Industry veteran Shmuel de Leon gives a personal view on the present state of the battery industry – both lead and lithium. In an exclusive conversation with *Batteries International* he talks about industry turmoil, unchecked dominance of China, and why the writing is on the wall for Europe and North America.

Western battery manufacturing is in freefall ... and running out of time

"I've spent 35 years in the battery industry, and I don't think I've ever seen a crisis this severe – or one that's accelerating so quickly

I've spent 35 years in the battery industry, and I can say without hesitation that I have never seen a crisis like the one facing us now. Not in its scale, not in its speed, and not in its severity. What we are witnessing is not a cyclical downturn or a temporary market correction. It's is a structural shock that threatens the future of battery manufacturing outside China.

The roots of the problem date back to early 2023, when China entered a phase of massive overproduction.

Expectations for electric vehicle growth in Europe and North America had been extraordinarily optimistic. Chinese companies built infrastructure, production capacity, and supply chains on the assumption that EV adoption would accelerate rapidly.

They invested heavily, bought huge volumes of raw materials, and expanded factory output to levels that turned out to be far beyond actual demand.

When the growth failed to materialise, the result was brutal.

Chinese manufacturers found themselves with excess capacity and falling orders. A fierce price war followed as companies fought to defend market share. Over the past two and a half years, this has driven an average 40% reduction in material, cell, and battery pack costs.

That collapse in pricing, combined with weakening automotive markets in Europe and North America, cuts to EV subsidies, and political uncertainty, triggered the second wave of crisis. Automakers reduced their battery purchases. Prices fell further. Investors pulled back. Start-ups ran out of cash. Expansion plans were shelved. And suddenly, across Europe and North America, the battery industry began to contract.

INDUSTRY INSIGHT: SHMUEL DE LEON

What we are seeing now is not an isolated failure. It is systemic erosion.

High-profile companies are going bankrupt. Others are shrinking production, laying off staff, or delaying factory launches. Investors, quite rationally, are unwilling to commit capital into a market where profitability appears impossible. And all this is happening while China continues to push forward, faster and harder than ever.

On top of this, we now face tightening export controls from China. Last October the authorities ruled that critical materials and components — graphite, silicon, lithium iron phosphate, cathode materials, automation equipment, and high-energy battery packs — require export licences. This was to have become law in November but was put back a year following discussions between US president Donald Trump and China leader Xi Jinping.

For Europe and North America, which still rely heavily on Chinese supply chains, this creates another destabilising force. We are effectively building battery factories without control over the materials, machinery, or technology they depend on.

The result is a deepening crisis across the Western supply chain.

Europe, in particular, is in serious trouble. The battery industry there is shrinking, not growing. If nothing changes, China's current 75% share of global battery production will not fall — it will rise. Some analysts claim it could drop to 60–65% as Western capacity expands. I'm afraid that's nonsense. If present trends continue, China could control 85% of global battery output by 2030.

That is not healthy for any industry, and it is deeply dangerous geopolitically. Batteries are becoming the fuel of the future. Whoever controls their production controls mobility, energy storage, defence systems, and industrial resilience. Concentrating that power in one country creates enormous political and strategic risk.

What we need is a globally distributed manufacturing base. Competition across continents drives innovation, reduces costs, and strengthens supply security. But today, I see no meaningful political strategy emerging.

The US government, the European Union, and the UK all talk about energy security, but I see no long-term industrial plan capable of supporting local supply chains for the decade required to make them competitive.

This is no longer just about cost. China is now leading in technology, speed, and industrial execution. Capital flows to opportunity, not ideology. And right now, opportunity lies overwhelmingly in China

Expecting private investors to shoulder that burden alone is unrealistic. They look at current economics and conclude — correctly — that the risk is too high. Capital flows to opportunity, not ideology. And right now, opportunity lies overwhelmingly in China.

The human cost is already severe. I estimate that roughly 20% of the European battery workforce has been laid off in the past year, alongside 10% in North America. That includes mining, materials processing, cell production, pack assembly, and even downstream integration. Expertise is bleeding out of the system. Once lost, it is extremely hard to rebuild.

This is nothing short of a catastrophe.

We need government intervention — serious, coordinated, long-term industrial policy. Not short bursts of subsidy. Not fragmented initiatives. And not political slogans. The last two decades have shown us exactly what does not work.

In the US, large funding programmes began under the Obama administration. Europe followed with its own battery alliance strategies. Yet both failed to deliver sustainable competitiveness. The fundamental problem was the absence of a realistic endgame. Companies received funding without credible pathways to independence and profitability.

Many invested in immature or unsuitable technologies. Factory construction dragged on for years, only to deliver outdated production lines by the time operations began.

In China, a 2GWh battery factory can be built in about a year. In Europe, it may take five. That time differential alone destroys competitiveness.

