

Automotive Supplier Outlook 2025

Volume 2: Companies E - I

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As we approach the end of yet another eventful year, we take the opportunity to assess the industry's current state by reflecting on the significant events of the past year and exploring the outlook for 2025.

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Introduction

S&P Global Mobility's Matthew Beecham has engaged senior executives from 42 suppliers in the automotive supply chain for an end-of-year interview initiative. This initiative seeks to gather valuable insights into the challenges faced in 2024 and the strategies being formulated for 2025, prioritizing genuine experiences over elaborate strategies.

This report is the second of four volumes. The key discussion points include ongoing supply chain disruptions, labor shortages, and regulatory compliance challenges encountered by automotive suppliers. It emphasizes the significance of technological advancements and a heightened focus on sustainability as suppliers prepare for moderate growth in 2025.

Additionally, the report highlights shifting consumer preferences towards electric vehicles, the need for increased investment in innovation, and the importance of collaboration with technology partners. It also addresses rising financial pressures due to inflation, the need for robust risk management strategies, and the imperative to close the skills gap through targeted talent development initiatives within the automotive supply sector.

Overview

Challenges faced by automotive suppliers in 2024

The interviews conducted for this report reveal the extent to which suppliers are grappling with severe supply chain disruptions, driven by geopolitical tensions and economic instability. These disruptions are forcing some to overhaul their logistics and sourcing strategies, demanding a shift towards more resilient frameworks.

Labor shortages are compounding these challenges. The automotive sector's dependence on skilled labor means that the current talent gap is not just a hindrance but a threat to production efficiency. Companies are compelled to raise wages and invest heavily in training to attract and retain necessary talent.

Regulatory compliance is another pressing concern. Stricter environmental regulations are being enforced, requiring suppliers to invest in new technologies and processes to meet evolving standards. Non-compliance can lead to hefty penalties, making proactive adaptation a necessity rather than an option.

Developments in the automotive sector

Despite these challenges, the automotive sector is witnessing significant technological advancements. Suppliers are increasingly adopting automation, artificial intelligence, and data analytics to enhance operational efficiency.

Sustainability is emerging as a central focus. With rising consumer awareness of environmental issues, there is an escalating demand for sustainable practices. Suppliers are integrating eco-friendly initiatives into their operations, from sourcing to manufacturing.

Outlook for 2025

Moderate growth in automotive production is anticipated. This rebound will drive demand for innovative products and solutions. Suppliers must prioritize strategies that enhance resilience and adaptability to navigate market uncertainties effectively.

Key issues to address

Suppliers must strengthen their supply chains to handle future disruptions. This requires diversification, improving inventory management, and establishing contingency plans. Monitoring regulatory changes is necessary to maintain compliance and avoid penalties. Additionally, investing in research and development and collaborating with technology partners helps suppliers meet changing consumer demands.

Elektrobit specializes in embedded and connected software products and services for the automotive sector, operating as a wholly owned and independently managed subsidiary of Continental.

We spoke to Moritz Neukirchner, senior director, strategic product management, Software-Defined Vehicle, Elektrobit.



Key takeaways:

- **Challenges:** A gap exists between ambitions for software-defined vehicles (SDVs) and the readiness to adopt necessary technologies. While technical issues are addressed, OEMs [original equipment managers] struggle with implementation, and customers are unclear about their own SDV goals.
- **Developments:** The first Linux distribution supporting automotive safety bridges automotive development and the open-source community, accelerating the convergence of automotive and IT technologies and driving faster innovation in the industry.
- **Outlook for 2025:** Economic challenges, such as declining German vehicle sales in China, complicate SDV investments, driving OEM cooperation through initiatives like Eclipse SDV and increasing pressure on centralized software organizations to implement cost-cutting and efficiency measures.
- **Emerging issues:** US government policies promoting increased oil production may weaken the American auto industry's competitiveness by limiting EV transition investments, complicating efforts to meet the growing global demand for electric vehicles despite economic slowdowns in some regions.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Moritz Neukirchner: Disparity between SDV ambitions and readiness to make the necessary technological and organization adoption.

While many technical issues surrounding the manufacturing of SDVs have been addressed, OEM readiness to actually adopt such technology remains questionable. For example, virtualization solutions are widely available, but many projects struggle to employ them effectively. Simply put, many are talking the talk but not yet walking the walk.

Customers are unclear about their own SDV ambition.

SDV has remained an overloaded buzzword with widespread confusion concerning the actual customer value that OEMs want to bring to the market. On the positive side, talking about SDV levels has brought some clarity to the discussion.

What was the most positive development you witnessed in your sector in 2024?

