

# Automotive World MAGAZINE

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## Sustainability sells: spotlight on Mercedes



**Mercedes-Benz** invests in a new recycling facility | **BMW** taps Mexico for EV production | **Applied EV** provides a modular AV solution | **Motional** aims for 24-hour robotaxi services | **Renault's** circular brand targets €2.3bn turnover | **Wejo's** collapse changes discourse on data

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IS **NEUTRAL**



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# Sustainability sells: spotlight on Mercedes

Mercedes-Benz offers an inside look at its involvement in battery recycling.

By Megan Lampinen

Electric vehicles (EVs) tackle the problem of tailpipe emissions but raise fresh sustainability concerns in terms of their full lifecycle environmental impact. The production of these vehicles, and the batteries pivotal to their performance, is resource intensive. Most current battery technologies draw on rare-earth materials like lithium, cobalt and graphite, which carry well-publicised environmental, social, and governance (ESG) challenges.

To reduce the environmental impact and ensure that an electric future is also a sustainable one, circular economy approaches are gaining ground and Mercedes-Benz has emerged as a pioneer. The automaker is preparing for an all-electric line-up by the end of the decade and is backing that up with a holistic approach to the circular economy of battery systems. Central to this is a

new battery recycling factory in Kuppenheim, Germany, designed to both slash resource consumption and bolster the brand's sustainability credentials with consumers. A groundbreaking ceremony took place in March 2023, and operations should begin by the end of the year.

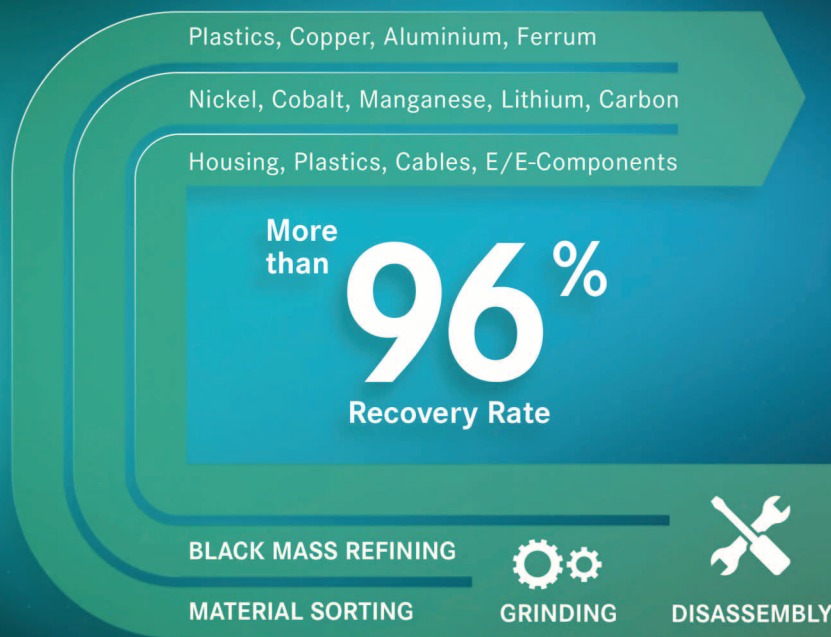
## Creating a “mine of tomorrow”

Ambitions for the facility are high but capabilities will be added gradually. In late 2023, it will kick off with mechanical dismantling of lithium-ion batteries from hybrids and EVs, including pre-production vehicles and batteries that have come back from customers. Later it should add shredding, drying and processing of battery-grade materials. Providing talks with the public sector go well, Mercedes also intends to add a



A rendering of Mercedes-Benz's forthcoming recycling factory in Kuppenheim, southern Germany

## Mercedes-Benz maximises the recycling quota of automotive battery systems.



hydrometallurgy pilot plant. Hydrometallurgy uses water-based solutions to recover metals from black mass and, along with pyrometallurgy, is one of the two most common processes for recycling batteries.

“The integrated recycling concept within a single factory is currently unique in Europe and brings advantages, not least in the implementation of efficient logistics,” Frank Deiß, Chairman Mercedes-Benz Drive Systems, Head of Production Powertrain Mercedes-Benz Cars, tells *Automotive World*.

The impact could be significant, and Jörg Burzer, Member of the Board of Management, Production and Supply Chain Management, refers to the plant as a “mine of tomorrow.” The hydrometallurgy process is expected to have a recovery rate of more than 96%. The recovered materials will be

fed back into the recycling loop to produce more than 50,000 battery modules for new vehicles. Annual capacity will begin at around 2,500 tonnes but volumes could be scaled up in the medium to long term.

### A German endeavour

While the payoff from the recycling facility could be significant, it’s not an inexpensive venture, with the construction requiring a “double-digit million Euro” investment. Notably, the plant is part of a wider scientific research project and as such, attracted funding from the German Federal Ministry of Economics and Climate Protection. Primobius, a joint venture of German mechanical engineering company SMS group and the Australian project developer Neometals, has been brought in as a technology partner, while the

Karlsruhe Institute of Technology and the Technical University of Berlin serve as scientific partners. The companies are taking a deep dive into the entire process of battery recycling including the development of logistics concepts, raw material recycling, and the use of recyclates in the production of new batteries. This one facility could end up making an important contribution to the future scaling of the battery recycling industry in Germany.

“The development of new, state-of-the-art battery recycling facilities and processes show great potential in the ongoing EV revolution,” says Deiß. “They provide an opportunity for regions poor in raw materials, such as Europe, with an opportunity to compete on the global stage.”

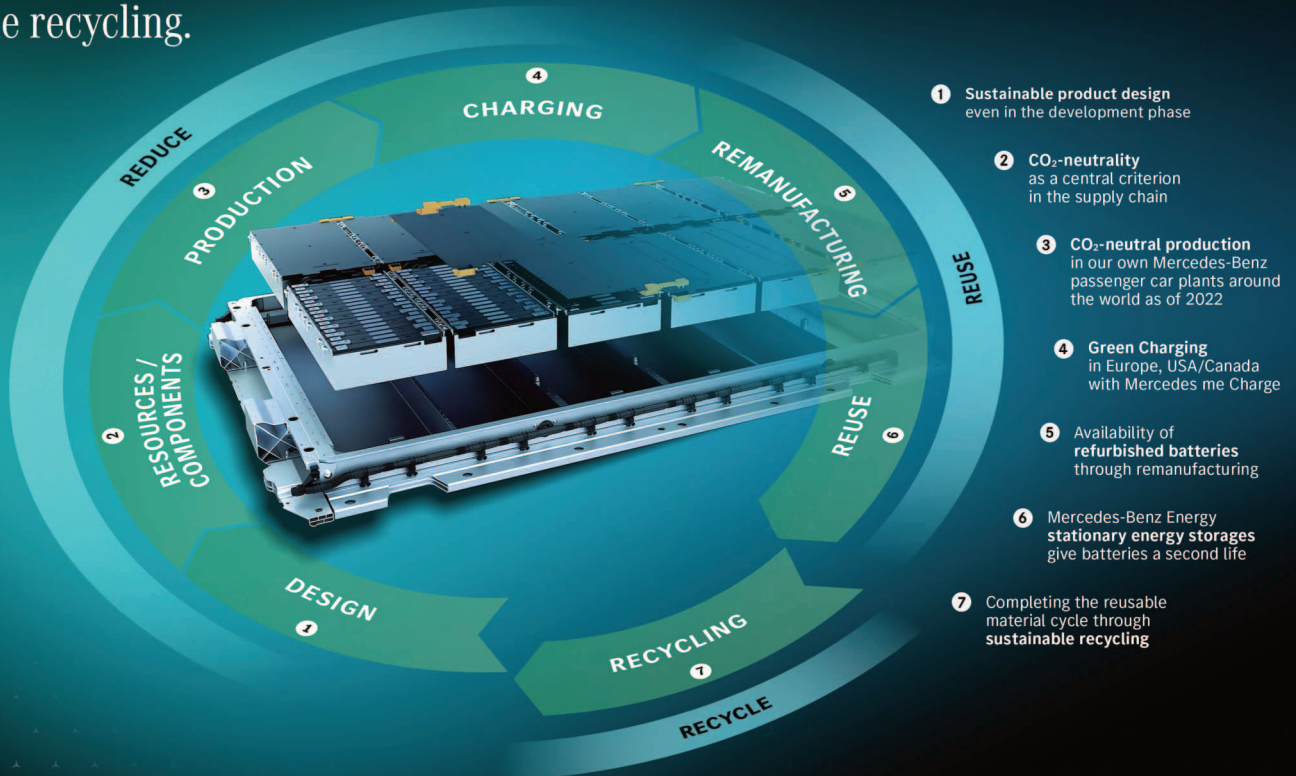
Thekla Walker, Minister for the Environment, Climate Protection and

the Energy Sector Baden-Württemberg, attended the groundbreaking ceremony where she spoke on the economic significance of the investment: “Crises such as the corona pandemic or the brutal Russian war of aggression against Ukraine have clearly demonstrated our dependence on supply chains and primary raw materials. Increased recycling can help to reduce this dependence on critical raw materials and thus strengthen the resilience of the economy. In this respect, the topic of battery recycling is highly topical and also of strategic interest.”

## Sustainability strategies

With global EV numbers set to explode in the coming years, other players are also preparing to bring

Mercedes-Benz is closing the loop on batteries through sustainable recycling.







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We want to build the world's most desirable cars, and a comprehensive sustainability concept plays a key role in this strategy

battery recycling facilities online. “We believe that the overall relevance of battery recycling will increase around the 2030s, when the return of vehicle batteries from today's electric models begins. We want to be prepared,” says Deiß. Facilities like this one could prove a real help in terms of resource supply. “This makes us less dependent on volatile raw material markets,” he emphasises. “Profitability plays a significant role as well. Scaling is particularly important here.”

Notably, this closed material loop represents one of the three key elements in the automaker's wider sustainability strategy, the other two being a pledge for CO<sub>2</sub>-neutral production and the conversion to an all-electric vehicle portfolio. Drawing on a photovoltaic system and externally purchased green power, the Kuppenheim facility should boast CO<sub>2</sub>-neutral operations. The plan is for all

Mercedes-Benz production plants worldwide to run entirely on renewable energy with zero CO<sub>2</sub> emissions by 2039.

“Kuppenheim is a very important starting point for us,” concludes Deiß. “Together with our partners from science and industry, we are systematically expanding our expertise in the field of battery value creation.” Notably, Mercedes is exploring a range of tangential services linked to EVs. Along with battery recycling it is also involved in EV charging. It was a founding member of the Ionia venture in Europe and recently outlined plans to launch a charging network across North America. Deiß points to these projects as an indication of its “holistic concept of electric mobility that takes our customers' needs into account. At Mercedes-Benz, we want to build the world's most desirable cars, and a comprehensive sustainability concept plays a key role in this strategy.”

# Daimler taps post-scandal Hino in scale pursuit

Oliver Dixon suggests this move is both opportunistic and strategically coherent on the part of Daimler

Falling firmly into the category of things that we did not see coming is the news of the mooted combining of the Daimler Trucks-controlled (it holds some 89% of the stock) Mitsubishi Fuso Truck and Bus Corporation (MFTBC) with Hino Motors, the truck OEM controlled by Toyota Motors.

This idea—at present it exists merely in the form of a legally non-binding MoU—would see the businesses of MFTBC and Hino bundled together under a holding company, the shares of which would then be listed in Tokyo. Daimler Truck and Toyota would hold an equal percentage of the new company along with other shareholders but these details, along with the scope of the business are yet to be finalised.

The deal is predicated upon a number of things—regulatory approval and valuation agreement come to mind immediately but not exclusively—and the timeframe for it to close is at present put at 4Q 2024.

