

The Expert View: Electrification in the automotive sector



In the late 19th Century, Siemens was a pioneer of electric vehicles (EVs), said Siemens' Brian Holliday, introducing a Business Reporter Breakfast Briefing at the Goring Hotel in London. Of course, the internal combustion engine (ICE) dominated the 20th Century but, Mr Holliday told the audience of senior executives from across the automotive sector, we are finally at a point where EVs are competitive and growing.

Driving the change is growing awareness of climate change and decreasing tolerance for pollution in cities. The briefing followed the UK government's commitment to reaching net zero carbon emissions by 2050 – in which EVs play a central role. Meanwhile, as one attendee noted, boardroom culture worldwide is changing, as companies try to reduce their environmental impact.

An education challenge

There remains some education work to be done, however, because EVs alone will not be enough. Instead, we will require a mix of solutions, with EVs being well-suited to certain uses, for example in commercial vehicles like buses and delivery vans. There is also a role to be played by hydrogen fuel cell vehicles and for hybrids, particularly on longer journeys.

Those journeys are the ones that worry many consumers. While EV owners quickly become advocates for the technology, said an executive from a major car manufacturer, non-owners concerned

about how far they can travel without recharging and whether there are sufficient charging points if they need one on a long journey.

In reality, an EV is still likely to be the 'second' car - used for the school run and quick trips to the shops. The main car for most families, attendees said, is still likely to be an ICE.

A battery 'arms race'

There were mixed views on whether battery technology would solve this problem. The fall in battery cost is what has made EVs viable today, but it is not clear whether they will fall further in the short term. In fact, prices might rise because of demand for commodities such as lithium and cobalt, both vital battery components.

Improved battery technology might help, most likely solid-state batteries - which use a solid electrolyte, perhaps made from ceramic, rather than a liquid electrolyte, as in current lithium-based batteries. However, this technology is still a few years away.

Infrastructure changes will be needed to put all these batteries on the road. People will probably charge EVs at home 60 per cent of the time and at work 30 per cent of the time. That means businesses will need increased numbers of charge points in staff car parks. In some areas new generating capacity might be needed, too, because having hundreds - or thousands - of people in a small area, all charging at once, will put new demands on the grid.

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Manufacturers under pressure

This is another example of where car manufacturers cannot solve the problem themselves. Many of those in attendance were frustrated at the burden on car makers. The industry already operates on thin margins and is not well-equipped to be spending more on research and development of an entirely new technology, while retaining existing ICE production for the near future.

This has made it hard to meet demand for EVs. While demand is still relatively low, perhaps around 15 per cent of the market, the industry is meeting only about one per cent, according to one attendee. Another delegate, from a major car manufacturer, said his company could deliver a new ICE car in two-to-three months but the wait for a new EV was eight-to-ten months. This will improve but the industry needs time to develop.

The increased availability of data and the digitalisation of processes will help. Even very small improvements in EV efficiency can have significant effects on battery life, range and overall performance. Digital simulations help too, though, as one attendee reported, they have to be incredibly accurate. If the aim is to improve efficiency by, say, a quarter of a per cent, then a two

- per cent margin of error on the simulation is unacceptable.
- Manufacturers will also benefit from more consumer data. Previously, a car maker's relationship with the consumer ended once the car was sold. Now, connected cars tell manufacturers about how cars are used, how often, and what typical journeys are like, allowing them to better meet consumer needs. There are ethical concerns over how this data is used, but consumers are increasingly understanding that they benefit from sharing it.
- What remains unclear is how much consumer behaviour will change. Millennials seem not to want to own cars, for example, but might decide otherwise as they enter middle age and have growing families. We're also likely to see a greater push towards a better mix of transport solutions, with public transport, ride sharing firms and vehicle ownership all working together.
- This could lead to the rise of some form of mobility-as-a-service subscription, though the economics of this are hard to work out at present.
- The picture that emerges is one of uncertainty. The automotive industry knows that it is in the midst of change and that more is coming but it is not clear what for them future will take.

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