Linux for safety applications

With the introduction of the first Linux distribution that supports automotive safety, the automotive industry is finally bridging the gap between automotive development and qualification processes and the vibrant open-source community. This solution will accelerate the convergence of technologies of automotive and general IT by being a catalyst for faster innovation.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

Impact of the economic situation of the auto industry on development

SDV will remain a hot topic as it is perceived as essential to retaining market share. However, the automotive industry's economic situation — such as the dramatic decrease in sales of German vehicles in China — is making investment harder. This will accelerate the trend toward cooperation among OEMs in organizations such as Eclipse SDV, which is establishing an open SDV core stack. Also, centralized software organizations that were established within OEMs are increasingly under pressure, which is leading to more potential cost-cutting initiatives and collaborations to increase efficiency.

Is there any specific concern or emerging issue you would like to highlight?

Government policy changes in the US could hurt the American auto industry.

The new administration's mandate to "drill, baby, drill" will backfire on the competitiveness of the American auto industry. American OEMs rely heavily on domestic market sales (two out of three major US-based OEMs comprise more than 50% of vehicle sales in the US).

Therefore, encouraging more oil production in the US will make it harder for US carmakers to invest into the EV transition. At the same time, increased oil drilling in the US will not have a significant impact on the demand for EVs in the rest of the world— which is projected to continue growing — despite the economic slow-down in some European countries. Therefore, serving the rest of the world will become harder over time.

Envalior

Envalior was formed in 2023 from the merger of two companies: the specialty materials business of DSM and the engineering materials business of Lanxess.

We spoke to Ryohei Takao, vice president of Specialty Materials Envalior.



Key takeaways:

- **Challenges:** Lower production volumes, discontinuation of EV-incentives and installment of government regulations.
- **Developments:** The automotive industry is gradually progressing toward sustainable materials and electric vehicles.
- **Outlook for 2025:** In 2025, moderate automotive production growth drives demand for innovation.
- **Emerging issues:** Envalior is committed to sustainability, aiming for a 75% reduction in greenhouse gas emissions by 2030 and 100% renewable electricity, while offering bio-based and recycled materials to support automotive customers' sustainability goals.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Ryohei Takao: The automotive market faced quite some challenges in 2024, amongst others in lower production volumes, discontinuation of EV-incentives and installment of government regulations. Envalior, however, remains optimistic and adaptable. Next to electrification we see an increased focus with automotive OEMs on sustainable solutions, and with our focus on bio-based materials and recycled based alternatives we are ready to support them. Our broad portfolio, experience in sustainable solutions and application know-how enable us to support a growing number of automotive customers in creating future-proof product designs.

What was the most positive development you witnessed in your sector in 2024?

As indicated, the automotive industry made significant strides toward sustainable materials, with growing commitment to eco-friendly practices. While a fully circular car model remains an ultimate goal, the progress made is encouraging. Another positive development is of course the continued shift to electric vehicles. Although the transition is slower than some forecasts predicted, it's clearly underway. Envalior is actively involved in many innovative projects with OEMs, fostering optimism for future growth.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

The growth of automotive production in 2025 is expected to be moderate. However, the industry is undergoing a significant transformation, creating demand for innovative solutions and new growth opportunities. Envalior is uniquely positioned to support automotive players in achieving success in the critical areas. For instance, Polyphenylene Sulfide (PPS) is increasingly used in EVs due to its exceptional chemical resistance, dimensional stability, and intrinsic flame

retardancy. Envalior's PPS solution, Xytron™, has become the material of choice for leading automotive OEMs and suppliers. To better serve European customers, Envalior is expanding compounding production of Xytron™ to Europe, complementing its existing facility in China and offering localized solutions.

Additionally, there is growing demand for PTFE-free solutions due to regulatory scrutiny of PTFE as a per- and polyfluoroalkyl substance (PFAS). Envalior addresses this need with its polyamide 46 solution, Stanyl®, which is ideal for applications requiring excellent sliding, friction, and abrasion properties, such as gears and bearings.

Envalior remains committed to driving innovation and providing cutting-edge materials that enable its partners to thrive in this evolving landscape.

Is there any specific concern or emerging issue you would like to highlight?

The European chemical industry is entering a new phase, facing the challenge of adapting to stricter regulations. Meeting these requirements demands significant resources. However, it also drives innovation, particularly in the area of sustainability and circularity.

Envalior has recently shared exciting news about its sustainability goals. Our Sustainability Ambitions focus on reducing our greenhouse gas emissions and extending our circular portfolio by:

- Offering an entire portfolio of bio-based and/or recycled-based alternatives by 2030.
- Achieving 100% renewable electricity by 2030.
- Reducing greenhouse gas emissions by 75% by 2030*.
- Reducing greenhouse gas emissions by 100% by 2040*.

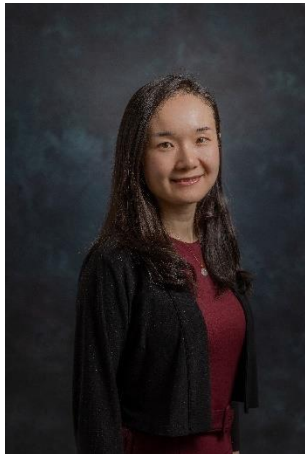
With a comprehensive portfolio of lower carbon footprint materials — including bio-based and recycled options — combined with tailored sustainability expertise and early co-development support, a range of solutions is available to help achieve automotive customers' sustainability goals.

