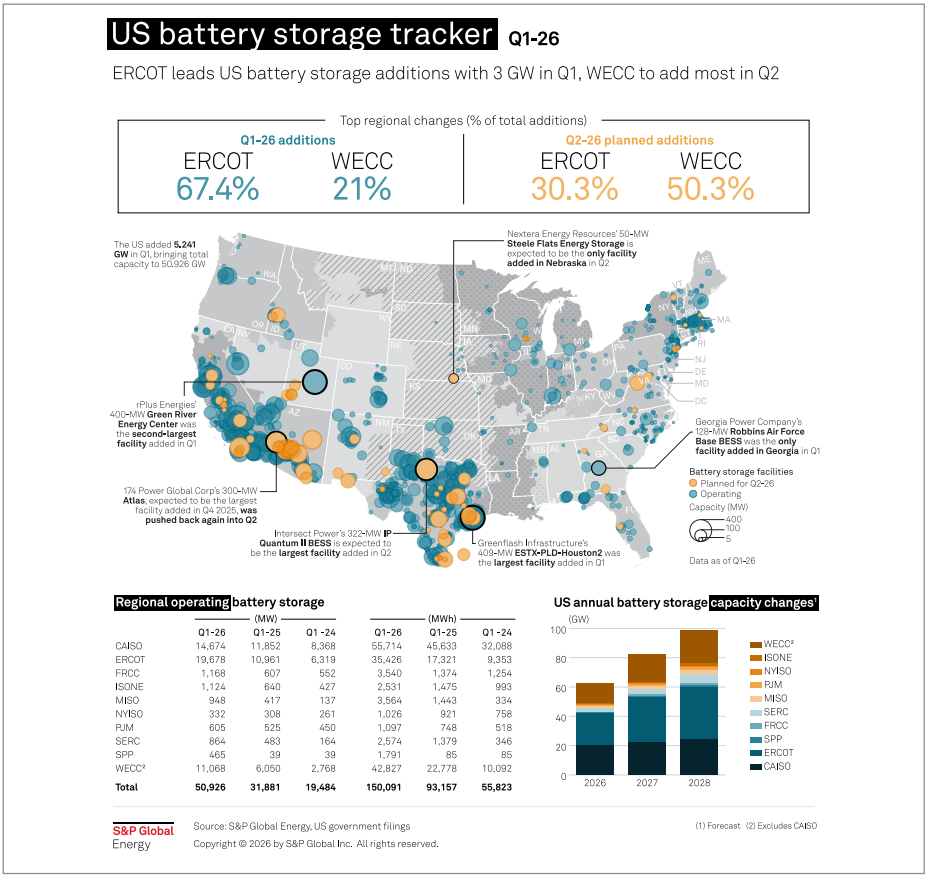
Lithium's second act: energy storage takes centre stage

North America's lithium industry is finding a new demand engine in the power sector. According to S&P Global Energy data, US utility-scale battery energy storage capacity surpassed 50.9 GW in the first quarter of 2026, rising 60% year over year, with another 6.6 GW expected to come online during the second and third quarter. As utilities build storage to support renewable energy integration, grid reliability and rising electricity demand, battery deployment is accelerating across key markets including Texas, California and Arizona.

The rapid expansion of battery energy storage systems (BESS) is also driving demand for lithium iron phosphate (LFP) batteries, which have become the preferred chemistry for many stationary storage applications due to their lower cost, safety profile and long cycle life.

Major projects scheduled for completion this year include Intersect Power's 322-MW IP Quantum II BESS in Texas, 174 Power Global's 300-MW Atlas project in Arizona, Arevon Energy's 300-MW Nighthawk Energy Storage facility in California and Invenergy's 275-MW Hashknife Energy Center in Arizona.

