

The year ahead:

Predictions for the global automotive sector



Foreword

The automotive industry is in a phase of transition that has not been witnessed since the moving assembly line brought internal combustion engine (ICE) vehicles to the masses in the early 1900s. There is no doubt about the complexity of the next transition. Geopolitical tensions, ownership of key resources and the complete reimagining of what engineering within the automotive sector is, will all play an important role as the electric vehicle (EV and hybrid) revolution gains pace.

As we look towards the future and what will unfold in 2025, it is clear that we will see much of the same, as China continues to gain an ever-increasing share of the global EV market, whilst more established automotive strongholds – Europe, Japan and the US – attempt to play catch up. China holds the edge in three key areas: supply chain dominance, ownership of key materials for the EV revolution and the broader ability to scale at pace. This is why they have become the dominant EV market force – indeed, 2024 was the year China's largest car manufacturer, Build Your Dreams (BYD), outproduced the incumbent, Tesla.

Despite this, 2025 will bring to the forefront several challenges that we have seen bubbling away in recent years. Neither range anxiety or the charging infrastructure have been solved, with a **worrying report** recently stating that almost one third of EV owners globally are likely to switch back to an internal combustion engine-powered vehicle. Add to this the fact that we are yet to have that 'breakthrough' moment in efficient electrified drives, e-motors, powerful e-batteries, or alternative energy sources, and we see that 2025 could well be the year of greater EV scrutiny, rather than a year of further EV adoption and positivity.

This does not mean that innovation and improved technology will not have its moment in the spotlight this year. We can expect to

see meaningful progress this year in vehicle range, continued interest in hybrid technology and further industry disruption through the adoption of AI, not just for underlying automotive technology, but at every point of automotive manufacturing which, in turn, will help make EVs more affordable and more widely available.

Monumo is hearing a marked interest in system-level engineering, one of our core strengths, from our discussions with Tier 1 suppliers and especially from OEMs. This is particularly relevant for EVs with multiple powertrain motors as well as for hybrid and the seamless relationship needed between the ICE motor and the electric powertrain. System-level optimisation that balances the specifications of the motor, inverter, transmission and even cooling and battery management, is becoming more of a reality thanks to the speed of multi-parameter optimisation enabled by the speed of AI.

Finally, 2025 could very well be the year we see greater European acceptance of the relentless march of Chinese automotive firms. We are already hearing rumours from European manufacturers that collaboration with Chinese firms is the only way to keep pace. This will likely come in the form of giving up surplus capacity in European plants to Chinese car manufacturers. One thing Europe has, and China is still playing catch-up, is truly valuable brands with great history and desirability. This matters enormously and should not be forgotten or sold short, it is a massive bargaining chip for Europe that can lead to genuine win-win collaborations.



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About the authors

We are grateful to all those who have contributed to this report. Some of those who helped shape and inform this report are listed below whilst others chose to remain anonymous. To everyone who contributed, we remain grateful for your input.



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Wolfgang has been working in the automotive industry since the end of the 1980s and was CTO and member of the board at hofer AG (hofer powertrain) from 2006 to 2023. Since 2024, he has continued to advise hofer AG and supports companies and individuals from his network in both their strategic and tactical decisions.

Is there still a cost problem?

The reality is that China's cost entry point is much lower than that of other countries when it comes to EVs. Chinese battery makers supply some 80% of cells worldwide and dominate the mining and processing chain. They process over half the world's lithium, two-thirds of its cobalt and more than 70% of its graphite; all essential for the batteries in today's EVs. It is also worth noting that China's extensive manufacturing capability is coupled with favourable government subsidies, which in turn means they can sell their vehicles at lower prices. We have seen the impact of this on the European automotive industry in recent years. The Chinese state-owned SAIC Motor Corporation, which owns the British brand MG has seen sales skyrocket; a trend that's set to continue in 2025.