There's some immediate financial sense to this. Daimler Truck Group (DTG) aims to improve EBIT from the 2019 low of 5.8% to 10% by 2025 and so costs clearly need to be addressed. The scale and synergy arguments that are the basis for this deal will go some way to achieve this. Its most recent results (1Q 2023) report MTFBC gross margin at 18.7%—pretty much in line with the DTNA and Mercedes-Benz segments but an EBIT margin severely lagging at 4.6% (compared with 11.6% and 8.5%

respectively). Scaling and cost synergies should—nothing is certain here—go some way to addressing this shortfall.

For Toyota the more immediate benefit is the containment of a significant liability. Hino has already put its hands up to long-term and systematic data falsification pertaining to engine emissions. While an external investigating committee failed to find “sufficient evidence to support a finding of direct involvement by management” the reality here is one of an organisation that now lacks credibility. Toyota President Akio Toyoda opined thus: “The misconduct committed by Hino is a betrayal of the trust of stakeholders including customers and is extremely regrettable.”



By the usually measured standards of Japanese corporate edict this is a fairly brutal condemnation and Hino—which has never seemed to fit entirely comfortably within the Toyota family—is now clearly marked for exile. No doubt the details of quite how DTG will be insulated from any future action taken against Hino will be of significant interest to all concerned here but it should also be remembered that current DTG senior management have some experience of dealing with Japanese automaker malfeasance; its acquisition of

the MTFBC stake in 2004 was followed almost immediately by a scandal involving defective Fuso truck hubs and fatal wheel loss.

There’s more to come here but an initial evaluation has to be one that sees this as both an opportunistic and strategically coherent move on the part of DTG. Decarbonisation is going

to come but it will only arrive at a significant cost and so this pursuit of scale makes a lot of sense. Consolidation candidates amongst the legacy OEMs are now few and far between and the fact that Hino’s dirty linen is—we would assume—now entirely out in the open gives the Stuttgart-based OEM the upper hand when it comes to future negotiation.

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Hino—which has never seemed to fit entirely comfortably within the Toyota family—is now clearly marked for exile

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*The Automotive World Comment column is open to automotive industry decision makers and influencers. If you would like to contribute a Comment article, please contact [editorial@automotiveworld.com](mailto:editorial@automotiveworld.com)*

# Low carbon concerns extend to websites

In the push for a cleaner future with EVs and hybrids, what happens ‘off road’ in terms of sustainability matters too. By James Cannings



**T**he internet, connected gadgets and other associated systems are said to have an annual carbon footprint equivalent to 3.7% of global greenhouse emissions. To put that into context, it is more than the entire aviation industry’s carbon output. But what has that got to do with the automotive sector?

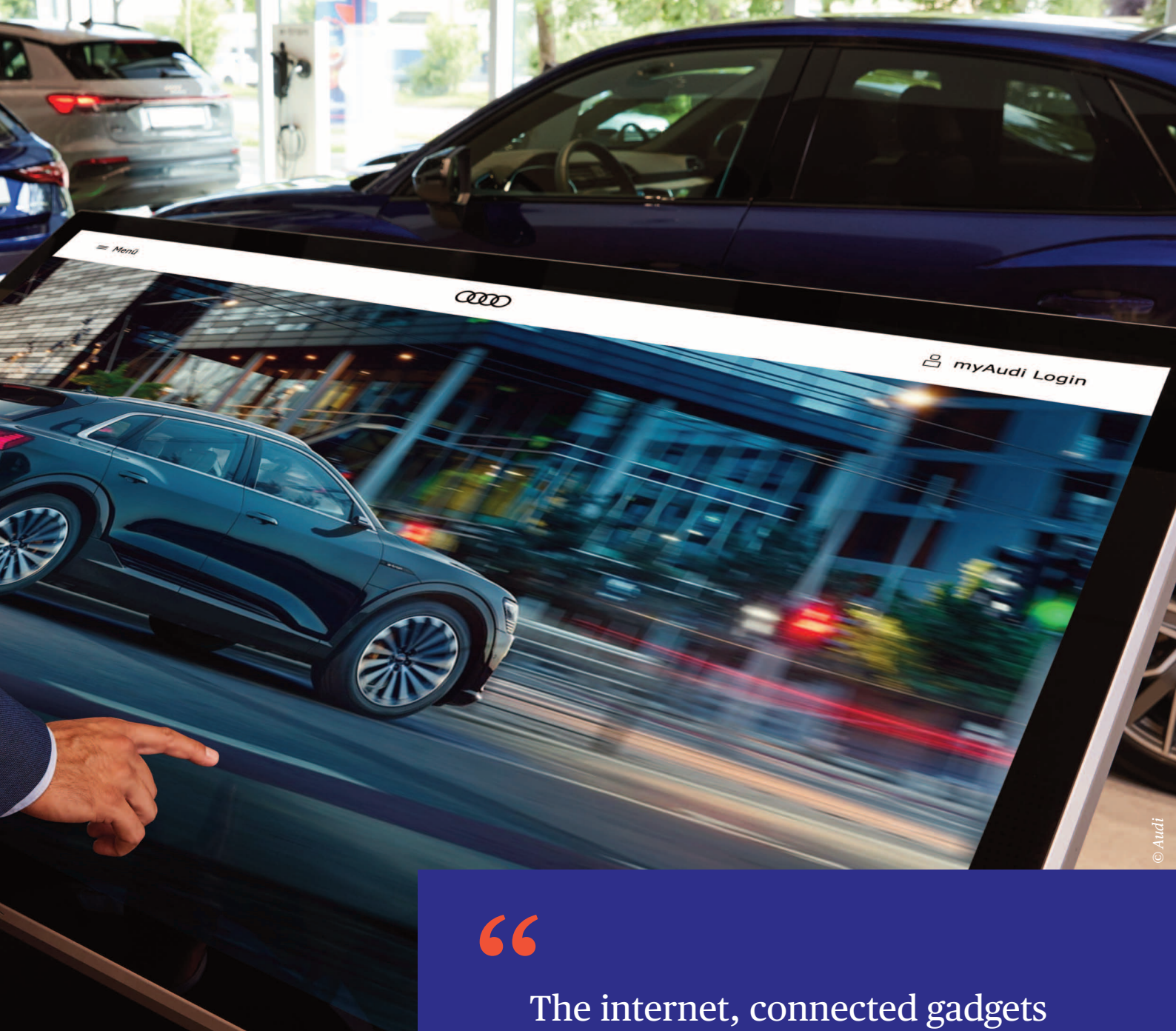
It’s true that improving the digital carbon footprint of

manufacturer and dealership websites will only account for a tiny fraction of the total emissions of wider automotive businesses. However, as we strive for a cleaner future with more electric and hybrid cars on the road, what happens ‘off road’ in terms of sustainability matters too.

When we go on social media, load a website or engage with other online activities, data is downloaded from multiple

sources and travels to our screens. This ‘data trip’ can go via many countries to get to us, which requires power - along with the carbon impact that brings.

So, when four and a half billion people with access to the internet globally are making trillions of interactions a year, the cumulative effect is what makes the internet such a high CO2 producer.



## Cleaner journeys on-and offline

Stakeholders across the automotive sector have a duty to understand the cumulative effect of online activity in manufacturing, sales, service and all other aspects of their daily businesses. Consider this: what do you hate most when you go online, whether to browse, shop or use social media? For many, the answer is how long it takes for a page to

load, closely followed by the number of steps it takes to get to what you're searching for. In fact, one study by Digital.com found that companies with slow website load speeds leave a

negative impression on 45% of consumers.

Customers value speed and efficiency when shopping online. Research from

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The internet, connected gadgets and other associated systems are said to have an annual carbon footprint equivalent to 3.7% of global greenhouse emissions

MarketingCharts suggests that 97% of consumers backed out of a purchase because it was inconvenient, and 83% of these consumers say that convenience while shopping is more important now than five years ago.

Website speeds also matter now more than ever. For every second a page slows down, so does the conversion rate. Portent found that at one second conversions were at 40%; 34% at two seconds; and at three seconds it was 29%. That goes even lower when load times increase.

When looking at high-performing, low carbon websites, eBay is a good example of a busy ecommerce site that gets these things right. It may not be aesthetically pleasing to some, but one thing it does very well is load fast. It's also 'low cost' from a carbon footprint point of view as it doesn't serve up data that you don't need. It's all about speed and convenience.

Keeping it simple and only providing the necessary information on each page means the whole website becomes lighter, easier to navigate and, importantly, faster to load. With lower data transfer levels as a consequence, the digital emissions are markedly reduced, and site performance becomes much better. In turn, from a customer journey perspective, a better performing site should lead to more enquiries and—ultimately—improved conversion rates.

Although more conversions lead to better car sales—which could be bad for the environment—we need to

Over a year, with **±10,000**  
monthly page views,  
[ebay.co.uk](https://www.ebay.co.uk)  
produces



**54.78kg of CO2 equivalent.**

The same weight as 0.37 sumo wrestlers and as much CO2 as boiling water for 7,423 cups of tea



**59 billion bubbles**

Woah, that's a lot of bubbles!



**3 trees**

This web page emits the amount of carbon that 3 trees absorb in a year.



**124kWh of energy**

That's enough electricity to drive an electric car 793km.

meet the industry where it is and support its sustainability efforts. The reality is that people need cars, so we can at least direct them towards automotive companies that aspire to become greener by reducing and offsetting carbon where they can. EVs are the closest we have to carbon-friendly vehicles, and by adding support to companies with an environment-first mindset, we can come closer to discovering even better automotive solutions in the near and far future.

## Make sites mean more on the green journey

Vehicle manufacturers state the performance of their cars as a selling point, so why should the efficiency and speed of their websites matter any less? Then there are the optics benefits, as more people get used to the idea of mitigating the environmental impact of their online lives. For instance, having the metrics of a better-performing website at their fingertips allows brands to tell their customers how much carbon they're saving by ordering online.

A manufacturer can calculate the emissions from purchasing or ordering a vehicle online versus a typical trip to the dealership. If added to all the other millions of sales, and millions of trips to the forecourt, they could calculate the amount of CO2 saved and conversion rates from faster online experiences.

But vehicle brands and dealers need to go one step further. They need to encourage customers to purchase their car online instead of making multiple trips to a showroom. Whilst the automotive sector must, like all sectors, focus on its core journey to net zero, a low-carbon website can be an important way to convey this journey to the customer.

Consumers' shopping behaviours are changing as they become more connected, and e-commerce is on the

rise in many sectors including automotive. Brands and dealers that can strike a balance between online and shop floor sales are set to succeed as long as they can deliver consumer needs like speed and convenience. They will meet the customer desire to purchase from brands that align with their values on sustainability among other things.

“

A better performing site should lead to more enquiries and—ultimately—improved conversion rates

Certainly, automotive brands and dealerships are just starting their journey to net zero. Continuing to offer online sales, powered by websites that load quickly with reduced need for data, will help further reduce the emissions associated with consumers' online interactions with the industry.

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*James Cannings is Co-founder, MMT; Chief Sustainability Officer of MSQ*

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# SAN LUIS POTOSÍ SE ELECTRICIZA



# Where does Mexico fit in BMW's EV vision?

San Luis Potosí's President and CEO takes Megan Lampinen through preparations for upcoming EV production and battery assembly



**B**MW is pushing hard on electrification and aims to transition half of all its global vehicle production to full battery electric by 2030. This impacts Group manufacturing facilities around the world, including Europe, China and North America. In early 2023 the automaker announced plans to invest €800m (US\$859m) to build electric vehicles (EVs) and assemble high-voltage batteries at its San Luis Potosi plant in Mexico.

San Luis Potosi has been turning out BMW models since 2019, starting with the 3 Series. In 2020 it added plug-in hybrid variants, thereby dipping its toes into electrification. The plant introduced production of the 2 Series in 2021, followed by the M2. The first all-electric models, which will be based on the Neue Klasse EV architecture, should start rolling off the line in 2027.