This shift is particularly important as the automotive market adjusts to slower growth. US passenger plug-in electric vehicle (PEV) sales fell 23% year over year to approximately 500,000 units during the first half of 2026 following the removal of federal EV tax credits. Rather than weakening the overall lithium outlook, demand from grid-scale storage, artificial intelligence infrastructure and data centers is helping diversify the industry's demand base beyond transportation alone.



Supply response meets execution challenges

On August 6th, Lithium Americas secured up to USD 175 million in additional financing for the Thacker Pass project in Nevada, where more than 1,600 workers are currently on site.

But the opportunity extends far beyond a single mine. According to the Federal Reserve Bank of Dallas, the United States has identified approximately 66 lithium projects at various stages of development. If projects currently under construction are successfully completed, US lithium production could increase roughly tenfold by the end of the decade, although financing, permitting and technology commercialization challenges remain substantial.

At the same time, government efforts to strengthen supply security have proven uneven. On August 3rd, the US Defense Logistics Agency cancelled a tender to purchase nearly 16,000 mt of battery-grade lithium carbonate, valued at up to USD 300 million, for the National Defense Stockpile, highlighting the challenges of turning critical-minerals strategies into direct market support.

The lithium industry spent the last decade preparing for the electrification of transportation. The next decade may be shaped by something different: the electrification of everything else.

View from North America represents the opinions of S&P Global Commodity Insights and does not reflect the opinions of ILiA.

S&P Global Energy

View from EUROPE

From Jordan Roberts of Project Blue

Battery hubs drive import growth

European lithium compound imports remain concentrated in a handful of key markets, led by the Netherlands, Germany and the UK. After relatively subdued volumes during 2025, imports strengthened in early 2026, driven by rapid growth in Poland and Hungary. The market reached a record level in April 2026, reflecting strong demand across multiple battery manufacturing hubs and suggesting renewed procurement activity throughout the European electric vehicle (EV) supply chain.

The scale of the import surge illustrates the widening gap between Europe's battery ambitions and its domestic lithium supply. Hungary imported 362% of its total 2025 lithium compound volumes in just the first five months of 2026, while Poland reached 1,097%, highlighting how rapidly battery-industry demand is expanding in key manufacturing hubs.

With European lithium projects still largely in development, the continent is increasingly relying on overseas supply to feed the build-out.

A more constructive period

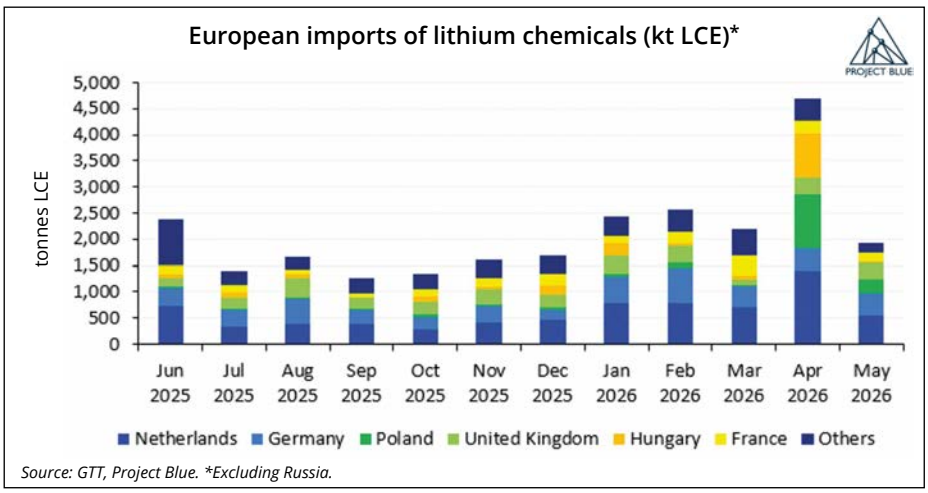
The past few months, however, have seen a number of developments against a backdrop of improved market sentiment and elevated prices.