*Scope 1 and scope 2 reductions versus 2016.

Factorial

Factorial Inc. develops solid-state battery technology that aims to provide longer range, increased safety, and cost efficiency compared to traditional lithium-ion batteries. Its FES^T® and Solstice[™] platforms use electrolytes for reliable performance and are designed to integrate easily with existing manufacturing processes. The company has established partnerships with major automakers, including Mercedes-Benz, Stellantis, Hyundai, and Kia.

We spoke to Siyu Huang, CEO and Co-Founder at Factorial.



Key takeaways:

- **Challenges:** Navigating the complexity of scaling the production of solid-state battery technology.
- **Developments:** Solid-state battery technology advanced in 2024, moving from lab to real-world deployment through partnerships with Mercedes-Benz and Stellantis. Key milestones indicate reliability and performance validation, with EV [electric vehicle] integration expected by 2026 and high-volume manufacturing later this decade.
- **Outlook for 2025:** Optimistic, with plans to launch EVs featuring solid-state batteries by 2026. Key efforts will focus on module integration and expanding manufacturing capabilities, while advancing the Solstice[™] battery for broader market applications, including consumer electronics.
- **Emerging issues:** The lack of government support for domestic solid-state battery development risks US competitiveness, as funding focuses on traditional lithium-ion technologies. Targeted investment in development and validation is crucial to match global advancements, especially from countries like China.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Siyu Huang: The biggest challenge for Factorial in 2024 was navigating the complexity of scaling the production of solid-state battery technology.

What was the most positive development in your sector in 2024?

One of the most encouraging developments this year was how solid-state battery technology finally made its way out of the lab and had a clear path to real-world deployment. Through partnerships with Mercedes-Benz and Stellantis, we demonstrated tangible progress toward commercial adoption. Our B-sample delivery milestone with Mercedes-Benz and demo fleet announcement with Stellantis marked critical turning points for solid-state battery technology, as these partnerships will allow us to gather essential real-world testing and validation data. This data is crucial to demonstrate reliability and performance under real driving conditions, bridging the gap between lab results and tangible proof points to drive widespread market adoption. These validation steps from automotive leaders underscored how our solid-state batteries will be in EVs on the road by 2026 and then manufactured at high volume later this decade.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

The outlook for Factorial in 2025 is promising as we progress toward commercialization. We recently announced our plan to launch EVs equipped with solid-state batteries on the road by 2026. There will be a substantial effort in module/pack and vehicle integration in 2025 to prepare for the successful launch in 2026. Additionally, we anticipate expanding our manufacturing capabilities and continuing to make strides in advancing Solstice™, our all-solid-state battery that expands our total addressable market beyond automotive and electric mobility applications to include consumer electronics for short-term revenue opportunities. With the support of our partners and the advancement of US battery policy, we see Factorial playing a key role in helping America build a robust EV ecosystem.

Is there any specific concern or emerging issue you would like to highlight?

A pressing issue we're observing is the lack of robust government support for domestic solid-state battery development and piloting. Currently, most funding and policies are focused on traditional lithium-ion battery manufacturing, even as demand for more advanced and efficient battery technologies grows. We've manufactured thousands of automotive-sized cells and delivered to our investors and customers such as Mercedes-Benz and Stellantis. However, bringing disruptive battery technologies to the automotive industry is not only about building buildings and investing in equipment. Investing in development and validation through commercial phases with automotive customers is crucial. Without targeted support in battery development, the US risks falling behind as other nations, notably China, ramp up in solid-state battery technology.

Falken

Falken is a brand of passenger car, light truck, and medium truck tires owned by Sumitomo Rubber Industries (SRI), a prominent Japanese company in the tire manufacturing industry.

We spoke to Andreas Giese, chief corporate officer, Corporate Planning/Product Planning, Falken.



Key takeaways:

- **Challenges:** Economic challenges have impacted domestic manufacturers and supply chains. While consumer tyres, especially all-season, have improved, truck tyres continue to struggle with reduced demand and high operating costs.
- **Developments:** The European tyre market is evolving with rising demand, which we meet through our broad portfolio, including the ultrahigh-performance AZENIS RS820 and the new e.ZIEX for improved vehicle efficiency.
- **Outlook for 2025:** Demand for the Falken brand is rising, especially in the all-season segment. Despite competition from cheaper imports, we are confident in our ability to compete in the upper mid and premium tyre segments in 2025.
- **Emerging issues:** The European tyre market is dynamic, with strong replacement tyre demand and opportunities from electric vehicles. Sumitomo Rubber Industries' SENSING CORE technology enhances performance by detecting tyre wear, pressure, load, and road conditions.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Andreas Giese: Economic challenges, including widespread inflation and rising energy prices, have particularly affected domestic manufacturers, while geopolitical tensions have disrupted supply chains, reduced demand, and led to inventory shortfalls across the region. These factors, combined with the growing influx of imported tyres, have made it challenging for us to regain market share. It's worth noting that the recent rebound has not been uniform across tyre segments. For example, consumer tyres saw a notable improvement, especially in the all-season segment, where drivers sought versatile options amid unpredictable weather. Truck tyres continued to struggle in the first half of 2024, facing reduced demand amid economic uncertainty and high operating costs.