Another key reason for the low cost of Chinese EVs is that they have approached the EV market as a long-term investment. The world demand is for affordable EVs and by building high volumes of EVs today, the Chinese manufacturers know that this will mean the cars will be less expensive tomorrow. The flip side of brand value is brand-exclusivity and Europe has tended to overly rely on this in the past to achieve higher sales and profits, but the risk is that much of the brand desire is removed when it comes to EVs. The democratisation of speed is a good example of this, as European brands have always been built on the idea that their high-performance vehicles can be sold at a premium. We are now at a point in the market where your older ICE premium supercar can be out accelerated by a relatively affordable electric hatchback. The very fundamentals of the automotive industry have shifted and will continue to do so as we adopt EVs.

Technology is also playing a key role in cost reduction. Whilst 2025 is unlikely to be the year in which EVs become globally more affordable than traditional ICE vehicles, it will happen soon. Electric engines – at a component level – are much simpler in engineering terms than traditional combustion engines, both to make and operate. The upfront cost of an EV compared with that of a traditional car doesn't tell the whole story, as EVs are much more reliable and durable. If you take electric motors as an example, they can run for millions of miles, compared with just a few hundred thousand for combustion engines. In the longer run even the need to extract rare-earth metals, one of the few environmental drawbacks of EVs, should become much less of an issue. Manufacturers are starting to develop electric motor designs that are no longer based on the rare-earth permanent magnets that are currently present in virtually all EVs.

Net-zero or scale at all costs?

The end goal of the transition to EVs is to help achieve net-zero, a goal that Europe aims to achieve by 2050, having committed to the European Green Deal and the European Climate Law. China, on the other hand, has said it will peak carbon emissions by 2030. This is a fundamental problem in the current economies of scale in the industry, when competing with China for automotive market share.

A key battleground in 2025, will come in the shape of how committed automotive nations in Europe remain in the push towards net-zero, given the falling sales in EVs. The figures from 2024 are likely to continue falling in 2025, with the battery-electric car market share for November 2024 falling to 15% from 16.3% the previous year. Plug-in hybrid car registrations for November 2024 also declined by 8.8%. Forcing a net-zero strategy could disadvantage European companies, particularly if Chinese competitors are able to build their EVs in Europe, which are priced more competitively and are not even competing with European EV products, but with European ICE products.

The answer could lie in Europe's competitive edge in ICE vehicles. By softening the net-zero approach and allowing a longer timeframe for the sale of new hybrid vehicles, manufacturers like VW, which already have extremely efficient ICE products, could remain competitive alongside cheaper and more efficient Chinese EV products. Somewhat counter-intuitively, it is vital that Europe's premium badge retain, or even improve, their quality levels. Brand aspiration must match brand reality.

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The actual measurement around how we look at a product is an important element for the automotive industry and one that will be scrutinised in 2025. EVs take significantly more energy to manufacture compared to ICE products, they use rare earth metals, and the complexity of global supply chains are not always factored into what the true carbon impact of a vehicle is, when worked out fully.

The innovation story for 2025?

It's no secret that Europe, Japan and the US have been caught sleeping at the wheel when it comes to innovating and transitioning to an EV world, despite many obvious signs that it was underway. One example is Warren Buffet's Berkshire Hathaway, which recognised the potential growth of Chinese automotive firms back in 2008, when it bought a 10% stake in BYD for \$230m. Another is the ambitious net-zero targets set out by the European Union, all of which have been in place for several years. The pivot of traditional manufacturers in Europe, the US and Japan, rather than building new products from the ground up as we have seen in China, has meant that EV development has been much slower.

Models like the Nissan Leaf, the first mass produced EV, the Toyota Prius, the Renault Zoe or BMW's i3 over a decade ago, were seen as exciting new beginnings for the automotive industry's transition away from ICE. Since then, many of these established brands have been slow to invest seriously in compelling, competitive EVs. Some of BYD's models have a range of over 2,000km, albeit in hybrid form, whilst Europe's longest-range EV is still some significant way behind.