AMG Lithium completed the USD 56 million acquisition of the Zinnwald Lithium project in Germany. The acquisition increases the company's resource base whilst also offering optionality and potential integration into the existing lithium-processing business. The company plans to reassess the current project scope before proceeding. A smaller, scaled approach is likely to reduce the initial funding requirement and allow technical parameters to be proven before scaling to larger production volumes.

Savannah Resources (of which AMG holds a 15.77% ownership stake) released the definitive feasibility study (DFS) for Phase 1 of its Barroso project in Portugal. The DFS could be argued as the most important project update of the period, moving the project from feasibility to financing.

The biggest risk to the project timeline remains the RECAPE environmental compliance process, which has slipped into Q4 2026, pushing back the approval into 2027 and placing the 2028 target start date in jeopardy. The social license to operate remains a key obstacle.

For many European lithium projects, securing financing has proved to be the biggest hurdle. Against that backdrop, Savannah's progress is notable. The project already has a EUR 110 million (USD 125 million) Portuguese state grant, potential export credit-backed financing, and has received its first non-binding project finance offers from commercial lenders. Whilst financing is not yet secured, these developments suggest Barroso is making tangible progress towards a bankable funding package and improving its prospects of reaching a successful final investment decision (FID). If unsuccessful, it will raise broader questions about Europe's ability to translate industrial policy into operational assets.



*Source: GTT, Project Blue. *Excluding Russia.*

Beyond borders: Europe looks abroad to bridge domestic shortfall

Despite progress, European companies still need to look beyond the region to secure supply. In July, Italian energy company Eni invested USD 225 million into EnergyX's Chilean subsidiary, Black Giant in return for a 25% stake. The deal supports Eni's stationary battery initiative. Black Giant is developing a 52.5ktpy lithium carbonate equivalent (LCE) project near the Salar de Punta Negra, which is planned to be executed in two phases. A 7.5ktpy LCE Phase 1 is due to come online in 2028, while a multi-train 45ktpy LCE Phase 2 is expected in 2030.

View from Europe represents the opinions of Project Blue and does not reflect the opinions of ILiA. ILiA member benefits include exclusive quarterly webinars with Project Blue regarding the lithium market. Contact ILiA for details.

PROJECT BLUE

View from CHINA

From Thomas Feng of SMM Information & Technology Co., Ltd

The Chinese lithium market: V-shaped rebound followed by high-level fluctuations. A tight balance persists.

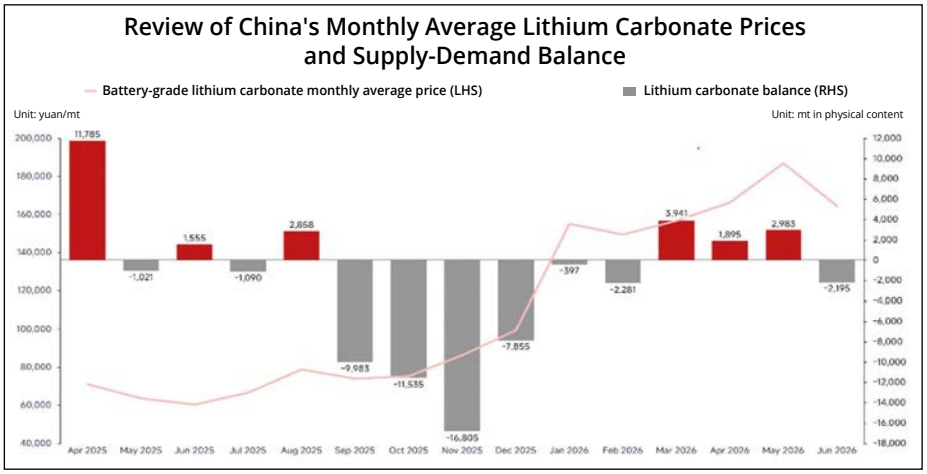
In the second quarter, domestic lithium carbonate prices experienced a V-shaped rebound and then traded in a high-range volatile pattern. The market maintained a tight balance between supply disruptions and resilient demand, with price sensitivity notably heightened.

i. Market performance: wide fluctuations with rising price sensitivity

In April, prices first fell then rose: early in the month, geopolitical disturbances in the Middle East dragged battery-grade lithium carbonate down to 155,500 RMB/t; by mid-to-late April, Zimbabwe's export ban, mining permit renewals in Jiangxi, and rising costs pushed prices back up, ending the month at 177,000 RMB/t.