The plant was designed from the start to be highly flexible. That flexibility will be put to the test with the addition of this upcoming electrified range. Harald Gottsche, President and Chief Executive of the San Luis Potosi facility, speaks to *Automotive World* about the significance of this new production investment and its implications for Mexico's wider prospects of becoming an EV production hub.

### What was the thinking behind allocating this EV production and battery assembly to Mexico?

With the aim that 50% of all BMW output will be fully electric by 2030, we have to transform production on a global level. In general, production follows the market. That means



More than 500 new employees will manufacture EV batteries in a new 85,00-sq-metre plant

investing in European production for the European market, in Chinese production for the Chinese market, and in North American production for the American markets.

### What specific changes are needed to prepare the San Luis Potosi facility for this EV and battery work?

€500m of the total investment will go towards the high-voltage battery production, which is completely new and will employ more than 500 new associates. For this we will need a

huge building, more than 80,000 square metres, and construction should start in early 2024. We are currently in the tendering phase with construction companies.

The plant was designed from the start to be highly flexible. We will integrate the new car architecture in our existing body shop, paint shop, and assembly, which entails some adjustments. We will extend the building for the body shop, as the underbody line will be completely new and needs to accommodate an integrated battery. There will also be some fairly easy, minor adjustments in the paint shop. Assembly was designed to carry up to three tons of load—electric cars are much heavier than internal combustion engine cars—and here we can basically use the existing structures with a minor addition for the area where we integrate the battery with the car.

### **What sort of additional employee training will be required?**

We have a training centre on site and extended our course to include instruction on battery production—specifically high-voltage, safety, foaming, gluing technology, etc.

### **Where will the bulk of the electric models built in Mexico be sold?**

The most important market will be the US, but we will also sell Mexican-made EVs in global markets. Today these operations produce cars that are exported to 75 markets, including the US, Europe, Australia, Canada, and even China.



**Harald Gottsche,**  
President and Chief Executive of the San Luis Potosi plant

### **Does Mexico itself offer any opportunities as an EV market?**

Mexico is a huge country and an interesting market, but quite a small market for premium vehicles. In terms of electrification, it will lag Europe. We anticipate that growth of our electric sales locally will be driven by air pollution laws in Mexico City. Already plug-in hybrids are very well appreciated by our customers there. The challenge is charging. It will take time before there is a fully capable, high-speed charging network across Mexico.

### **What are some of the key draws of Mexico as an EV production location?**

We have a broad supply network with a lot of experience, and most of the suppliers here are ready to transform [towards EVs], as they are in Europe.

Moreover, Mexico is integrated into the USMCA treaty to support free trade, but also has attractive free trade agreements with the European Union. Another important aspect for EV production is green energy. It doesn't make sense to produce EVs with limited dirty energy. Mexico has about 300 days of sunshine and 100% of our electricity today comes from solar power.

**That's an impressive achievement. What sort of effort went into this?**

It is not as easy as it sounds and it took considerable effort. We remain in constant discussions with the local and federal governments because not only do we want to produce in a green way, but we also want our suppliers to produce green. The good

thing is that I've seen a positive change over the last two to three years. The government is really open and acknowledges that we have to push for more green energy supply.

**Do you foresee Mexico becoming a notable EV production hub?**

The base factors—personnel, green energy, proximity to the US and free trade agreements—are very good. From our point of view, investment into generating more green energy is pivotal. It's also important to ensure that the position regarding free trade agreements is kept as it is today, or even extended. The Ministry of Economy is also thinking about global interesting markets like South Korea, and that would make it even more attractive.



The new investment will bring about 1,000 new jobs to the plant

# The modular Blanc Robot: a recipe for commercial AV success?

Suzuki's growing partnership with Applied EV promises to bring modular, software-defined autonomous vehicles to the mass-market. By Stewart Burnett

After more than a decade of intensive investment and development, autonomous fleet vehicles are closer than ever to becoming a reality. The March 2023 announcement of a partnership between Suzuki and Melbourne-based autonomous electric vehicle (EV) company Applied EV marks a major step forward for the industry. This partnership has been in the works for some time now—Suzuki first entered into an agreement with Applied EV in September 2021 and made a venture capital investment in the company one year later.

As part of this partnership, the automaker has agreed to supply the ladder frame from its 4WD Jimny to produce Applied EV's modular Blanc Robot vehicle and bring it to mass production. According to a statement by Suzuki, business models will also be developed to expand the adoption of autonomous EVs and enhance brand awareness.

## A tidal shift

Julian Broadbent, Chief Executive of Applied EV, reveals to *Automotive World* that the road towards autonomous vehicles (AVs) has not been easy. "Self-driving cars used to be a joke in the auto industry—the operating system would bluescreen every two weeks and need a reset." Following US\$200bn of global investment—according to a 2021 report by McKinsey & Co—the technology has matured significantly.



In a proud repudiation of AVs' former reputation, Applied EV now markets its products as being software-defined. For Broadbent, the term means giving functions traditionally designated to mechanical parts to software via the company's "Digital Backbone" technology. "We're literally deleting hardware and replacing it with software—really stripping the costs out of traditional vehicles." The lack of a human driver means that a lot of parts can simply be removed. "Imagine the cost rundown of a traditional truck platform—now run a line through air conditioning, windscreen wipers, ventilation, air conditioning, seats, airbags, carpet, and trim," states Broadbent.

## Modular design

The company's design ethos has been brought to life with its flagship product, the Blanc Robot AV. It has two base variants: on-road, with a

carrying capacity of 500kg, and off-road, with a carrying capacity of 1,000kg. While the former is capable of higher speeds and is more suited for last-mile deliveries in urban locations, the latter is more rugged and suited for military and scientific purposes.

The Blanc Robot is distinct on account of its highly modular design. Virtually anything can be added, from temperature-controlled food containers and luggage racks to private transport pods. While this creates new levels of efficiency and convenience, Broadbent also believes it is essential for AV fleets to be commercially successful: "I don't see the business case for a product with a single-use body; such massive production volumes per year are required that it makes no sense."

Both variants benefit from the Suzuki Jimmy ladder frame, which, Broadbent claims, is one of the smallest and most sophisticated



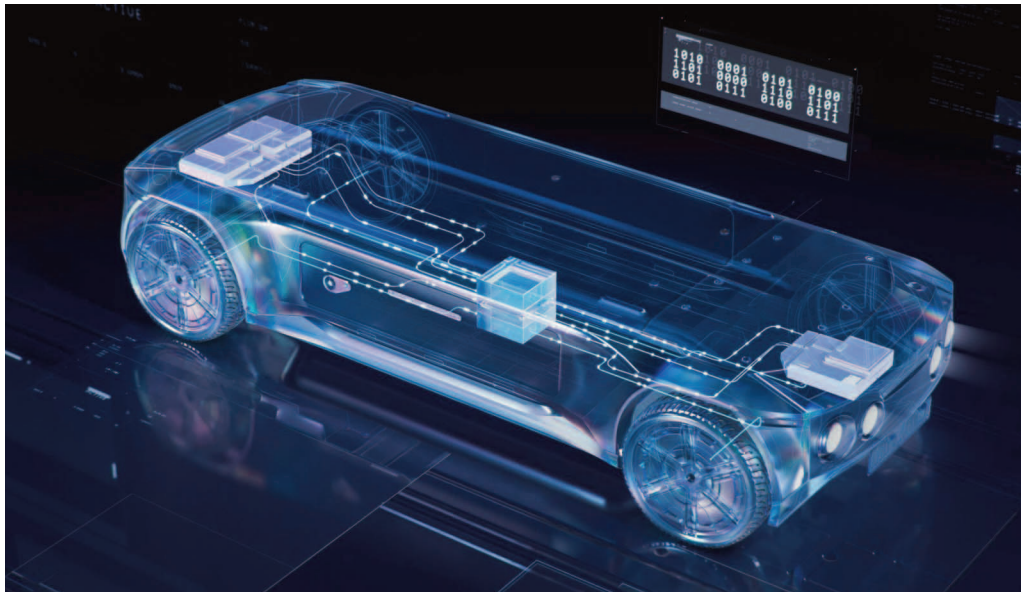
The Blanc Robot has been in continuous development since 2015, and has benefitted from ongoing partnerships with Suzuki and Oxbotica

body-on-frame architectures in the world. He emphasises that its inclusion will be crucial to the future of the Blanc Robot: “It’s going to help us a lot with our underlying business case because it’s already available in high volume.” As such, the Blanc Robot can improve its per-unit profit margins, and the company won’t need to worry about finding parts that require re-engineering.

## Orchestrating the future

If AVs begin to enter mass production in the coming years, Broadbent is confident that the Blanc Robot will be at the forefront of the first wave. He indicates that “a

four- to five-year plan is being laid out, which includes the early commercialisation of on-road and off-road vehicles.” He believes that the company’s value proposition lies in its software-defined, modular approach, which reduces hardware manufacturing costs and allows it to price the Blanc Robot more competitively. As the scale of production increases, the lower costs will become. The Blanc Robot is already being deployed on a smaller scale for UK retail company Ocado Group, which plans to use the on-road variant for last-mile, kitchen-to-kerb, and warehouse functionalities. This is in partnership with AV software company Oxbotica and is being prepared for launch in 2024.



When considering regional markets in which to introduce the Blanc Robot, Broadbent remarks that the

company's sights are set on "mature areas—particularly cities—where there is a structured ecosystem around road behaviours and users." To this end, Europe and Asia are Applied EV's major focus areas for the medium term. Japan is the most promising of all, he notes, on account of its orderly traffic systems, co-operative regulatory environment, and tech-positive culture.

Other markets may take more time. While stating that the Blanc Robot has proven adept in scenarios where traffic is unpredictable, he concedes that it will still be a difficult sell in developing countries where traffic can be more erratic. Applied EV is also holding its breath on some of the world's most advanced economies—for example, the US. Broadbent remarks that the company may relent on making a play on the US market until it has reached a point of significant commercialisation. "American companies are not looking for technology anymore; they're looking for a solution. When we go there, that's what we'll bring."

“

American companies are not looking for technology anymore; they're looking for a solution

# Solar tonneau covers could lower grid dependency for pick-ups

Workspport's modular solar panel tonneau covers promise to deliver eight to 12 miles of free range every day. By Stewart Burnett

**T**here is a strong correlation between electric vehicle (EV) drivers and solar panel owners. An April 2023 study by UK charging app Zapmap has revealed that EV owners are seven times more likely to have solar panels installed in their homes than their non-EV counterparts. The interest from this demographic has contributed towards a push to incorporate solar options within EVs themselves, ranging from the December 2022 launch of

the battery electric/solar hybrid vehicle Lightyear 0, to the imminent arrival of solar add-on technology for vehicles.

At the frontier of solar in automotive is Workspport, which, from its 2011 founding onwards, has established a reputation as makers of bespoke soft and hard tonneau covers. Workspport has been on a steady rise in recent years, making its NASDAQ debut in 2021 and shifting its manufacturing facilities from China to a plant in New York in

2022. Now, the company is launching production of two new products: Solis, a foldable solar panel tonneau cover, and Cor, a battery system which stores the energy Solis generates.

## Inside the technology

Chief Executive of Workspport, Steven Rossi, tells *Automotive World* that the Solis represents the “the first of its kind”—an affordable means of passively collecting energy that is entirely carbon neutral. The product is capable of generating up to 650 watts of power while simultaneously providing full protection to the truck bed. It can be paired with another of the company's offerings, the Cor, which stores energy and can be used to charge the EV battery at a rate between 1.5 and 2kW. Rossi is optimistic this could be raised to 3kW in the future but emphasises that charging speed is not the most important factor as the products allow charging to take place anywhere at any time.