The modern EV is seen more like a mobile phone on wheels, with Chinese infotainment systems really leading the way when it comes to usable, on-board technology

Where China has really moved ahead of Europe is in the shift from hardware-centric to software-centric design, moving the primary focus in product development from the physical components (hardware) to the programming and logic that controls it (software). The modern EV is seen more like a mobile phone on wheels, with Chinese infotainment systems really leading the way when it comes to usable, on-board technology. The only other manufacturer that competes at the same level right now is Tesla, as they followed a very different business model of building new electronic and software architecture from scratch. However, this may also open up opportunities for European companies, as a trailing investment in hardware by the Chinese companies could prove a weakness if the capabilities of AI for hardware design are adopted quickly and comprehensively by the major European brands. Hardware matters and always will.

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Autonomous vehicles have had troubled growth in recent years, with the technology being held back in its very final stages of development. Despite this, there are signs that continued funding and leaps forward in AI innovation is helping to accelerate the adoption of autonomous vehicles. Just look at Waymo's autonomous driving service, which has a 22% market share of taxi rides taken in San Francisco, equal to Lyft's share. This is a significant increase from when Waymo launched in August 2023, when Uber had a 66% share and Lyft had a 34% share.

AI will have an even greater role to play in the automotive sector in 2025, and it won't just be in the areas of cutting-edge technology, like autonomous vehicles, but the slightly more mundane, but just as important areas such as supply chain management and manufacturing optimisation. Whilst the West has tended to be ahead of China in terms of cutting-edge AI technology, firms like BYD have already become extremely good at integrating AI into their manufacturing process. This, in turn, means that they can build new factories and ramp up production far more quickly than their competitors can. Again, as China continues to

lean into the European market, this AI integration could certainly play a key role, if they begin building factories across Eastern Europe. Even today, we can use AI to make an e-motor 10% cheaper while still boosting its overall performance. That rate of improvement will only become more significant, and the inflection point has already arrived. AI will permeate every aspect of EV design and manufacture over the next decade.

As in 2024, the conversation around hydrogen technology will continue, but the likelihood is that whilst the technology will continue to be developed, it is not a viable solution for passenger cars but can hold interest in commercial vehicles. Hydrogen simply does not offer sufficient improvements over batteries, which have far higher power density and capacity. Further, the significant levels of investment that have already gone into battery technology, and the potential storage opportunities a distributed network such as 'an EV outside every home' could offer, means that the incumbent investors are unlikely to want to row back on their commitment in the short to medium term.

The role of government & the impact of legislation

A more immediate and impactful change in 2025 will be as a result of government legislation. The year began with rumours that Trump 2.0 will be a premiership heavily reliant on tariffs and we are already seeing this unfold. It will have fast-paced consequences for the automotive sector. Possible significant tariffs on goods from Canada, Mexico and China will result in many automotive firms having to reposition in order to supply the US market. Almost every leading automaker that operates in the US has a plant in Mexico, including the six top-selling automakers, which accounted for more than 70% of US sales in 2024. The situation remains volatile, even as we write this report.

One side effect of US-imposed tariffs could be to encourage Chinese companies to set up close collaborations in Europe

One side effect of US-imposed tariffs could be to encourage Chinese companies to set up close collaborations in Europe. We have already mentioned that as Europe seeks to compete with Chinese EV automakers, they will likely look towards collaboration (e.g. Geely), rather than outright competition and as China is likely blocked yet again to some degree by tariffs in the US, a doubling down on European market share could be a key theme of 2025, whilst tariff negotiations unfold.