The monthly average price rose 6% month-on-month. In May, prices trended upward with a monthly average increase of 12%, and the futures main contract briefly broke through 200,000 RMB/t, as time mismatches between supply and demand persisted.

In June, record-high import volumes and GFEX stocks remaining at 50,000t, combined with fully priced-in demand expectations, pulled the price center lower. Downstream buyers accumulated large inventories at levels below 160,000 RMB/t.



ii. Policy environment: dual drivers from mandatory recycling rules and rigid energy storage targets

On April 1st, the Interim Measures for the Management of Recycling and Comprehensive Utilization of Waste Power Batteries from New Energy Vehicles [which include electric vehicles] took effect, mandating "integrated vehicle-battery scrap page" and requiring a lithium recovery rate of no less than 85%. This shifts recycling from "encouragement and guidance" to "mandatory compliance," boosting long-term resource circularity.

On June 25th, the 15th Five-Year Plan for the Construction of a New Energy System set a target of 300 GW of new energy storage installed capacity by 2030, representing over 120% cumulative growth in five years. This elevates energy storage from "optional" to "essential," providing rigid support for lithium demand.

iii. Supply side: steady release with structural disruptions

Domestic production maintained a stable pace in Q2, with salt lake ramp-ups and recycling additions pushing monthly output above 107,000t and edging higher.

External disruptions such as Zimbabwe's export ban did not significantly impact production, as companies held ample raw material inventories.

The inventory pattern shifted from "demand-driven destocking" to "structural volatility underprice bargaining".

A declining proportion of long-term contracts exacerbated spot-market fluctuations, with upstream producers firm on prices and downstream buyers cautious in procurement, while traders became the primary buffer. The market entered a high-price-sensitivity tight-balance state.

Conclusion

In the second quarter, lithium carbonate prices first rose then corrected, supported by supply disruptions and high production schedules, while record imports and warehouse receipt pressure weighed on June prices.

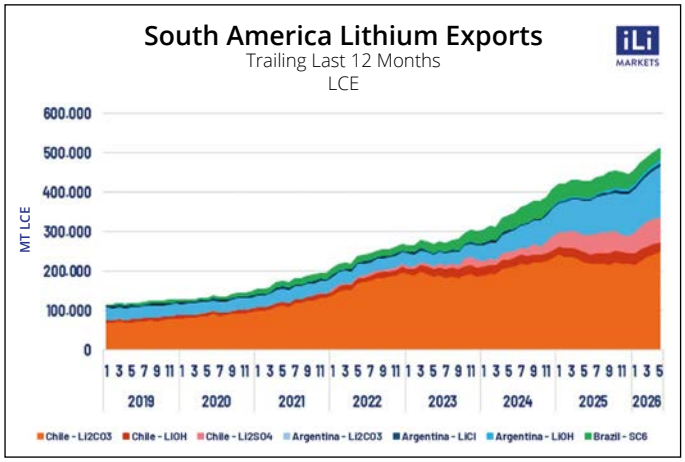
On the policy front, new recycling rules and energy storage targets provide medium-to-long-term support. Supply growth remained relatively stable but with frequent disturbances, and upstream-downstream bargaining deepened. The market remains in a high-level tight balance.

View from China represents the opinions of SMM and does not reflect the opinions of ILiA. ILiA member benefits include exclusive quarterly webinars with SMM regarding the Chinese lithium market. Contact ILiA for details.