What was the most positive development you witnessed in your sector in 2024?

The European tyre market is characterised by dynamic factors that influence its growth and evolution. Understanding and adapting to these dynamics is essential. We have witnessed continued and increasing demand, which we are servicing through our broadest portfolio of patterns to date. This includes our first ultra ultrahigh-performance tyre (UUHP) — the AZENIS RS820 and our new e.ZIEX tailored to the needs of any vehicle looking for improved efficiency.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

I'm very positive. We are in a good position with demand for the Falken brand growing. The level of technology and features we can offer at a compelling price point is really working across Europe. We are optimistic for sectors such as all-season where one tyre is suitable for all year and offers a worthwhile cost saving for end users in markets that mandate cold weather tyres. It's a segment that's growing. I predict more competition from cheaper imports and aggressive pricing, but we can fight in the upper mid and premium segments with confidence in 2025.

Is there any specific concern or emerging issue you would like to highlight?

The European tyre market is a dynamic and competitive business, driven by factors such as vehicle sales, technological advancements and changing consumer preferences. The market offers diverse opportunities across various segments. The demand for replacement tyres is expected to remain robust as the vehicle parc continues to expand. Additionally, the adoption of electric vehicles offers opportunities — catering for the specific requirements, such as low rolling resistance and larger wheel diameters.

In addition, further technological developments will continue to shape the market led by OEM businesses, which drives the necessity investments in research and development to introduce innovative technologies. The integration of sensors, connectivity features and advanced materials will enhance tyre performance, safety and durability. Our parent company, Sumitomo Rubber Industries Ltd. has revealed a groundbreaking technology for detecting tyre wear levels. This latest breakthrough represents the next evolution of our proprietary SENSING CORE, Tyre Sensing Technology, adding wear to the parameters that this innovative technology can detect — a list that already includes tyre pressure, tyre load and road conditions. With this, our SENSING CORE technology will continue to contribute to the realisation of a new Mobility Society.

Geotab is a vehicle telematics company with a vast amount of data and insights into driver behavior and vehicle usage patterns.

We spoke to Edward Kulperger, senior vice president, Geotab EMEA.



Key takeaways:

- **Challenges:** Polarized discussions about electric vehicles hinder progress. Data-driven analysis shows many public and private sector vehicles are ready for electrification, challenging the growing pessimism surrounding EV adoption in the industry and media.
- **Developments:** Despite scepticism around AI, the launch of Geotab Ace, the company's Generative AI assistant for fleet managers, received positive feedback from over 100 early adopters, addressing key topics like driver safety, diagnostics, and fuel efficiency.
- **Outlook for 2025:** Geotab approaches 2025 with optimism despite market challenges, excited to strengthen partnerships with car makers like Volkswagen (VW) and Kia. Integrated telematics promise enhanced collaboration between OEMs and data-driven solutions for all stakeholders.
- **Emerging issues:** To combat congestion and environmental issues, Geotab is prioritizing sustainability by promoting EVs, electric delivery, and sustainable transport modes, while utilizing data-driven solutions to optimize public transit and traffic management for improved efficiency and air quality.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Edward Kulperger: The polarisation of the discourse around electric vehicles hasn't been helpful. It appears that the debate around EV has become political, and this can cloud people's judgments. Instead, we should be relying on data to tell us when and where electric vehicles are best deployed. Our analysis, for example, shows a sizable chunk of vehicles (cars and vans) operated by private and public sector organisations are ready to go electric — contrary to increasing industry and media pessimism around EV adoption.

What was the most positive development you witnessed in your sector in 2024?

There's obvious scepticism around the deployment of AI technology, but we see only positives for fleet management.

We've received a superb reaction to the launch of our Generative AI (GenAI) assistant for fleet managers, Geotab Ace. Over 100 companies globally signed up to be part of the early adopter programme to evaluate and provide feedback. Early adopters have worked with the GenAI assistant providing data-driven answers to more than 1,000 customer questions. Recurring topics include questions relating to driver risk and safety, diagnostic data and maintenance, fuel consumption and efficiency, and vehicle utilisation.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

We approach 2025 with a renewed sense of optimism despite macro challenges in the market. This year has seen unprecedented political and economic upheaval, and we look forward to a period of stability.