The durability and flexibility of Solis are, Rossi believes, two of its defining features: “We have videos available online where we literally beat them with a hammer, and even after taking considerable structural damage, they still retain 77% of their original efficiency.” In the event of a natural disaster or some other form of unexpected damage, they can still collect a meaningful amount of power. This is, in part, due to their bus bar diode design, which gives it a 15 degree radius of flexibility.



The solar panels the company uses are monocrystalline—the most efficient solar panel technology currently available. Rossi claims that the company’s products can reach 22% efficiency, beating the 15-20% standard for most monocrystalline panels. He believes the technology will continue improving, citing the solar panels installed on the White House by the Carter administration in 1979, which were only 10% efficient. As interest in the green economy draws ever-greater levels of investment, even higher levels of efficiency will be achieved.

## Relieving grid dependence

Although the future is bright for solar in automotive, Rossi claims it can already deliver a tangible amount of free driving range to consumers—eight to 12 miles per day. Notwithstanding some stationary EV chargers which are connected to solar and wind power grids, he claims that this is “the most meaningful source of clean energy charging for an EV ever.”

The chief executive also notes that people are travelling fewer miles per day than in the past, triggered in part by factors like remote work and shorter commute times. As a result, the eight to 12 miles of range per day promised by the Solis could, according to Rossi, take a “30% bite out of a customer’s energy dependence on an otherwise smoggy grid.”

The impact of climate change is another of Rossi’s concerns, noting that “blackouts are becoming more prevalent, and the grid is becoming more stressed.” A special report by the American Meteorological Society in January 2023 revealed that weather-related power outages have increased 78% since the early 2000s—something that is expected to worsen before it improves. Owning a microgrid inside the EV may reassure customers that they have a backup to hand in the event that the owner experiences a blackout.

Partnerships are already beginning to emerge. “There has been a lot of interest from major automakers around the world to integrate our product on a global level,” says Rossi. Although he is not ready to publicly name some of the partnerships, he does share that Hyundai is looking to work with Workspport on integrating the technology in an EV currently in development. The goal of this partnership is to provide continuous passive charge to the vehicle and lower its carbon emissions.

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Blackouts are becoming more prevalent, and the grid is becoming more stressed

## The next steps

Because of the growing demand for renewable and reliable energy sources, Workspport anticipates consistent demand for Solis and Cor. At present, the company is estimating between US\$350,000 and US\$450,000 in unrealised revenue from pre-order reservations, with more to follow as production ramps up scale. Although the Solis is designed to fit pick-up truck beds, with time, the tonneau maker also aims to target commercial audiences.

Directly integrating the technology into vehicles can only happen through active collaboration and partnership with automakers, so the Solis will, for the time being, remain an add-on product. Looking ahead, Rossi is enthusiastic about the company’s future. “We’re far past the start-up phase now. Production’s about to start, and we have some of the brightest minds—doctors and PhDs—working to bring our innovations to new levels,” he concludes.



# Night-time operations are essential for robotaxis' future

The demand for bookable mobility options during late hours could be a key factor in robotaxis' journey to profitable commercialisation. By Will Girling

**A**t the end of 2022, a perceived lack of progress resulted in the ROI of some autonomous vehicle (AV) projects being [called into question](#), and even, in the case of Argo AI, liquidated. In the aftermath, AV developers such as [Gatik](#) and [Oxbotica](#) opined that money channelled into experimental robotaxi projects would be better spent on more immediately realisable logistics use cases instead.

However, for AV firm Motional—a collaboration between Hyundai and automotive tech supplier Aptiv—nothing has changed. “Robotaxis remain the biggest market opportunity in the driverless industry,” states Akshay Jaising, Vice President of Commercialisation. Indeed, the global sector is expected to undergo substantial medium-term growth—from US\$1bn in 2023 to US\$39bn in 2030, according to Allied Market Research.

To fulfil this expectation, robotaxis will need to operate safely and reliably under all conditions. The lighting changes from day to night that occur within any 24-hour period present an unavoidable challenge to self-driving systems everywhere. However, Motional is seeking to prove AVs’ applicability for round-the-clock transport with a fully automated night-time service in Las Vegas.

## Night-time demand

Since late 2022, Motional has been trialling a daytime robotaxi service to customers through partnerships with ride-hailing networks Lyft and Uber. Between August and December of

that year, around 130,000 fault-free autonomous rides were carried out. In these instances, a human driver was still present in case of emergency. Jaising states that this has been important not only for refining Motional’s processes and systems but also to acclimatise passengers to a self-driven vehicle. This is the same approach deployed for its night-time rides offered since February 2023. However, by the end of the year, the company intends to offer fully driverless rides for the first time.

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Robotaxis remain the biggest market opportunity in the driverless industry

Public transport is generally limited after midnight in most cities, creating a demand for ride-hailing and other private mobility options. Motional’s decision to launch an extended hours robotaxi service in Las Vegas is both a recognition of night-time operations as a sound business case and an opportunity to validate the company’s technological capabilities. “We see significantly higher ride

demand in the evening hours accompanied by a more diverse set of complex interactions, which allows us to further mature our system capabilities,” says Jaising. “Before we extended the service, we conducted extensive testing at night to confirm the system met our safety criteria.”



One of Motional's Hyundai Ioniq 5 AVs driving in Las Vegas—both daytime and night-time operations are needed for the commercialisation of robotaxis

Motional's SAE Level 4 robotaxi is based on an all-electric Hyundai Ioniq 5, which he states has been equipped to handle both day and night driving, as well as operate in inclement weather conditions. “The AV is equipped with over 30 sensors—a combination of cameras, radar, and LiDAR that provide 360-degree vision around the vehicle.” Each sensor has benefits and trade-offs: radar is highly adaptable but low-resolution, cameras are high-resolution in 2D but easily affected by lighting conditions, and LiDAR is precise in both light and dark conditions but can be expensive and easily compromised by weather like rain. However, by using a fusion

of sensors, Motional's advanced artificial intelligence-based algorithms can merge the separate data streams into a coherent perception of the world. Subsequently, the company can utilise the core performance strengths of each sensor and off-set the weaknesses.

## Route to commercialisation

This focus on AV services during the hours of darkness is not unique. Indeed, Motional's move is indicative of a wider trend that is seeing more operators transition to 24-hour operability. For example, in China, Baidu slightly expanded its Wuhan service to between 7am and 11am (previously 9am to 5pm) in December 2022 following four months of testing. Meanwhile, General Motors' robotaxi-focused subsidiary Cruise took an inverse approach to Motional: in April 2023, the company extended its initial 11pm to 5am San Francisco routes to an all-day service 14 months after initial launch.

Jaising emphasises that night-time AV operations are a necessary part of Motional's overall vision for robotaxi technology, which must be equal to the adaptivity of human drivers in all conditions and situations. “We see it reducing the reliance on personally owned vehicles, which in return could lead to cities being able to reclaim public space that was previously used for parking,” he tells *Automotive World*. For example, the company's own study found that robotaxis could “reduce the need” for Singapore's total fleet of more than 600,000 private cars by 66%.



Convenience, Jaising reasons, is what will drive this transition—meaning an easy and comfortable ride at whatever time the customer requires it. “Our fully autonomous experience for riders will mean that our systems and processes are designed to minimise interaction with the operators,” he explains. “When the vehicle arrives, passengers open the door through their app, they start the ride through an in-vehicle display and can contact a remote assistant for questions if needed.”

Jaising concludes that the night-time Las Vegas service represents a significant step forward for Motional’s

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Our systems and processes are designed to minimise interaction with the operators

commercialisation roadmap. At the same time, by unlocking 24-hour operations across a range of territories, the wider robotaxi sector could combine technological capability with profitability to an extent that will reassure investors about its future.

Images © Hyundai



# Industry turbulence: how can automakers weather the storm?

Confronting new realities, reducing costs, improving supply chain stability, and repositioning for the future are all Herculean tasks. By Arturs Smilkstins and Victor Silonov

**T**he automotive industry is in the midst of a full-scale transformation driven by electrification, autonomous driving, and software-defined vehicles. By 2030, electric vehicles will account for around 40% of global new car sales, while about 50% of new vehicles sold will have advanced driving assistance system capability of Level 2 or greater, offering features like autonomous obstacle avoidance, parking, and many others. Boston Consulting Group (BCG) expects that 90% of future differentiating car features will be software based by 2030, too.

Although many insiders anticipated smoother sailing in 2022, last year saw unrelenting obstacles to this transformation, with supply-side challenges, labour shortages, ongoing lockdowns, and increased

geopolitical instability creating a perfect storm, resulting in sales falling by nearly 12% in the first half of the year alone.

The storm won't pass in 2023 either, with BCG forecasting continued turbulence. As auto suppliers address pent-up demand for vehicles, the industry will increasingly feel the effects of the broader macroeconomic challenges. The bottom line? The automotive market is unlikely to revert to pre-pandemic volumes before 2025, with forecasted global production of light vehicles of around 88 million by 2025; just one million above 2019 production volume (89 million).

The situation in Europe is particularly acute, with the continent experiencing high inflation, energy challenges, and rising interest rates. The region also faces several structural

obstacles, which raise more questions about its outlook over the long term compared to other regions. These include unfavourable demographic trends, productivity declines, fiscal tightening, and ongoing weakness in the bloc's eastern countries—resulting in real GDP forecast for 2023 standing at 0.8%, less than a fourth of the growth reported for 2022 (3.5%)

To weather this storm, automakers should take four key actions.

Firstly, industry players must adapt their operating models to a lower-volume, higher-uncertainty environment. This will include taking a zero-based budget approach to cost structure, planning for worst-case scenarios, and dramatically reducing the break-even point. Savings can be made by developing digital capabilities



such as AI and automation. To better capture value created with end consumers and between OEMs and suppliers, companies should consider realigning pricing and commercial structures.

Next, businesses must consider the resilience of supply chains in the face of existing and emerging risks and geopolitical uncertainty. This can be done by reconfiguring demand- and supply-planning processes to drive greater accuracy and better evaluation of trade-offs. Players should also be leveraging data and AI to unlock efficiencies and respond to risks in new ways.

Thirdly, automakers would do well to embrace their supplier relationships and forge targeted partnerships. This involves developing more robust longer-term demand and supply forecasts and increasing transparency throughout the value chain. Players should also balance the need to push for incremental cost efficiencies with maintaining long-term relationships and incentives for co-investment. Additionally, they

should consider new types of strategic partnerships to create scale, secure new technologies, and ensure security throughout the supply chain.

redesign efforts to reduce reliance on scarce resources.

The climate is undoubtedly adverse, but it also presents an

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The automotive market is unlikely to revert to pre-pandemic volumes before 2025

Finally, now is the time to accelerate innovation and optimise operations for the current and future environments. Automakers should take this opportunity to focus on what they stand for and how they intend to create sustained value. This means challenging the status quo and reinventing ruthlessly. Break free from traditional talent models, ways of working, and cultural constraints, and double down on

opportunity for automotive companies that aggressively tackle near-term challenges. Confronting new realities, reducing costs, improving supply chain stability, and repositioning for the future are all Herculean tasks. However, those companies who can successfully navigate these turbulent times with purpose and decisiveness stand to come out stronger once the storm has passed.

*The opinions expressed here are those of the author and do not necessarily reflect the positions of Automotive World Ltd.*

*Arturs Smilkstins is Managing Director and Partner and Victor Silonov is Project Leader at Boston Consulting Group*

*The Automotive World Comment column is open to automotive industry decision makers and influencers. If you would like to contribute a Comment article, please contact [editorial@automotiveworld.com](mailto:editorial@automotiveworld.com)*

# ‘When’ and ‘how’ of truck electrification hotly debated

Roland Berger warns that a zero-emission future for commercial vehicles will require a fundamental transformation of the business model among OEMs, fleets and utilities





The case for de-carbonising transport applications in North America in light of increasing challenges due to climate change is clear. The environment for de-carbonising transport applications in the US as the largest market has never been more positive looking along the dimensions of ZEV policies, technology and demand as well as raw material and charging availability. While it is not a question of if the industry will decarbonise, the when and how still requires significant debate which is the focus of this article.