Shanghai Metals Market

View from SOUTH AMERICA

From Daniel Jiménez of iLiMarkets



The lithium market entered the second quarter of 2026 on firmer footing. Prices extended the recovery that began in late 2025, with spot carbonate reaching its strongest levels since late 2023. Rising prices spurred a wave of new activity across South America that has consolidated as the main lithium producing region in the world.

In **Chile**, NovaAndino Litio (the Codelco-SQM joint venture, referred to as Novandino Lithium outside Chile) submitted its Salar Futuro environmental impact study, part of a plan to extend Salar de Atacama production to 2060 while investing in technology, including DLE, to make the operation more efficient and less water-intensive, eventually targeting up to 470 kMT LCE per year by 2030. Albemarle advanced its own DLE project into environmental review, targeting a production increase from 75 kMT LCE to a ceiling of 145 kMT LCE.

Separately, the CEOL framework[1] kept drawing new interest: Quiborax secured a permit to extract lithium from decades of mining waste, and Italy's Eni took a 25% stake in EnergyX's Black Giant DLE project at Salar de Punta Negra (targeting 52.5 kMT LCE per year, pending its own CEOL). Progress was not uniform, however, as France's Eramet challenged ENAMI's selection of Rio Tinto for Salares Altoandinos, a dispute that could delay the project. Chile's LCE exports reached 93 kMT in Q2 alone, up around 28% YoY.

In **Argentina**, several ramping projects kept converting into production. Rio Tinto increased production at Hombre Muerto and Olaroz and is focusing its future lithium developments on South America, with aspirations to reach 200 kMT LCE by 2028. Ganfeng Lithium and Lithium Argentina's Cauchari-Olaroz produced 22 kMT LCE in the first half.

POSCO won RIGI[2] approval for a USD 839 million expansion of Sal de Oro adding 23 kMT per year, part of a wave of approvals that also covered Rincon and Cauchari-Olaroz. Zijin's Tres Quebradas secured RIGI backing in July for a MUSD 709 second phase adding 40 kMT per year, while Eramet kept ramping its Centenario DLE plant toward its 24 kMT per year nameplate.

Ganfeng started exports from Mariana, and Galan Lithium should be the next project to export by year-end. In total, Argentina exported 41 kMT LCE in Q2, up 64% YoY, and should keep climbing as brownfield and greenfield projects start up.

In **Brazil**, Sigma Lithium produced 35 kMT LCE of concentrate at Grota do Cirilo, beating its 33 kMT LCE target, but the operation was reportedly idled for more than ten days in July as the company negotiated a conduct-adjustment agreement over disputed state environmental fines.

CBL is advancing a brownfield expansion to double its spodumene mining capacity, targeting completion around 2028. Atlas Lithium advanced toward first production at Neves, with its dense media separation plant already delivered, while Pilbara Minerals continued developing its USD 400 million Colina project in Minas Gerais. Finally, Lithium Ionic is advancing its Bandeira project toward a construction decision.

Bolivia's quarter was defined by politics rather than lithium. CATL and Uranium One DLE contracts, blocked in 2025, remain stalled in Congress, and the La Paz administration continues to review them.

Overall, Q2 2026 showed a region moving decisively from permitting to production: Argentina adding capacity the fastest, Chile drawing fresh private and foreign capital into its state-led model even as that model faces pressure to become more streamlined and better incentivize exploration, and Brazil advancing its project pipeline despite regulatory friction.

[1] CEOL: In Chile the Contrato Especial de Operación de Litio or Special Lithium Operating Contract.

[2] RIGI: In Argentina the Régimen de Incentivo para Grandes Inversiones, or Large Investment Incentive Regime.

View from South America represents the opinions of iLiMarkets and does not reflect the opinions of ILiA.

In conversation with ANAND SHETH

Founding Chairman of ILiA



The International Lithium Association (ILiA) was founded in 2021. How did this come about and has it become what you imagined it would?