At Geotab we're excited to strength our relationships with car makers. We entered agreements with VW and Kia in 2024, and there's a lot more to come from those two as well other partnerships. "Software-defined" is an overused term, but you cannot argue with the power of data. Integrated telematics promises a new era of collaboration between OEMs and companies like Geotab, for the benefit of everyone who understands the value that this data delivers.

Is there any specific concern or emerging issue you would like to highlight?

We must prioritise sustainability and efficiency to tackle congestion and environmental concerns on our roads.

Not only should [governments] continue to encourage the use of EVs and buses through incentives and infrastructure development, but also promote electric delivery and other sustainable modes of transportation such as e-cargo bikes through infrastructure improvements, incentives and public awareness campaigns. This will reduce emissions and improve air quality.

We can also utilise data-driven solutions to optimise public transportation routes and schedules. This can improve efficiency, reduce wait times, and make public transit a more attractive option. By implementing intelligent traffic management systems that use real-time data we can alleviate congestion and improve traffic flow.

By focusing on these strategies, we can create a more sustainable, efficient, and safe transportation system that benefits both the environment and the well-being of our communities.

Harman International has functioned as an independent subsidiary of Samsung Electronics since 2017. Based in Stamford, Connecticut, Harman operates in the Americas, Europe and Asia. Harman designs and engineers connected products and solutions for automakers, consumers and enterprises worldwide, including connected car systems, audio and visual products, enterprise automation solutions, and services supporting the internet of things. The company markets its diverse range of products under various brands such as AKG, Harman Kardon, Infinity, JBL, Lexicon, Mark Levinson and Revel.

We spoke to Huibert Verhoeven, senior vice president, Intelligent Cockpit, Harman.



Key takeaways:

- **Challenges:** The race to deliver advanced in-cabin experiences is on, as consumer expectations soar. Harman seizes this challenge, transforming cockpits into seamless environments where technology enhances daily life, keeping pace with the rapid evolution of the automotive landscape.
- **Developments:** Harman has innovated across product lines with upgradable infotainment systems, Neo QLED displays, augmented reality head-up displays (AR HUDs) and driver monitoring systems, while also providing continuous software updates for older models to enhance user experience.
- **Outlook for 2025:** As electric vehicle adoption slows, the focus shifts from powertrains to premium in-cabin experiences, highlighting the need for rapid innovation. Harman's Ready suite leads the charge, transforming the cockpit into a hub of seamless technology.
- **Emerging issues:** As vehicles become more connected, over-the-air (OTA) updates are crucial for enhancing functionality and cybersecurity. Harman prioritizes user privacy while leveraging data to improve experiences, ensuring compliance and trust with original equipment manufacturer partners and customers alike.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Huibert Verhoeven: One of the biggest challenges for the entire industry is the rapid development and delivery of new vehicles with advanced capabilities — offering compelling in-cabin experiences that align with consumer expectations worldwide. Priorities have developed very quickly in regions where the previous focus was on more basic mobility — and OEMs want to keep pace with consumer technology. The cadence of development, innovation and in-cabin experience is rising exponentially, and such challenges bring opportunities for Harman's focus on delivering 'consumer experiences, automotive grade' — turning the cockpit into an environment that allows people to seamlessly continue their daily lives and thrive.

What was the most positive development you witnessed in your sector in 2024?

We've introduced innovative solutions across entire product lines — where traditionally they were custom designed per vehicle — as well as rolling them out as updates across older models. This includes the successful deployment of technologies with leading OEMs, such as Ready Upgrade upgradable infotainment systems, superior Ready Display Neo QLED display products, augmented-reality Ready Vision head-up displays (AR HUDs), and Ready Care driver monitoring systems. In addition, Harman continues to create a compelling experience evolution via continuous software updates across product families.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

In 2024, there was a lot of discussion about the slower-than-expected adoption of EVs. In turn, this has led to an emphasis on holistic in-cabin experiences, regardless of the vehicle's propulsion technology. Generally, drivers are spending less time thinking about the transmission or power of a new vehicle and making buying decisions based on the in-cabin experience — meaning the rapid development, convergence and scalability of similar technologies, products and experiences worldwide is more important than ever. This leans into Harman's automotive model and suite of Ready products — including Ready Care, Ready Display, Ready Upgrade and Ready Vision — which create in-cabin experiences at a superior automotive grade.

Is there any specific concern or emerging issue you would like to highlight?

Technology is allowing vehicles to become inherently connected, and we mustn't overlook the importance of over-the-air updates for delivering new functionalities and maintaining cybersecurity. Data gathered through the way people interact with their cars helps to improve their user experience. Balancing the value of data for drivers and OEMs with privacy concerns is vital. As such, Harman spends a lot of time working with its OEM partners and customers to make sure we not only adhere to the legislation but broadly and actively uphold the privacy of what users do in their vehicles.