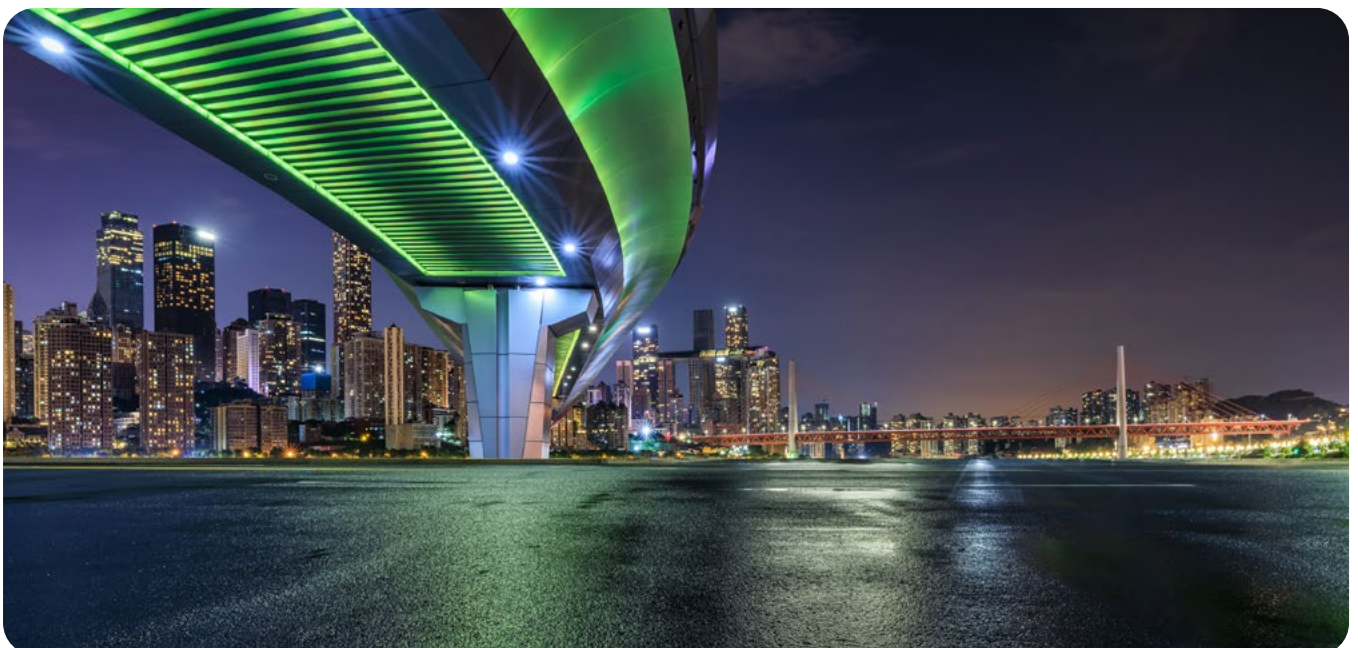
A broader policy area that will likely gain traction in 2025 is a move away from the focus on just charging stations and batteries. Whilst important aspects, this siloed approach to support the transition to EVs needs to go further. Optimising engineering and manufacturing of all parts, from motors to charging, as well as addressing recyclability, will enable the industry to work towards tackling environmental challenges and encourage widespread adoption. AI is one of the most important areas of technology innovation and is likely to dominate all areas of market development from 2025 and ever increasingly thereafter. It will play a huge role in overcoming sustainability hurdles in the automotive sector, whilst making supply chain and production more efficient.

Conclusion

If you were to sum up the road for the automotive sector in 2025, it would be that we will see a continued progression on the groundwork of previous years:

- China's dominance in the EV market will continue to grow
- Reducing costs for the end-customer and extending range will remain the key aim for all manufacturers
- Scrutiny around bold net-zero targets will continue, especially as it is likely to have a greater impact on European and US automakers
- AI will be the leading technological factor in the industry that will help achieve exciting change across all areas of the automotive industry

Outside of knee-jerk tariffs, what has not been seen in previous years, is the likelihood of further collaboration between Europe and Chinese manufacturers. These closer ties could well be the defining moment of 2025; a year that will be remembered as the collaborative building block that accelerates the EV transition.





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