Looking back five years, I think we have been blessed to be able to bring this nascent industry together. It's with gratitude to the industry, industry players and stakeholders, who were so ready to come together; we've just been the facilitators, helping people connect and build up this Association.

The lithium industry has been built from just a couple of players in the industry a decade ago, to become a globally significant operation in the last five years.

I'm just grateful that the whole industry has appreciated the vision that we started with. The core ideas were how to connect people together, how to learn from each other and how to explain our story to the world. I remember our first calls with the founding members; Roland and I explained the vision and one by one the lithium producers' first response was "yes, do it", so we did.



With David Michael in 2025, then Minister of Mines for Western Australia. *(Image: ILiA)*

How have you been reaching the initial goals?

I remember when we started out in 2021, we were ambitious but even so the budget and membership milestones we set ourselves were all achieved within a few years. The number of members that have joined us from different parts of the world and industries in the supply chain, all coming together has been amazing!

In the Association's first 5 years, our membership has grown to 85, which is an amazing result. Additionally, we are now attracting much bigger players, multinationals who are now coming into the fold. It's so great to see our vision resonating with them. This also reflects the next phase of growth of the lithium industry.



What have been the challenges?

Thankfully we didn't have any major obstacles. There are always challenges when you grow fast, so I'm very proud to see that we have built up a team that's global; China, Australia, South America, North America, and Europe.

Staffing is key. We'll be adding more as the industry grows in those regions further, to make sure we can always represent our members. For the first year we only had one person but now the team is up to 6 full time equivalent. So, it's such an honour to see them having the same objective that we need to strengthen our industry and be a powerful voice for lithium.

ILiA's initial vision focused on representation, sustainability, and education. Are these still as relevant for the Association?

Absolutely! The public and governments have all heard of lithium, but they did not understand lithium that deeply. For example, ILiA's focus on education seems to have improved the public's understanding and now they are asking more and better questions. So that's progress.

What are the big projects that the Association is working on?

As soon as the Association was established, we got involved with the challenges caused by a misunderstanding about how to classify lithium salts in Europe. I remember our partners, European Metals, asking us "where were you?" and since then it's been very demanding work. The risk is that Europe's proposal may have a global impact, so we spend vast resources helping support lithium to be classified in the appropriate category and using a scientific basis.

On the sustainability side, we saw how the industry and different companies were assessing product carbon footprints for LCAs [life cycle assessments]. There was no consistency, so we formed a working



Visiting Sichuan Calciner Technology Co., Ltd in Chengdu, China. *(Image: ILiA)*

group to develop standard guidelines which the leading companies have adopted. This greatly helps the supply chain to compare lithium from different suppliers. Now this group is considering repeating this process for recycled lithium. It is an amazing achievement.

Also, where I live in Western Australia, we are working with the Minister of Mines' office to help resolve the issues with DBS [delithiated beta spodumene, a co-product of refining spodumene] generated by the new lithium refineries that are in Western Australia. With the government's support DBS will be classified correctly, opening up new applications and supporting a competitive lithium industry in Australia and around the world.

What can be done to ensure that the lithium industry continues to have high standards when it comes to responsible production?

We all want a cleaner and greener world, and this will need a lot of lithium for batteries, lubricants, and electrified transport solutions.



With fellow speakers at the Critical Minerals Conclave India 2024. *(Image: CMA India)*

This means that more mines will be needed and with that inevitably impacts will increase, but we are constantly learning what more can be done better and are aware that many eyes are watching. At ILiA we regularly bring in expert consultants to discuss environmental, social and governance issues and related topics with our members. We also work with all the leading mining standards to help members know what they need to do to meet their supply chain requirements.