Hydro Extrusions

Hydro Extrusions is an aluminum extrusion business with a presence in Europe and North America, and plants in South America and Asia. With about 140 production sites and offices in 40 countries, the company employs 21,080 people. Its position in extrusion, building systems and precision tubing is supported by local expertise, a global network, and research and development capabilities.

We spoke to Paul Warton, executive vice president for Hydro Extrusions.



Key takeaways:

- **Challenges:** Facing a 30% drop in aluminum demand in Europe and North America but remains well-positioned for long-term growth in the green energy transition.
- **Developments:** Committed to reducing the environmental footprint of aluminum production through recycling and cleaner technologies, promoting transparency and providing customers with necessary data and certifications.
- **Outlook for 2025:** Hydro Extrusions anticipates improved aluminum demand in 2025, driven by trends in automotive lightweighting, replacing copper with aluminum for conductivity, and increased focus on circularity and recycling.
- **Emerging issues:** Hydro is concerned about the EU's Carbon Border Adjustment Mechanism (CBAM), which allows imported aluminum to be assigned zero emissions, creating a loophole detrimental to European recyclers. A study by Arkwright highlights flaws in CBAM's emission calculation methodology that could undermine its effectiveness.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Paul Warton: The most significant challenge we encountered in Hydro Extrusions this year was the continued slowdown of demand for aluminum extrusions in Europe and North America. Compared to the peak demand in 2021, the demand is estimated to be down by as much as 30%, and it is estimated to be at a level that we have not seen for the last decade.

This is, of course, a challenge to maneuver in the short term, but in the long term, the aluminum extrusions market is still a very attractive market. And Hydro Extrusions is well positioned to capture the opportunities that come with the green energy transition, with increased demand for aluminum extrusions made of recycled and low-carbon aluminum.

What was the most positive development you witnessed in your sector in 2024?

The continued race is to deliver aluminum and aluminum extrusions with the lowest possible environmental footprint. Despite the challenging extrusion demand situation, the industry continues to move in the right direction, which is very encouraging.

Recycling of aluminum is one way to produce aluminum with a lower footprint, since that process only requires a fraction of the energy used to produce new aluminum. But even in primary aluminum production, we are making progress towards zero emissions through a cleaner energy matrix from the mine to the metal and new technology.

We at Hydro Extrusions are promoting transparency and aim to always disclose all relevant data around the environmental footprint to our customers. We provide the data and the third-party certifications needed so our customers can document that their products contain future-proofed aluminum extrusions.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

We are expecting a slight improvement in the demand for aluminum extrusions in 2025, and we will continue to work closely with our customers to create more and better products with aluminum extrusions.

The use of aluminum extrusions in automotive is increasing due to the need to create lighter vehicles with a longer driving range and for certain safety-critical parts in the car. The carmakers are now looking into the embedded environmental footprint of the materials they use in their cars, so Hydro is well-positioned to capitalize on this trend.

Another related trend is that carmakers and other industries are seeing the opportunity to replace copper with aluminum for certain parts which require conductivity. The price ratio of more than 3.5 times in favor of aluminum, the lighter weight, and the move to electric vehicles with an increased need for conductivity applications, is driving this trend.

And not least, there is a circularity trend across most industries, with increased focus on what happens to products at the end of life. Products need to be designed so they can be disassembled, and the materials can be separated and recycled. In buildings, we are now taking the aluminum from old aluminum facades that are being renovated to recycle this material and make new building facades out of it.

These are just a few examples of trends which will influence Hydro Extrusions in 2025 and beyond.

Is there any specific concern or emerging issue you would like to highlight?

One of our main concerns at the moment is the implementation of the EU's Carbon Border Adjustment Mechanism (CBAM). The purpose of CBAM is to extend EU Emission Trading System carbon pricing to imported goods, ensuring that importers face the same carbon costs as EU producers. However, the way CBAM is currently set up will not protect European industries from unfair competition and will not promote global decarbonization.

One of the most pressing issues with the current CBAM framework is the methodology for calculating the emissions of imported goods. The current methodology assigns zero emissions to imported aluminum products based on the process scrap. This creates a large loophole in CBAM that will be particularly detrimental to European recyclers.

There are two sources of aluminum scrap for recycling. Post-consumer scrap has been used in a product and the embedded carbon footprint has been accounted for. On the other hand, industrial scrap has not been in use and therefore carries the same embedded emissions as the primary aluminum it was created from.

To solve this, the same emissions should be assigned to recycled content based on industrial scrap as for the primary aluminum it comes from.

There is a growing awareness both within and beyond the aluminum industry of the significant loopholes and circumvention risks within the current CBAM design. Most recently, former President of the European Central Bank Mario Draghi's report on EU competitiveness mentions this loophole.

A few figures:

- The global supply of remelted industrial scrap is large enough to meet the entire demand for primary aluminum and semi-finished products in Europe.