ZEV policies have become increasingly demanding at the state and federal level while the US has also taken a positive approach towards incentives to drive the clean transportation transition. In some sense, the US government is working with a significant carrot as well as a stick approach in contrast to the European Union, which has focused much more on legislative sticks. An

overview of selected current regulations and incentives is given in Figure 1.

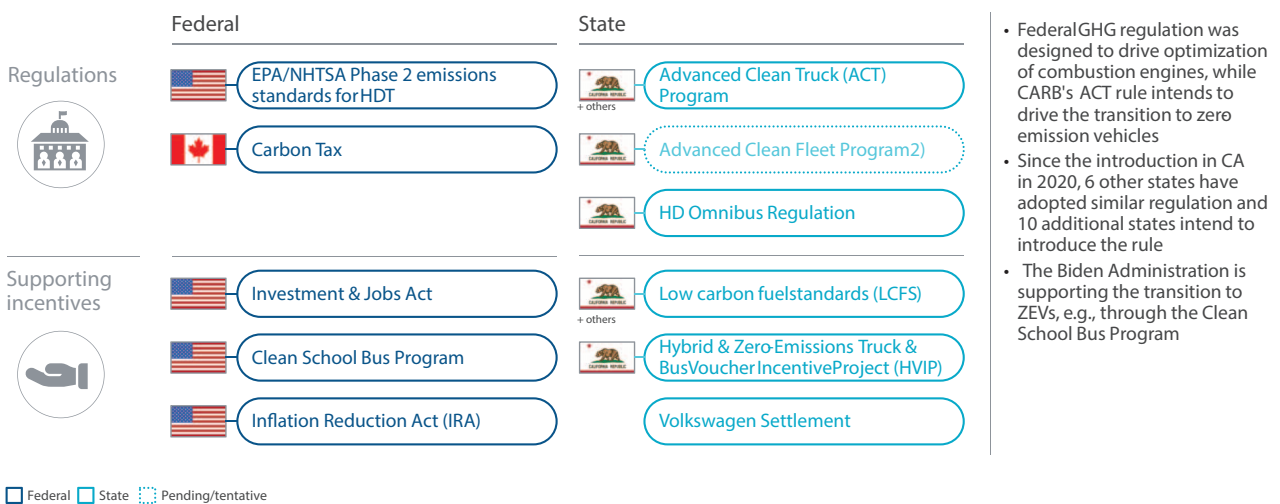
In addition to the legislation outlined above, the current EPA Phase 3 proposal for Green House Gas emissions is a further step towards tightening emission norms. Compared to Phase 2 regulation, Phase 3 would reduce GHG emissions by an additional 10% in 2027 and foresees significant further reductions by 2032. Attaining this standard will require a transition towards ZEV trucks at the fleet level.

From a ZEV technology perspective, the overall advances in battery, vehicle and charging technology have been significant. All major OEMs have electric vehicles in their line-up and are planning production ramp ups. Given IRA incentives which reduce battery costs to the tune of US\$40/kWh, electric truck prices that are TCO competitive seem to be within range.

**Figure 1**

The policy environment in the US is becoming increasingly supportive for ZEVs with investment programs on Federal level and many states adopting CARB regulation

ZEV policy environment (key regulations and incentives)



Source: EPA, State of California, NYSEERDA, Desk research, Roland Berger

Roland Berger

Demand from fleets is strong as many major fleets have made significant commitments towards emissions reductions as shown for some selected fleets in Figure 2. In principle, fleets are open to switching their vehicles to fully electrified or hydrogen based solutions. In practice, however, significant challenges remain. Deploying electric vehicles in a fleet operation, in particular, requires significant changes in fleet management and operation. Challenges from sufficient depot space for charging stations to efficient route planning and retraining of maintenance personnel abound. At present, many fleets with electric truck or bus experience report a loss of efficiency with electric vehicles vs diesel vehicles due to reduced flexibility to use vehicles across routes. As a

consequence, overall cost competitiveness vs diesel is difficult to achieve. In addition, getting adequate energy to owned depots and figuring out what to do in the case of rented depots are complicated challenges.

The availability of battery raw materials both from a mining and processing side needs to be watched carefully. With exploding demand for passenger vehicle and commercial vehicle batteries as well as other applications such as stationary storage, cell demand is likely to increase by a factor of six from today till 2030. Clearly, this puts pressure on the production capacity of battery cells as well as the availability of critical raw materials such as lithium, nickel, etc.

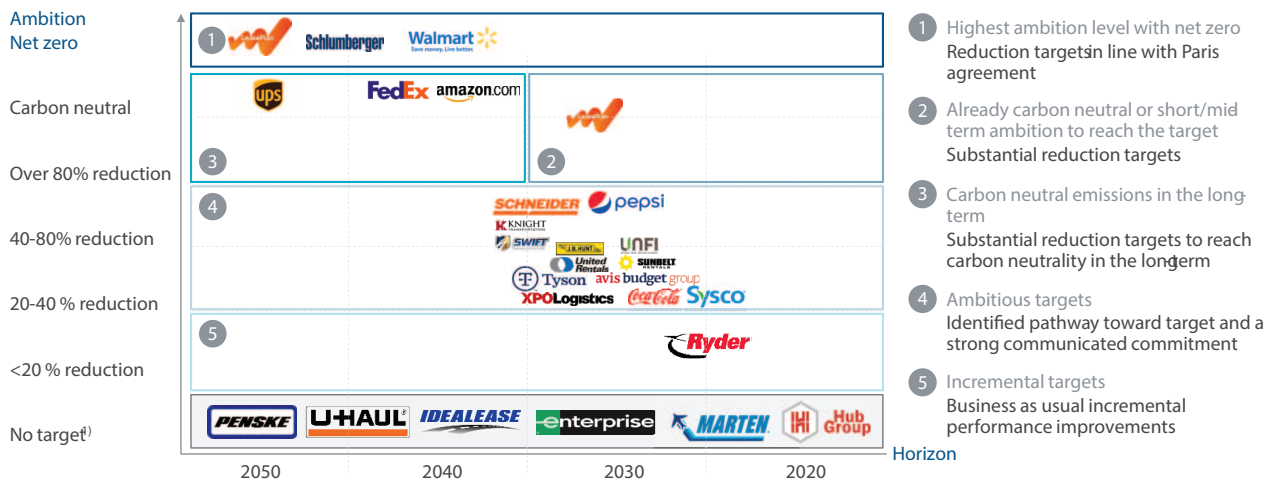
Lastly, the availability of charging is a challenge, especially for commercial vehicle applications. Based on current projections, Roland Berger believes that industry volumes in North America could amount to about 100,000 units of battery electric commercial vehicles in 2028. The incremental energy demand for this fleet would be about 16 TWh or less than 0.4% of today's US electricity consumption. In comparison, passenger cars would consume about 86 TWh in 2028 or 2.1% of today's US consumption. Given opportunities in energy savings as well as renewable energy additions, it is clear that the availability of energy will not be a problem. However, commercial vehicles have large batteries and their overall distribution is very much concentrated in depots. For

**Figure 2**

Illustrative

With increasing pressure from customers and shareholders to reduce emissions, several fleet operators and leasing companies have defined sustainability targets

Carbon reduction ambition of example fleets and leasing companies in North America



1) Time horizon does not apply

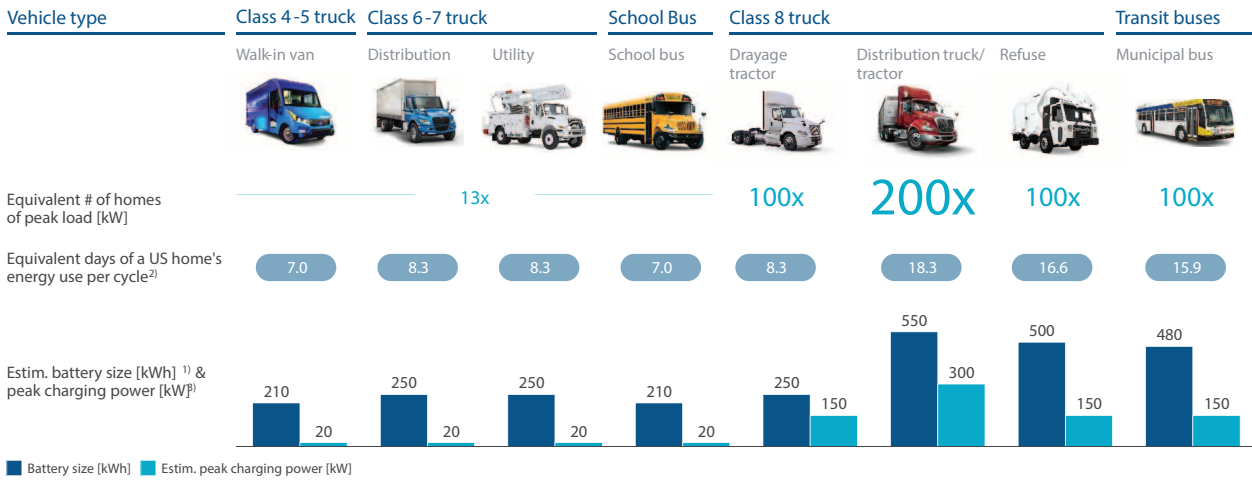
Source: Company reports, Roland Berger

Roland Berger

**Figure 3**

Of the new demand sources, heavy duty vehicle use cases may create the most acute challenge of delivering charging capacity through wire infrastructure

Emerging challenges related to EVs and EV infrastructure



1) Based on estimated average use case; 2) Average home estimated to be 30.2 kWh per day; 3) Based on likely recommended charging output related to use case needs and duty cycle and compared to estimated peak household load of 1.5 kW  
Roland Berger

example, a private logistics centre with about 25 heavy-duty trucks, 75 medium-duty trucks and 150 walk-in vans would require about 8 MW of additional peak power. Depending on the local grid, this could exceed the peak of the network load curve and would trigger investment needs. In addition, the segment needs large cables that get sufficient power to the depot which again would trigger investments. To put things in perspective, Figure 3 relates the power and energy needs of selected commercial vehicles to average US homes.

The challenge with bringing this energy to commercial vehicle depots is, among others, the collaboration with utilities.

Utilities are open to invest for electrified transportation as they are paid a certain margin on their investments. Yet, their investments plans need to be acceptable to the regulator and must be prudent. As a consequence, utilities are faced with a chicken and egg problem of their own: build the infrastructure and hope demand will come or wait for demand and then build the infrastructure? As the time to connect a site can vary significantly, infrastructure development besides its cost can be a show stopper. Connection times can be as short as several months if the work is only on the customer site. Yet they can take up to seven years if upstream work is required. In

the latter case, work needs to start now to support BEV sales in 2030.

As a consequence, a key need for the electrification of the US commercial vehicle market is the close collaboration between OEMs, fleets and progressive utilities to drive pro-active planning and execution. In summary, North America is well on its way to de-carbonise transportation. The way is long and requires a fundamental transformation of the business model of OEMs, fleets and utilities. Proven approaches exist to help companies get through this disruptive period and help them manage the risk while leveraging the inherent opportunities.

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# Canada wins EV production with green energy, skilled workers

What's attracting so much investment for new battery and electric vehicle manufacturing facilities? By Megan Lampinen

© General Motors

Canada's automotive manufacturing industry has a solid century behind it and currently turns out around 1.12 million vehicles a year. Big names like Toyota, Honda, General Motors, Ford, Fiat and Chrysler have all set up local production operations, supported by a robust supply network. But most of these plants were built to support the manufacture of internal combustion engine (ICE) vehicles. The challenge now is to reposition all that manufacturing infrastructure for a future powered by batteries.