Hosting an ILiA networking event in Chongqing, China. *(Image: ILiA)*

Today in the lithium industry, we are extremely fortunate that the leading producers are already meeting high industrial standards in their mining and processing operations, speaking relatively to many other mining industries. They typically have systems and processes in place that meet the OECD's guidelines, operate in jurisdictions with strong rule of law and are listed on public stock exchanges, all of which pushes them towards more responsible production.

Where do you see the Association and the lithium industry in a further five years from now?

Well, firstly, we're about to hold our first in-person Annual Meeting for members in Singapore this September and it will be fantastic to meet so many of our members there in person, especially those who we have been working with virtually for several years already but not yet met.



Meeting Dr Amir Razmjou, author of ILiA's "DLE 101" report. *(Image: ILiA)*

In Singapore we'll be launching a new prize as well. The Lithium Excellence Awards are a great opportunity to thank and recognise the experts who have been fundamental to the growth of this industry and to honour their vision, integrity and commitment that have helped to shape a sustainable future of our industry.

Looking ahead, in five years' time I see an industry that is much bigger than where we are today. Recently we have seen the IEA talk about lithium growing by two and a half to three times and I'd like to see ILiA member companies play a key role in growth. I'd also like to see a lithium battery that has a very high energy density, which is the holy grail of the industry.

Finally, in terms of ILiA, I'd like to see it have a much bigger presence globally, so it can make a bigger contribution to our members' businesses and the wider lithium industry! All this resulting in a cleaner and greener future!

Do you own an electric vehicle?

Yes, I do, with a very appropriate licence plate, "LITHIUM"!



Visiting the Greenbushes mine with ILiA's Roland Chavasse. *(Image: ILiA)*

Feature

SPOTLIGHT ON SUSTAINABILITY

Building trust in Brazil's lithium future

Brazil has the potential to become an important supplier of lithium. Alongside technical expertise and investment, however, long term success will depend on maintaining strong relationships with local communities.

There are a handful of legacy players who have been operating in Brazil's Northeastern Minas Gerais for several years. These hard rock mining projects in the Jequitinhonha Valley have been joined in recent years by a host of early production and exploratory lithium mining projects.



Musicians of the Quilombola Community of Olaria Bagres. *(Image: PLS)*

As more companies establish operations in the region, meaningful engagement with local communities is becoming increasingly important. Early dialogue allows companies to explain their project plans, discuss potential impacts, and build trust with those affected by mining activities.

One company seeking to embed this approach from an early stage is Australia-based lithium miner PLS. Having secured 100% ownership of the Colina Project in Minas Gerais in 2025, the company has built



upon several initiatives aimed at strengthening relationships with local communities.

A key pillar of PLS's local engagement with communities local to the Comia Project is their "Letramento Minerário" (mining literacy strategy). The objective of the strategy is to offer training and knowledge to communities on what mineral extraction at the site will look like, why lithium is needed as part of the energy transition and what impacts mining will have on the local environment. So far PLS has managed to reach over 300 families and convey information in a digestible way for those not familiar with the mining industry, via several channels both in person and digitally.

The mine is not the only focus of PLS's engagement with the communities of Salinas and the surrounding region. Building on its community engagement approach in Australia, PLS has also invested in initiatives that value and preserve local culture in Brazil, including the donation of traditional musical instruments, support for music education, and the construction of a stage for cultural events in the Quilombola Community of Olaria Bagres.

Recognising the importance of the Olaria Bagres Quilombola Community and guided by its values, PLS undertook a Free, Prior and Informed Consent (FPIC) process, recognising it as an ongoing commitment that guides its relationship with the community throughout the life of the project.

"Respect for people, culture, and community decisions is fundamental to the way PLS develops its projects. Our commitment is to build and strengthen long-lasting partnerships founded on trust and mutual respect," said Marisa Cesar, Director of Corporate Affairs and Sustainability at PLS Brazil.



ILiA's Jimena Carnelos visits the PLS stand at Lithium Business 2026. *(Image: ILiA)*

In July, ILiA's Jimena Carnelos, attended "Lithium Business" an annual event, which is held in the Jequitinhonha Valley. While there Jimena had the opportunity to meet in person with many mining companies, including PLS, and learn more about their project.