- The aluminum sector is highly exposed to this loophole, with 30-40% of global aluminum production potentially exploiting it.
- By 2035, with an assumed carbon price of EUR140 per metric ton CO₂, remelted industrial scrap from countries in Asia could have a cost advantage of about \$200 per metric ton over identical EU products.

Hydro commissioned a study with management consulting firm Arkwright on CBAM's effects on the aluminum value chain, revealing serious flaws that could undermine its goals if not addressed. We hope that the European Commission will rectify this issue for the permanent period kicking off in 2026.

IBM Technology

IBM integrates technology and expertise, providing infrastructure, software and consulting services for clients pursuing digital transformation of mission-critical businesses.

We spoke to Nicole Roik, head of technology for Security Global Manufacturing Industries, IBM Technology.



Key takeaways

- **Challenges:** Research and development teams face pressure to quickly implement software features for in-car experiences, with clients increasingly using generative AI to enhance productivity and select impactful projects amid tight margins.
- **Developments:** Automotive clients adapt to complex changes, advancing electric vehicles, connectivity and safety, while leveraging AI to enhance development and efficiency.
- **Outlook for 2025:** Sustainability, electrification and consumer demand for EVs will grow, but challenges such as labor shortages, supply chain disruptions and cyberthreats will shape the automotive industry in 2025.
- **Emerging issues:** The shift to software-defined vehicles (SDVs) poses challenges for original equipment manufacturers, requiring new skills and AI use amid labor shortages, while emphasizing the importance of data governance and collaboration with IT providers.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Nicole Roik: For an industry that's increasingly defined by software, especially around the in-car experience and brand differentiation, there's growing pressure on already stretched Research and Development (R&D) teams to get new features from 'code to road' as fast as possible.

In-vehicle AI isn't new — advanced driver assistance systems, autonomous driving and the chatbots many luxury cars now feature wouldn't be possible without it. That said, we are seeing many clients turning to GenAI to increase engineering productivity far beyond code generation. Margins are tight throughout the industry, so one of the most significant challenges is choosing the right projects to deploy AI to drive the right outcome.

What was the most positive development you witnessed in your sector in 2024?

It's hard to point to one single development, but what's always impressive is how automotive clients continue to navigate a very complex and ever-changing landscape while meeting consumer needs. The development of EVs continues at pace, but connectivity, mobility-as-a-service and advanced safety are also seeing progress. Again, many clients are turning to AI to help speed up developments to help solve complex problems, aid worker knowledge or streamline their processes.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

We expect the focus on sustainability targets will continue to grow, with more companies committing to electrification and reducing their carbon footprint. Technological disruptions will likely persist, driving innovation in areas including autonomous driving and connected car technologies. Consumer demand for EVs is expected to increase, but it will also be essential for automakers to balance this demand with affordability and accessibility.

Labor shortages and supply chain disruptions may continue to impact costs and production, potentially leading to price increases and delays in deliveries. Geopolitical tensions could escalate, further disrupting supply chains and affecting the industry's growth prospects. Lastly, the threat of cyberattacks will remain a significant concern for automakers.

Taking all these factors into account, the automotive industry in 2025 is likely to be shaped by a combination of challenges and opportunities. Companies that successfully navigate these complexities and adapt to the changing landscape will be well-positioned to thrive, while those that fail to do so may face significant challenges.

Is there any specific concern or emerging issue you would like to highlight?

The move towards software-defined vehicles comes with new challenges for automotive OEMs and suppliers — they will be an increasing direct liability and interaction with the end user and a step change in the skills required to manage the manufacturing and maintenance of these new vehicle designs. This comes at a time when retirements and skills shortages are hitting the industry, making better use of AI and data essential to maintain continuity.

We are also seeing many in the industry rushing to use even more AI capabilities, largely driven by board-level pressure around the use of the technology. But there are still challenges to overcome, especially around the availability of data and the capacity to generate meaningful insights from it.

We are in a sweet spot because that's what IBM is all about, but not all AI is equal and I'd urge anyone considering the technology to think about data and governance. What's needed are strong capabilities in new areas, such as large language models life-cycle management and GenAI governance, but also classic information management. Here, significant time can be saved via collaboration between automotive manufacturers and IT service providers, sharing learnings and experience, as well as the use of advanced platforms like IBM watsonx.governance that are built to direct, manage and monitor the AI activities of an organization.

Integrals Power

Integrals Power Ltd. develops battery cathode materials such as lithium iron phosphate (LFP).

We spoke to Behnam Hormozi, founder and CEO.