## Attracting investment

Tony LaMantia is President and Chief Executive of the Waterloo Economic Development Corporation, which is actively working to position the country as an EV production hub. "We're already well on our way," LaMantia tells *Automotive World*.

In December 2022, General Motors held a grand opening for Canada's first full-scale electric vehicle (EV) manufacturing plant. Located in Ingersoll, Ontario, and supported by financial investments from the federal and local governments, the retooled CAMI Assembly plant now serves as the global manufacturing base for BrightDrop's electric delivery vans. In his opening ceremony remarks, Canada's Prime Minister Justin Trudeau observed that the facility was "positioning Canada as a leader on EVs."

Since then, a number of global players have outlined substantial e-mobility investment projects for the region. In March 2023, the Volkswagen Group confirmed plans to locate its first overseas gigafactory

for battery cell manufacturing in St Thomas, Ontario. Production, which will be carried out by the Group's battery company PowerCo, will start in 2027.

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If a company is making a commitment to low-carbon production, this is the perfect place to locate

Just days after the PowerCo announcement came news that Stellantis and LG Energy Solution would invest CA\$5bn (US\$3.7bn) to set up a joint venture EV battery plant. Production is scheduled to begin in 2024 and will eventually ramp up to more than 45 gigawatt hours (GWh) a year.

Ford is also pouring in new investment. In April 2023, the automaker allocated CA\$1.8bn to transform the Oakville Assembly Complex in Ontario to produce EVs and assemble battery packs. Retooling work will begin in Q2 2024 and the first EVs will begin rolling out in 2025. The revamped—and renamed—Oakville Electric Vehicle Complex will serve as a hub for Ford EVs sold across North America. Vic Fedeli, Ontario's Minister of Economic Development, Job Creation and Trade, commented how this investment will strengthen the region's "end-to-end EV supply chain and help ensure that the vehicles of

the future are built here in Ontario. With our plan to build a strong Ontario, we continue to create the right conditions for businesses and workers to succeed now and for generations to come.”

## The green allure

Canada offers plenty of reasons for companies to base their e-mobility operations there, but some are more frequently cited than others. Low-carbon manufacturing is one of them. There’s little point in shifting the vehicle line-up from ICE to EV if the manufacturing process behind these models is carbon intensive. Thomas Schmall, Board Member for Technology of Volkswagen AG and Chairman of the Supervisory Board of PowerCo SE, noted at the time of the PowerCo investment: “Canada and Ontario are perfect partners for scaling up our battery business and

green economy jobs, as we share the same values of sustainability, responsibility and cooperation.”

Stellantis flagged the country’s “leadership in the generation of electricity from renewable sources” as a significant factor in its favour. François-Philippe Champagne, Canada’s Minister of Innovation, Science and Industry, spoke of the country as becoming “the green supplier of choice to the world.” LaMantia pointed out that a decarbonised power grid was “very important” to VW in its final decision.

The province of Ontario considers itself a leader in decarbonised energy after phasing out coal-fired power over the last decade. About 92% of its electricity is zero-emissions, coming from nuclear, hydroelectric, wind and solar. “With our energy now overwhelmingly zero-emissions, few of our North American competitors

GM completely retooled the CAMI Assembly plant to become the new global manufacturing home of BrightDrop’s electric delivery vans

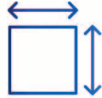


# Oakville Electric Vehicle Complex

Established in 1953 as Oakville Assembly Complex



3,000 Employees



5.4M sq. ft.



487 Acres



## Current Models

Ford Edge  
Lincoln Nautilus

## Past Models

Ford Windstar  
Ford Mainline  
Ford Customline  
Mercury Custom  
Mercury Monterey  
Monarch Lucerne



© Ford

can match us,” LaMantia boasts. “If a company is making a commitment to low-carbon production, this is the perfect place to locate, which is why we’re getting so much interest in EVs and battery production.”

Other draws include a highly educated and skilled workforce and a strong value placed on diversity, equity and inclusion. LaMantia also notes that geographically, Canada offers “space to grow and an incredible untapped mineral wealth.” While the rise of EVs has put battery materials like nickel, cobalt and lithium in high demand, Canada has committed CA\$3.8bn to fund the development of the country’s critical minerals industry. Notably, northern Ontario is home to a large untapped reserve of battery-critical minerals.

## Headwinds

Despite these assets, the region also has its challenges. LaMantia points to borders and costs: “Whatever you produce in Canada needs to go through a border to reach American consumers. That produces some uncertainty, though with deals like the USMCA it’s much less uncertain.” Costs, especially for labour, can be higher in Canada than they would be in Mexico or some US states, such as Ohio or Kentucky. On the other hand, says LaMantia, employers will find an extremely professional and well-trained workforce in Canada. “There’s a reason Toyota’s Cambridge Plant has won more quality awards from JD Power than anyone else—the people building the cars are the best you’ll find anywhere,” he adds.

However, Canada’s prospects of leading in EV manufacturing face some serious headwinds from the US’s Inflation Reduction Act, which links financial incentives for EVs to local content and production. While some players may see this as a threat, LaMantia prefers to consider it “an impetus for action in Canada,” pointing to a long history of American legislation being passed that requires a Canadian answer. He is hopeful that Canada’s federal and provincial governments “will step up in a decisive way and ensure that companies investing in Canada are on equal footing with those in the US. The automotive industry is very important to our economy. It’s a priority to ensure they can be globally competitive here... All in all, the future is really bright for EV and battery production in Canada.”

# What's holding back circularity in the tyre industry?

Krzysztof Wróblewski explores the growing interest in sourcing sustainable feedstocks in the tyre industry

**T**echnologies developed over the last few years allow tyre manufacturers to design tyres with circular and sustainable raw materials. However, there's a significant obstacle at play: scalability.

The pyrolysis industry, whose current supply capacities are insufficient, is expanding rapidly to meet demand. Tyre manufacturers would like to source recovered Carbon Black (rCB), recovered steel, and recovered pyrolysis oil as a circular feedstock to produce more sustainable carbon black grades. A solid record of quality products and growing volume would also help to drive the increasing demand for these sustainable feedstocks.

But many tyre manufacturers are still quite cautious in incorporating circularity into their business models. This is understandable as global companies need reliable

partners and the rCB industry is still in its infancy. So what does the rCB industry need to do to attract more customers and succeed in increasing circularity in the tyre industries? The key is tighter collaboration to speed up innovation adoption within the industry.

## **Collaboration: speeding up the pace of innovation**

If the tyre and automotive industries are to realise more circularity and sustainability, stronger collaboration is a crucial step in addressing some critical challenges facing the nascent rCB industry. As the rCB industry is still under development, it needs new standards to define rCB types and their quality to make the product easier to use and trust. Pyrolysis methods differ and use distinct end-of-life tyre (ELT) feedstock ratios, producing rCBs

of varying composition and quality. The more standards in the industry, the more players can implement sustainable feedstocks into their manufacturing process.

A few auxiliary technologies will also improve the pace of sustainable feedstock adoption. Companies must prepare ready-to-use rCB for specific industry needs, and collaboration is key to adjusting different parts of the rCB back end. That includes milling the rCB to a powder or pelletising and drying it to industry-required standards, ensuring the product can be handled properly by different industries and with different usage.

Then there is the need to publish more quality standards. ASTM Committee D36 is developing methods to measure rCB parameters which will allow differentiating between various rCB products and their production processes and will



recommend quality control tools for producers and consumers. This will increase market adoption since quality testing will be widely available for players looking to replace virgin feedstock with a new, sustainable alternative.

## Recycling solutions: a partnership example

Tyre manufacturers, rCB producers, and waste collectors can also collaborate to ensure narrow feedstock selection, which can impact the reinforcing properties of rCB, making it more attractive for specific uses. For instance, Contec collaborates with Tyre Recycling Solutions (TRS), global solutions providers for end-of-life tyre collection, processing, and recycling. Since the two share the same vision of implementing circularity within the rubber and tyre manufacturing industry, they work together to research and develop better ways of bringing recycled rubber feedstock into the tyre and automotive industry. Joining R&D and engineering efforts facilitates collaboration and innovative solutions for waste management and feedstock quality checks. One of these solutions is using

specific parts of tyres as a feedstock for the pyrolysis to assess the influence on the rCB performance.

By voicing our demand, we can bring more funding to the industry, increasing innovation and collaboration—and

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Every case study of successful, workable solutions lowers investment risks and makes it easier for the rCB industry to attract investments and speed the adoption of its sustainable feedstocks

Collaboration not only increases the pace of innovation but also increases a crucial variable in the economy: demand. By collaborating, it's possible to show more (tested and standardised) applications for innovative sustainable raw materials like rCB. This increases the industry demand not only due to regulatory restrictions on virgin carbon usage but also when it comes to the adoption of innovative technology. Additionally, increased demand brings more funding to the industry—allowing collaboration between R&D teams and investors.

ultimately, improving circularity and sustainability. Each declared rCB kilotonne sold per annum matters. Every case study of successful, workable solutions lowers investment risks and makes it easier for the rCB industry to attract investments and speed the adoption of its sustainable feedstocks. Only by increasing industrial volumes can the rCB industry ensure quality and sustainability. By collaborating with investors, suppliers, and buyers, we can successfully decarbonise the tyre industry and get closer to meeting its environmental, social, and governance targets.

*The opinions expressed here are those of the author and do not necessarily reflect the positions of Automotive World Ltd.  
Krzysztof Wróblewski is Chief Executive at Contec*

*The Automotive World Comment column is open to automotive industry decision makers and influencers. If you would like to contribute a Comment article, please contact [editorial@automotiveworld.com](mailto:editorial@automotiveworld.com)*

# Will co-creation hubs accelerate tech innovation?

Megan Lampinen reports back from the ADI Catalyst facility, a purpose-built space for innovators to collaborate and test new technologies

**R**apid technological advancements are reshaping the mobility sector across multiple fields simultaneously. The combination of electrification, connectivity, and automated driving has resulted in an arguably unprecedented level of change. And it's becoming increasingly clear that the only effective way to respond to that change is through collaboration.

It's impossible to pinpoint an exact figure when it comes to mobility collaborations because they can take numerous forms, from mergers and acquisitions to joint ventures and coalitions. Even start-up incubators are promoting communal spaces for different innovators to informally meet and exchange ideas. All these interactions

constitute collaborative effort to one degree or another. Semiconductor specialist Analog Devices, Inc (ADI) has put another spin on the collaborative ecosystem with its ADI Catalyst hub in Limerick, Ireland.

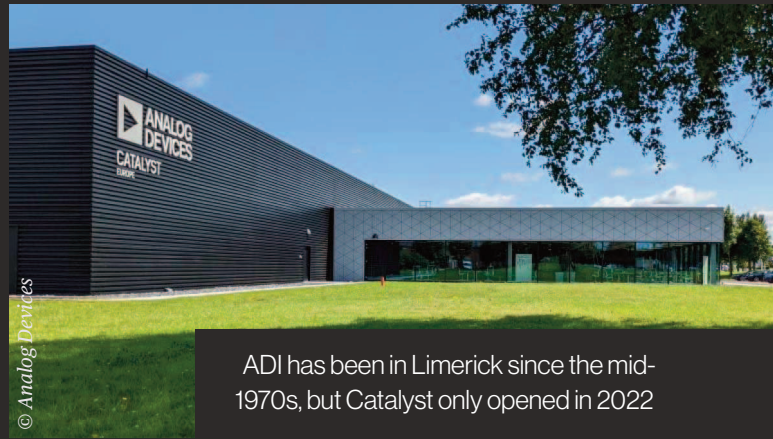
Analog is a semiconductor company, and its products can be found in numerous automotive devices supporting driver safety, autonomous vehicles, and electric and hybrid powertrains. Battery management systems (BMS) are a key focus area, and ADI designs appear in 16 of the leading 20 electric vehicle automakers. It's also a big player in radio networks, featuring in 60% of the 5G network transceiver technology on the market. It established the Limerick operations in 1976,

and today the site hosts manufacturing, design, and R&D. This one location is responsible for developing more than 100 new products every year, 30% of the company's total.