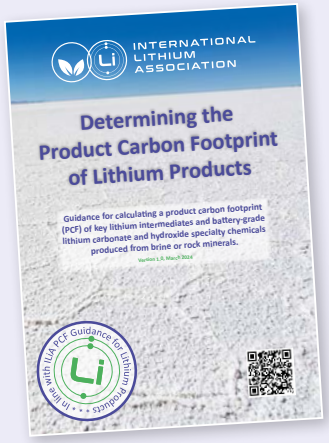
As more projects move from exploration to production, continued engagement, transparency, and a willingness to adapt will be essential in ensuring lithium production.

THE CURRENT

Catch up with ILiA's work at a glance

New project: PCF guidance for recycled lithium

In 2024 ILiA published the first Product Carbon Footprint (PCF) Guidance for lithium products produced from virgin (primary) materials. It has been widely adopted by the industry leaders (and is freely available at www.lithium.org).



Now ILiA is considering whether to expand the existing guidance to include recycled (secondary) lithium too.

We believe this is an important topic and it has been raised by others too:

- The need for a PCF for recycled lithium has been discussed within the ISO/TC 333 (lithium) framework;
- This subject aligns with China's recently published 15th Five-Year Plan, which emphasizes the establishment of a product carbon footprint management system and the promotion of low-carbon development in the recycling sector.

Fact-finding and next steps

From May 2026 ILiA's sustainability team (Danyi Feng and Tom Drabble) have been meeting with diverse stakeholders to discuss this subject. In addition, since waste lithium-ion batteries form the most significant raw material for recycled lithium, ILiA also connected with relevant associations for batteries and battery recycling who share our interest around this subject.



Waste batteries from Apple iPhones waiting to be recycled. How to measure the carbon footprint for the recycling process is not clearly defined at present. *(Image: Shutterstock)*

The feedback was clear - there is a real and urgent need for this gap to be addressed.

On September 17th ILiA will officially launch a new project focused on PCF guidance for recycled lithium, as part of its Annual Meeting which this year will take place in Singapore. Subsequently a multistakeholder working group will be convened, within the scope of the Sustainable Lithium Subcommittee.

It is expected that the proposals generated by this project will:

- Align with the existing ILiA PCF Guidance for primary lithium products and other relevant standards.
- Be agnostic to the source of the scrap material. For example, the guidance will be applicable to both nickel-rich and non-nickel lithium battery chemistries.
- Determine the system boundaries for recycled (secondary) lithium.

Who can participate?

This project is open to members, non-members and academic experts. The working language will be English. Side meetings in Chinese will also be facilitated.

We recognise that this is an iterative process and that some aspects will inevitably need addressing once the first proposal has been drafted, but that is part of standard setting, and we hope that you will join us for the journey!

To register your interest contact **tom.drabble@lithium.org** or **danyi.feng@lithium.org**

INTERNATIONAL LITHIUM ASSOCIATION

INTRODUCING THE

LITHIUM EXCELLENCE AWARDS



The **Lithium Excellence Awards** recognise exceptional leadership and enduring contribution to the global lithium community.

They honour those whose vision, integrity and commitment have helped to shape the future of our industry, exemplifying the values that ILiA seeks to champion and inspiring progress for generations to come.

The ILiA Lithium Excellence Awards are manufactured from ZERODUR®, a lithium-containing glass-ceramic that has been one of SCHOTT's most unique and extraordinary products for over 50 years. With an extremely low thermal expansion, ZERODUR® is essential for a large number of demanding high-tech applications requiring exceptional precision, including aviation gyroscopes, giant telescopes, satellites and manufacturing microchips. SCHOTT kindly donated the ZERODUR® monoliths to ILiA in support of the Lithium Excellence Awards.