If we are serious, governments must provide long-term stability — guaranteed market conditions, procurement commitments, infrastructure acceleration, and regulatory reform — giving companies confidence to invest for at least a decade. Only then can Western manufacturers hope to close the cost and scale gap.

Some argue that technology leadership could rescue Europe and North America. I wish that were true. But the reality is stark: China now leads battery innovation.

Once, companies like LG, Samsung, Panasonic, and Murata drove lithium-ion development. Energy density improvements, power capability, and form factor evolution came largely from Japan and Korea. That era is over.

Today, Chinese firms dominate. In the high-volume 21700 cylindrical cell format, Chinese manufacturers deliver capacities of 6.5Ah. Their Western counterparts remain stuck at 5.5–5.8Ah. Across prismatic, pouch, LFP, sodium-ion, and solid-state research, Chinese companies lead in speed, scale, and industrialization.

This technological dominance is not accidental. It is the result of coordinated national strategy, enormous R&D spending, rapid factory iteration, and close cooperation across the supply chain. Meanwhile, Western firms struggle with regulatory barriers, fragmented funding, and risk-averse investors.

One of the most striking examples is solid-state batteries. China has invested over $1 billion across 10 major companies to accelerate development. The goal is to replace liquid electrolytes — the main source of fire risk — with solid alternatives, enabling safer designs and the use of lithium metal anodes, which dramatically increase energy density.

Chinese companies now manufacture semi-solid, quasi-solid, and even fully solid-state cells. I

Expecting the private market to solve this alone is unrealistic. Without long-term government intervention, the Western battery industry will continue to collapse

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have visited their production lines. These are not lab prototypes — they are scaling real manufacturing. Meanwhile, Western players such as QuantumScape and Solid Power remain trapped in long R&D cycles, struggling to reach commercial volumes.

This gap extends far beyond batteries. It encompasses automation, materials engineering, process control, and manufacturing know-how. China is not just cheaper. It is faster, more agile, and increasingly more advanced.

Some suggest that Europe could cooperate with Chinese companies by hosting their factories. That is happening — but let's be honest about what it means. Production may take place in Europe, but raw materials, machinery, and intellectual property remain Chinese. It reduces transport emissions and adds local jobs, but it does not create technological sovereignty.

Recycling, often presented as Europe's strategic advantage, faces equally harsh realities. Battery recycling is not profitable without subsidies. With industry margins collapsing, funding for recycling plants is drying up. Europe largely focuses on black mass processing, while refining still happens in China. Without healthy upstream manufacturing, recycling cannot stand alone.

This brings us back to political leadership — or the lack of it.

Tariffs, such as those proposed by the Trump administration, will not fix this problem. Tariffs raise prices but do not create factories. LFP cathodes cost around $35 per kWh in China. There are virtually no non-Chinese suppliers. Even with tariffs, US manufacturers will still have to buy Chinese material, only now at higher cost.

Protectionism without industrial investment simply weakens domestic markets.

Tesla demonstrates the complexity of survival. The company manufactures batteries in China, sources from CATL, and sells globally. It supplements this with Panasonic cells in the US, leveraging scale and integration. But even Tesla cannot escape Chinese dominance. Most automakers lack Tesla's vertical integration and financial resilience.

Long-term, battery chemistry evolution will be gradual. NMC will remain dominant for high-performance vehicles. LFP will continue in cost-sensitive segments.

Batteries are becoming the fuel of the future. Whoever controls their production controls mobility, energy storage, defence systems and industrial resilience

Sodium-ion, while promising, remains more expensive than LFP. Without economic advantage, adoption will remain limited. Revolutionary breakthroughs are unlikely within the next decade.

What we will see instead is consolidation. Smaller firms will collapse. Mid-sized players will merge. Market share will concentrate further. Already, two Chinese companies control nearly 60% of global production. That level of concentration is unhealthy — but inevitable in the current environment.

Every week brings more bad news. Factory closures. Cancelled expansions. Workforce reductions. The political system remains largely unresponsive.

What worries me most is that time is running out. Once industrial ecosystems collapse, they are extremely difficult to rebuild. Skills disperse. Suppliers disappear. Infrastructure decays. Restarting from zero takes decades.

This is no longer just an economic issue. It is a matter of national security. Energy independence. Strategic autonomy. Industrial resilience.

We cannot allow Europe and North America to become permanently dependent on Chinese battery production. Not because China is an adversary, but because no critical industry should ever be monopolized by a single country.

The solution exists — but it requires courage. Governments must commit to long-term, industrial-scale intervention. They must support domestic manufacturing through capital, policy, and procurement guarantees. They must align education, research, and regulation behind a coherent strategy. And they must act quickly.

If not, history will look back on this moment as the point where the West quietly surrendered control of one of the most strategic industries of the 21st century.

And that would be an unforgivable failure. ■

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