The Catalyst centre opened within the Limerick site, in the Raheen Business Park, in February 2022, delayed by the COVID-19 pandemic. The 100,000 sq-ft custom-built unit is billed as a "collaboration accelerator" where ADI's customers, business partners, and suppliers can work together with ADI experts on new technology innovations. "The focus is on forging stronger partnerships and creating living labs," Leo Mchugh, ADI's Vice President of Industrial Automation, told media on a tour of the facility.

The underlying idea is to facilitate the development and market launch of automotive solutions using ADI products. “Catalyst is about the way we will work in the future,” emphasises Mchugh. “It is about solving problems for customers and accelerating the adoption of new technology. The setup allows for different ecosystem partners and domain knowledge to come together.”

By locating on the Limerick campus, it grants easy access to ADI’s major business units, technology groups, sales division, and global operations. “That means we can assign the right people and resources to each project,” Mchugh points out. The site offers a temporary workspace for project teams, where they can set up customised labs or pilot lines to test



ADI has been in Limerick since the mid-1970s, but Catalyst only opened in 2022

“The world does not have enough analogue hardware engineers anymore to keep pace,” asserts Mchugh. “Customers want us to do more to help, and the best way is to work closely with them. We bring in other partners to support that. This building is all about solving more of the problems for our customers.”

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## Complexity is coming into today’s challenges, and that complexity will [eventually] get out of hand

systems. The approach is designed to encourage a new way of working in the wake of evolving mobility requirements and dramatically shorter development cycles. “Complexity is coming into today’s challenges, and that complexity will [eventually] get out of hand,” he notes. Key focus areas for Catalyst involve Industry 4.0, smart energy, automotive electrification, 5G and next-gen connectivity.

The supplier is jockeying for a leadership position within the new mobility R&D space. In a promotional video, ADI describes itself as the place “where ‘what if’ becomes ‘what is’.” It backs up that admittedly vague target with a very solid €100m (US\$107m) investment for Catalyst, which could prove a considerable support for its own future success as well as wider industry progress.

# What does Wejo's collapse mean for vehicle data brokerage?

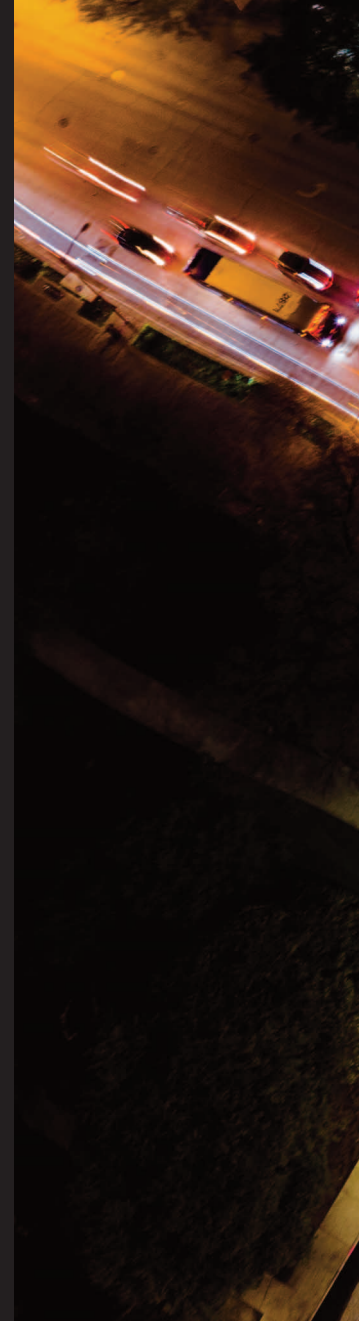
Despite many high-profile backers and clients, Wejo's failure indicates that the concept of vehicle data brokerage needs re-examining.

By Will Girling

**O**n 30 May 2023, Wejo announced that it was going into administration, precipitating its delisting from Nasdaq in June and a revised valuation of less than US\$10m. Founded in 2013, the start-up presented a new vision for the use of connected vehicle data. Collecting trillions of data points from more than 12 million vehicles in near-real-time, the company stated that it could analyse this information and produce reports on driver behaviour, congestion, weather conditions, and more.

It gained significant momentum in 2019 when General Motors secured a 35% stake. This was soon followed by investments from Microsoft and global insurance firm Sompro, which catapulted the company to unicorn status (value in excess of US\$1bn) in 2021, one of only 44 UK tech companies to do so. At that time, Wejo managed vehicle data for 24 automakers, including GM, Ford, Hyundai, and Daimler.

Chief Executive Richard Barlow previously told *Automotive World* that a shared data network had the



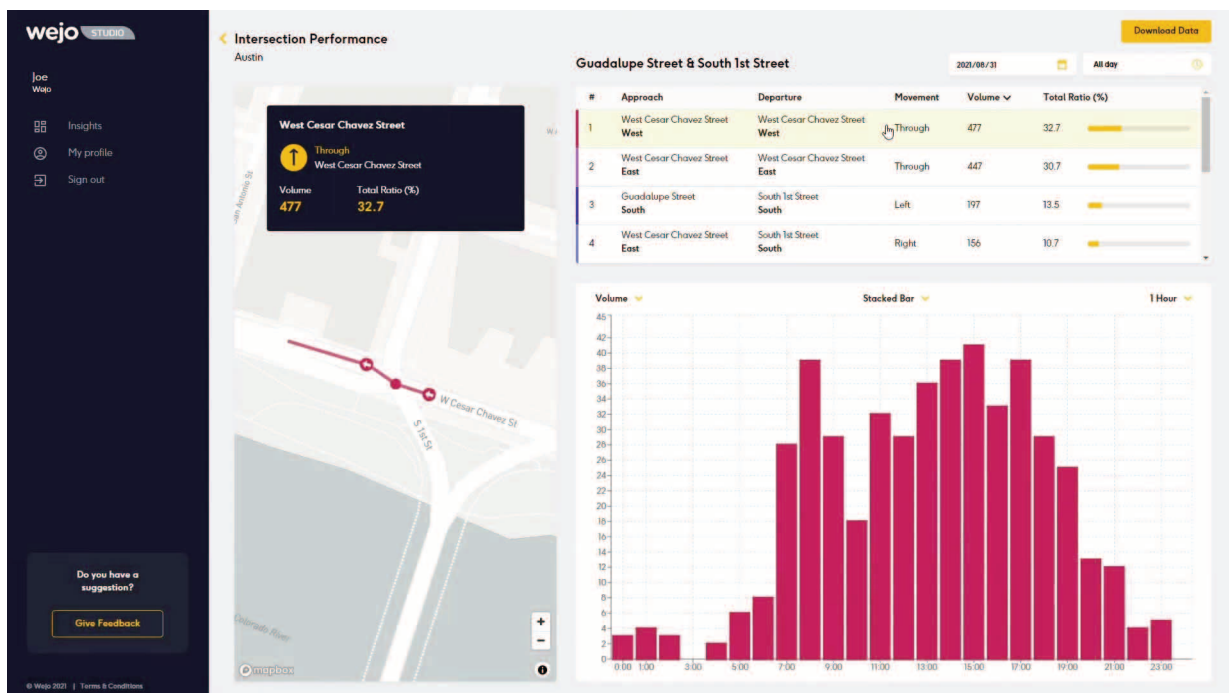


capacity to boost fleet efficiency, break down communication barriers in the autonomous vehicle space, and create a more integrated industry. So, what went wrong?

## Lack of value

At the time of writing, Wejo has not provided public commentary on the circumstances of its decline. In Reuters' analysis, the start-up was a "casualty of the deflation of the Connected-Autonomous-Shared-Electric investment bubble."

In a 31 May 2023 op-ed posted on LinkedIn, Roger Lanctot, Director of Automotive Connected Mobility at TechInsights, called the Wejo-GM deal "Faustian"—it netted Wejo status in the industry that was not commensurate with its offering's value. He opined that it was "sharing mainly anonymised location-related data comparable to data sets from other sources widely traded in the marketplace." A lack of genuine market value despite high-profile partnerships could explain Wejo's reported net losses of US\$159.3m in 2022. Indeed,



A screenshot from Wejo Studio demonstrating the platform's ability to collate real-time vehicle data—in this case, the traffic volume of an intersection in Austin, Texas

Richard West, Managing Director of UK business intelligence platform Red Flag Alert, told BusinessCloud that his company had logged Wejo on its insolvency index since March that year.

But is the idea of a vehicle data brokerage inherently misguided, or was it just poorly realised by Wejo? Pedro Pacheco, Vice President of Research at Gartner, tells *Automotive World* that the concept is one that will likely prove problematic in the industry for the foreseeable future. This is for several reasons. “Automakers are not able or not keen to provide a broad range of data types to third parties, and the organisations that can benefit from data brokerage often suffer from limited data maturity. This substantially lowers the value they recognise in that data,” he explains.

## Conditioned by regulation

The global automotive data management market was estimated at US\$1.58bn in 2021 and is forecast to reach approximately US\$9bn by 2030, according to Grand View Research. However, the exact value of connected vehicle data and its utility are still contested, although evidence suggests it could help [create brand differentiation](#) and open [new monetisation opportunities](#) for OEMs. Regardless, industry commentators like NTT Data emphasise that efforts to utilise such data must be equitable for consumers as well as businesses.

Defining the relationship and entitlement of stakeholders in data monetisation will be paramount, and new legislation could impede the

development of vehicle data brokerage. For example, the European Commission continues to debate its proposed Data Act, which aims to create a “fair and innovation data economy”. The Act, notes Pacheco, stipulates that the user of a connected device, which also applies to connected vehicles, has the right to ask the manufacturer for all the data extracted from that device.

Wejo may have been inevitable sooner or later. If Lanctot’s assessment is correct and the company’s value proposition was too simplistic and its information too generic, merely creating a marketplace for shrinking pools of connected vehicle data would not have been sustainable. “From a profitability standpoint, the future is not about selling data but rather

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## The future is not about selling data but rather selling data-related services and insights

“The future of vehicle data trading platforms will be heavily conditioned by regulation and buyer ‘willingness to pay’,” he says. This type of regulation will be a major challenge to the already precarious profitability of data brokerage. Indeed, Pacheco concludes that regulation could ultimately push automakers to make vehicle data freely available to drivers. “In some circumstances, there might just be a symbolic fee related to the infrastructure cost to transmit that data. This generates a situation where it’s hard to gather the most valuable vehicle data or have data buyers recognising the full value of that information.”

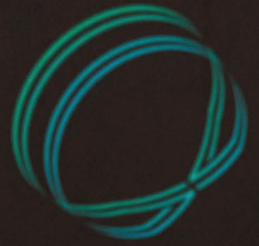
### More ambition needed

With these legislative developments still unfolding in Europe, the financial troubles of the UK-based

selling data-related services and insights,” suggests Pacheco. “We just need to take a page out of the digital giants’ book to understand how this works: such companies have access to vast amounts of data through their ecosystems.”

For all its industry hype and automaker buy-in, the failure of Wejo may have been the result of a fundamental lack of ambition. If, as Pacheco suggests, the company had offered several different services and digital features created from the huge volumes of information collected, its connected vehicle data brokerage concept might have survived. The challenge for whichever entity follows in Wejo’s wake will be to create a clear vision of connected vehicle data’s actual value for the company’s former investors and clients.