Key takeaways:

- **Challenges:** Integrals Power built a 20-metric tonne pilot line in 2024, producing world-class LFP and LMFP cathode materials on a tight budget and timeline, proving its chemistry theories amid challenges.
- **Developments:** The shift from NMC to LFP battery chemistries reduces energy storage costs. The supplier is attracting interest from global automotive original equipment manufacturers and tier 1 energy storage companies.
- **Outlook for 2025:** To partner with global energy storage OEMs and scale production from 20 to 1,000 metric tons annually to meet demand.
- **Emerging issues:** Monitoring potential US tariffs on imports, which may necessitate establishing a US-based production line with a partner.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

Behnam Hormozi: This year, Integrals Power built and commissioned our 20 metric ton per year pilot line and produced and tested world class LFP and LMFP cathode material. We achieved this on a very modest budget and challenging timeline. We knew, in theory, that we could achieve exciting numbers if we got the chemistry right, but it was certainly a challenge to prove it out.

What was the most positive development you witnessed in your sector in 2024?

The industry move from NMC to LFP battery chemistries has been a very positive development in our sector as this enables a lower cost per kWh [kilowatt-hour] for energy storage. We're excited to be in the vanguard of LMFP battery chemistry, which offers up to a 20% boost to the energy density, without impacting the cost per kWh. Since announcing our new LMFP material, we've been inundated by global automotive OEMs and tier 1 energy storage companies requesting samples for them to test.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

We are excited about 2025, which will see us forming customer partnerships with a wide number of global energy storage OEMs and tier 1 [companies]. We'll also be raising more investment to support the scale-up of our production line from 20 metric tons to, ultimately, 1,000 metric tons per year, which will prove out that our system scales to meet customer demand.

Is there any specific concern or emerging issue you would like to highlight?

One concern that we are keeping an eye on is the threat of tariffs for importing into the US market. These may require us to establish a US-based production line in partnership with a customer, so we are watching the geopolitical landscape with interest.

Founded in 2022, Ionetic specializes in electric vehicle battery-pack technology. It does so by integrating advanced software tools with manufacturing systems to deliver battery solutions for low-volume original equipment manufacturers.

We spoke to James Eaton, CEO and co-founder.



Key takeaways:

- **Challenges:** Ionetic focuses on innovations for smaller OEMs and emphasizes the need for electrification amid recent improvements in capital markets.
- **Developments:** The supplier sees unprecedented innovation in electrification. Its deep technology investment enables an end-to-end battery-pack development system, helping OEMs lower costs, risks and time to market.
- **Outlook for 2025:** With a brighter economic outlook and emissions regulations boosting EV adoption, Ionetic is optimistic about 2025 and confident that it can harness capital for substantial growth.
- **Emerging issues:** OEMs, especially smaller-scale ones, must compete with cost-effective electrification from mainland China. Ionetic aims to solve the challenge of battery-pack development by offering high-performance custom solutions that minimize costs and complexity for successful EV launches.

The following is an edited transcript of the conversation.

S&P Global Mobility: What were the most significant challenges your business encountered this year?

James Eaton: It's clear that there are quite a few preconceptions about the shift to electrification. Those preconceptions have fed into a narrative of ongoing decline in electric vehicle adoption – but that's simply not the case; from Q1 to Q3 this year, EV sales grew 13% year-on-year.

As a tier 1 supplier of EV battery-pack solutions, it's up to businesses like us to reinforce the environmental, legislative and commercial need to electrify — and deliver innovations that enable more, smaller-scale OEMs to produce cost-effective EVs and continue to drive the shift.

From a broader commercial perspective, the global contraction of capital markets presented challenges, but we're pleased to see base rate cuts now happening to address that.

What was the most positive development you witnessed in your sector in 2024?

There has been a lot of negativity surrounding electrification in 2024. Nevertheless, it's important to recognize that we have never seen more intelligent innovation in the market across different technologies than we do today. That's hugely exciting and something that needs to be leveraged to drive progress.

For us, investing in deep-technology has enabled us to integrate software, prevalidated hardware and fabrication in one fully end-to-end battery-pack development system. That kind of approach is what OEMs need to reduce costs, risk and time to market, and it's made possible by leveraging the technologies available today.

Looking ahead to 2025, how do you perceive your business prospects and the overall outlook?

With the improving economic outlook and emissions legislation set to drive EV uptake further, we're looking positive for 2025, and we see lonetic being able to leverage capital to achieve significant growth.

Is there any specific concern or emerging issue you would like to highlight?

For all OEMs, there is a pressing need to match the competitiveness of products from markets like mainland China that are leading the race to deliver cost-effective electrification. But this is particularly critical for smaller-scale OEMs, who have a crucial role to play in driving the EV shift.

Battery-pack development is one of the most time- and cost-intensive challenges in delivering a competitive EV. OEMs requiring 100 to 10,000 battery packs annually face a difficult choice: expensive and time-consuming, highly bespoke battery packs, or low-performance off-the-shelf solutions. Neither of these provide a strong business-case for OEMs to launch electrified vehicles; they need high-performance custom battery packs without the cost and complexity. It's this issue that we are addressing, and we're excited to help the industry overcome [this] moving forward.

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