THE FUTURE  
IS NEUTRAL



# Renault's circular economy brand targets €2.3bn turnover

Carbon neutral could prove big business, according to the CEO of The Future Is Neutral. Megan Lampinen hears more



**S**ustainability and circularity are becoming increasingly important for the automotive industry, driven by looming regulations, material scarcity and pricing volatility. Renault has emerged as one of the pioneering players on this front with the launch of circular economy specialist company, The Future is Neutral. Announced in October 2022, this new entity brings together all the existing expertise and assets of the Renault Group and its partners under a new brand with the aim of serving the wider automotive industry in its push towards a circular economy.

## Answering a need

“Over the past couple of years, the automotive industry has been growing increasingly aware of the opportunities represented by the circular economy,” comments Jean-Philippe Bahuaud, Chief Executive of The Future Is Neutral. Regulation and scarcity are both playing a role.

Europe is introducing aspects of circularity into various mobility industry requirements. For instance, legislation stipulates that 85% of a vehicle’s weight must be recycled at the end of its life. However, only a fraction of this makes its way back into new vehicles. The European Commission is currently considering new regulations on mandatory minimum amounts of recycled content in new vehicles, as well as in electric vehicle (EV) batteries. Material recovery targets for the latter are set to be 90% for cobalt, nickel, and copper by 2025 and 35% for lithium. By 2030, the plan is to increase

these to 95% for cobalt, nickel, and copper and 70% for lithium.

At the same time, a scarcity of key materials is looming. Renault estimates that the global consumption of cobalt, nickel, and lithium used in the automotive industry will likely be multiplied by a factor of seven as automakers roll out their electrification strategies. Recycling those materials in closed loops decreases the pressure on virgin sourcing.

Awareness of the circular economy may be on the rise, but progress among automotive players has been limited. “Many companies are still at the start of their journey,” Bahuaud tells *Automotive World*. “Creating efficient and profitable closed recycling loops requires experience in operations, business collaborations and enterprise governance.” This is where The Future Is Neutral comes in.

## Partners and capabilities

The new company is focussed on technologies and services that enable manufacturers to increase the proportion of recycled materials from the automotive industry in the production of new vehicles. There is plenty of room for improvement, as it estimates that new vehicles today contain just 20-30% recycled materials from all industries. “Our ambition is simple: we believe that it is possible to increase the use of recycled content from old cars into new ones and limit the consumption of virgin materials,” Bahuaud states. The motto is ‘from car to car’.

# OUR VISION: USING OLD CARS TO BUILD NEW ONES

11m VEHICLES REACHING  
END-OF-LIFE



AUTOMOTIVE PRODUCTION EQUIVALENT POTENTIAL

>8m  
STEEL



>5m  
PLASTICS & COPPER



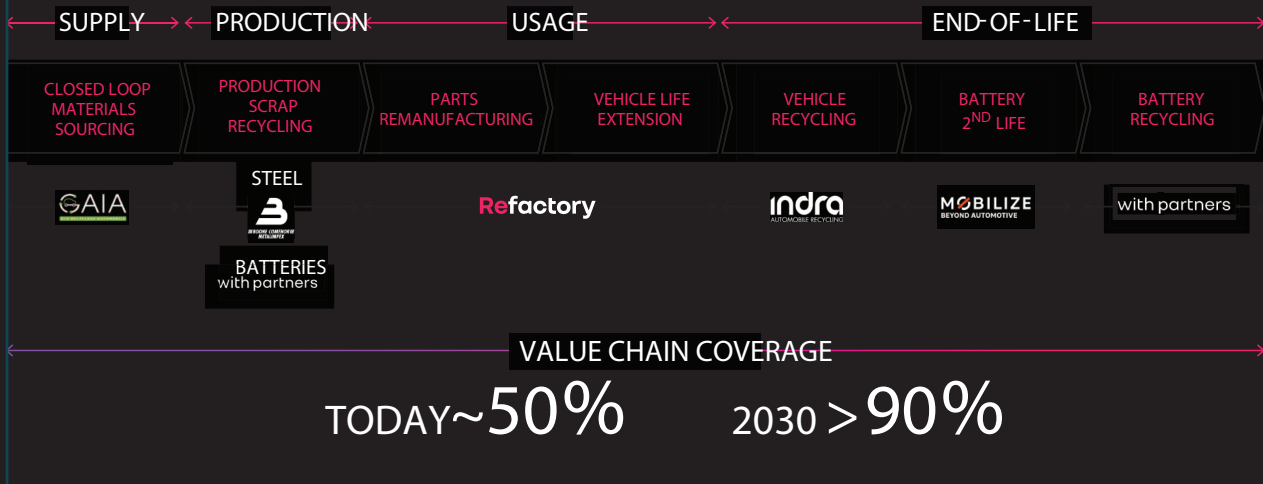
“Most ELV dismantlers have access to their surrounding markets and operate according to the potential business this represents. However, a wider view of the demand would unlock significant opportunities,” says Bahuaud. “The power of open platforms, marketplaces and business prediction technologies, including artificial intelligence, offer a lot of potential in that field.” That’s exactly what the company intends to tap into.

Subsidiary company Gaia, which specialises in battery repair, parts collection and reuse, and recycling of ELV materials, will play a key role along with Indra, the leader in ELV treatment in France, and metal scrap recycler Boone Comenor. Over the past decade, the activities developed by these three subsidiaries have already recovered 14 million tonnes of steel and 12,000 tonnes of plastics and copper. That could prove just the start.

“Part of the plan is to increase the number of dismantlers that join Indra’s network so we can extract more from vehicles,” Bahuaud comments. The anti-waste law in France will help in that respect but he also expects to see the company gain momentum across the rest of Europe. In terms of EV battery recycling, The Future is Neutral is pursuing shredding and hydrometallurgy approaches to extract cobalt, nickel and lithium. Although Bahuaud, concedes that Europe’s recycling market is behind that of Asia and the US, he is hopeful “that will soon change.”

There is also considerable work underway to expand its battery repair capacity and footprint threefold, which would allow it to repair close to 9,000 batteries every year. “We are already very advanced in that field thanks to the batteries we collect,” he notes. Renault was an early mover in the EV segment more than a decade ago with models like the Fluence, Kangoo and Zoe.

# CIRCULAR ECONOMY SOLUTIONS THROUGHOUT THE CAR'S LIFECYCLE



## Profitable future

By 2030, the aim is to develop a business portfolio with a turnover of more than €2.3bn (US\$2.45bn) and an operating margin of more than 10%. The stated vision is to become “the leader in industrial and European scale of the closed-loop automotive circular economy, at the service of car manufacturers as well as the entire industry.” It’s a bold target, but one that Bahuaud stands by: “Beyond answering regulatory requirements and reducing CO2 emissions, automakers and suppliers realise that recycling in a closed loop reduces the risk of material shortages. In this environment of pricing volatility, it helps the economic equation of every vehicle. Strategically, it is also a way to reposition enterprises on new value chains while reducing dependencies on regions of the world where natural resources or refining capabilities are concentrated.”

He goes on to note that the scope of the competencies on offer requires a

vast patchwork of technologies and involves numerous companies. The Future Is Neutral is not vertically integrating those capabilities, but rather forming partnerships with different players, and that strategy will continue. Importantly, it is designed to serve the industry as a whole, not just Renault Group. Indra’s dismantler network can handle vehicles from any brand, and Gaia is able to recycle any type of catalyst, copper or plastic. In steel recycling, Renault Group represents just 25-30% of the customer base.

“Think of The Future Is Neutral as a strategic area for the industry in which Renault Group invests in order to develop the master plan,” emphasises Bahuaud. “We are also opening the capital to external investors. A single OEM alone cannot succeed in that space, we are convinced of this. The spectrum of capabilities and the scale required to make operations successful requires an alignment of many players. My daily job is to make that happen.”

# The death of the internal combustion engine has been delayed

The switch to EVs in North America will come later and slower for larger pick-ups and SUVs, writes Ian Henry



**I**n the space of a week in early June GM announced about US\$1.7bn of investment in three plants to build the next generation internal combustion engine (ICE)-powered full size SUVs and pick-ups. US\$1bn will go into the Flint Assembly and Flint Metal Centre (featuring an expanded body shop, new tooling and improved conveyors throughout the assembly process); US\$500m will be allocated to the assembly plant in Arlington in Texas; and US\$200m will be spent at the once-doomed

Oshawa plant in Ontario.

The company may well have ambitious plans in electric vehicles (EVs), but at the moment, this is mainly in smaller vehicle segments, whether conventional cars, crossovers and compact SUVs. However, in the full-size vehicle segment, in which GM has a range of segment-leading models—Escalade, Suburban, Tahoe and Yukon SUVs, Silverado and Sierra pick-ups—it is clear that ICE power will remain the company's preferred route. President Biden's Inflation Reduction Act

has certainly accelerated investment in battery production and associated supply chains across North America, with much more to follow, but this investment is currently focused on smaller vehicles; the behemoths of the full-size SUV and pick-up segments seem destined to retain their large gasoline units for several years to come.

This is of course good news for the workforces at the relevant factories and their supply chains, but these investments will not help GM specifically—nor the US—reduce their



Images © General Motors

emissions and non-green manufacturing footprint as quickly as they might like. In many ways, disappointing though this may be, it should not have come as a surprise. Back in February, GM's Chief Executive, Mary Barra, had said that the company was still some way from getting its battery costs down to a level which would make EVs anywhere near as profitable as their gasoline-powered counterparts. And given the scale of these new investment commitments, and the product life lengths of the new models (at least six or seven

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In the full-size vehicle segment, in which GM has a range of segment-leading models...it is clear that ICE power will remain the company's preferred route

years, but most likely twice that as vehicle companies like to get two model cycles out of

a new vehicle platform and major investments such as these), GM will remain

committed to ICE-powered vehicles in the full-size vehicle segments well into the 2030s.

Hopefully GM will have found a way to lower battery costs so that its full-size trucks can deploy them profitably but this should not be assumed; the company has said it wants to be fully electric by 2035 and it may well achieve this target but while it works towards that goal, it will need modern ICE powerplants for its most profitable vehicles, profits which will moreover fund the ICE powerplants' eventual demise.

All these investments were moreover presaged by the announcement in January 2023 that GM would invest nearly US\$800m in V8 engine and associated components production. Like the US\$1bn investment in vehicle assembly in Flint, the January investment in engine production also centres on Flint, long the heart of GM's manufacturing operations. Additional, smaller investments in Rochester, New York and Defiance, Ohio brought the total investment in gasoline engine and associated engine production to nearly US\$920m.

Unions and local government officials have all welcomed these investments. The switch to EVs will

lead to a major dislocation and realignment of vehicle production footprints and associated supply chains, so anything which retains and indeed expands existing operations will be welcomed for the short-term relief which may well secure these plants' long-term future as well. Nowhere is this more evident than at the Oshawa plant in Canada. Not long ago, Oshawa was slated for permanent closure but now, having been shuttered from late 2019 until November 2021, it will soon be running on a three-shift schedule making both the light- and heavy-duty Silverados on the same line; this is the only factory within GM's network which makes light- and heavy-duty vehicles on the same line, a flexibility which may well stand the plant in good stead in the future.

The move to EVs is seemingly unstoppable—although Toyota may well succeed with its own hydrogen efforts, both fuel cells and applying hydrogen to ICE powerplants—but in North America, the switch in the larger truck segments will be later and slower than in the smaller vehicle segments. In the land of still cheap oil, and in the absence of strictures such as Euro 7, the market for GM's behemoths will remain strong for the next decade, and possibly longer. Don't write off ICEs just yet.

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*The opinions expressed here are those of the author and do not necessarily reflect the positions of Automotive World Ltd.*

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*The Automotive World Comment column is open to automotive industry decision makers and influencers. If you would like to contribute a Comment article, please contact [editorial@automotiveworld.com](mailto:editorial@automotiveworld.com)*