

Written evidence submitted by McLaren Automotive (EVP0114)

Introduction

McLaren Group is globally renowned as one of the world's most illustrious high-technology brands, and one of the largest independent companies in the UK.

Headquartered in Woking, Surrey, the Group encompasses McLaren Racing, McLaren Applied and McLaren Automotive. For the purpose of this enquiry, the evidence submitted is from McLaren Automotive.

McLaren Automotive is the largest company within the Group and is a small volume manufacturer (SVM) founded on innovation and excellence in manufacturing.

McLaren designs and hand-assembles high-performance, technologically advanced supercars in the UK and we export 90% of our products outside of the UK, with North America being our largest market. To date, over 20,000 vehicles have been produced since we sold our first vehicle in 2011.

McLaren invests an industry-leading percentage of turnover in research and development. We operate at the forefront of automotive innovation and technological development, derived from ground-breaking technology developed in motor racing, including Formula 1.

We support several thousand jobs in the UK, directly and indirectly, and are a significant provider of highly-skilled engineering and manufacturing employment across the United Kingdom.

In 2018, combined investment of £50m saw the opening of the McLaren Composites Technology Centre in the Sheffield region, which has enabled us to enhance our lightweight capability and bring in house the ability to develop and design the carbon fibre chassis for our future vehicles. Launching this month, the first application of this cutting-edge new lightweight vehicle architecture is the 'McLaren Artura', a ground-breaking high-performance hybrid supercar with emissions of 129g/km and capable of up to 30km zero-emissions driving in EV mode. This vehicle architecture has been specifically designed to underpin the next generation of McLaren supercars, all of which will be electrified.

McLaren is supportive of the global drive to decarbonisation and has welcomed the technology challenge that this presents. As a technology pioneer, McLaren produced the McLaren P1 in 2013, the world's first plug-in-hybrid super car and has pledged that its road car fleet will be fully hybrid by 2026.

Summary

McLaren welcomes the opportunity to contribute to the inquiry and is responding specifically to the first two points on 'Accelerating the shift to zero emission vehicles.'

We support Government's ambitions for zero emissions but request clarity on the following as soon as possible to support the transition to zero emissions:

- Clarity on the definition of "significant EV range" for hybrids between 2030-35, to ensure hybrid technology is not stigmatised in the short term whilst it continues to

play a key role in consumer and automotive manufacturers (OEMs) transitions to zero emissions;

- Increased, coordinated investment in battery technology to support the varying requirements of different market segments;
- Technology-agnostic policy-making to enable McLaren and the wider industry to explore a variety of alternative powertrain solutions to deliver zero-emissions and publication by Government of strategies to support these technology developments, i.e. the national hydrogen strategy;
- Increased support across the supply chain, including skills, to build UK electrification capability that will facilitate the development and manufacturing of vehicles in the UK for the longer term. Enabling UK based OEMs to source technology in a cost-effective manner supporting the Rules of Origin requirements set out by the EU/UK Trade and Cooperation Agreement

The feasibility, opportunities, and challenges presented by the acceleration of the ban of the sale of new petrol and diesel vehicles to 2030

First and foremost, McLaren supports the Government's ambition for net zero and we are pleased that the Government has announced it will allow the sale of new passenger cars with "significant" zero emission range to continue until 2035. Furthermore, McLaren is ideally placed to embrace electrification thanks to our expertise in lightweight engineering – a key enabler in the introduction of alternative power-train technologies.

However, given the timescales of investment decisions relating to new vehicle development, clarification of "significant" zero emission range is needed both to inform product planning, and to provide consumers with certainty when considering current hybrid models which have an important role to play in reducing emissions ahead of 2035.

The automotive industry has always been a sector of fast development. Since the invention of the internal combustion engine, car manufacturers have demonstrated their ability to adapt and deliver incredible innovations which have made vehicles cheaper, lighter, stronger, safer, cleaner, faster, and more luxurious. Many innovations and new technologies pioneered and advanced by premium manufacturers such as McLaren, then make it into the automotive mainstream and higher volume applications.

McLaren faces three key challenges; technology availability, supply chain capability, and customer requirements.

Technology

As an independent SVM, McLaren is unlike large volume OEMs which benefit from much larger revenues and R&D budgets, as well as substantial production efficiencies due to economies of scale and component commonality provided via a parent company.

While McLaren does invest an industry-leading proportion of turnover into R&D, due to smaller production numbers, it has fewer platforms which last for multiple model cycles with a longer-term return on investment compared to large OEMs. It is expected that McLaren's new generation platform will remain in production beyond 2030. This platform must also comply with regulations of our other global markets, not just the UK.

A significant challenge we face with electrification, is that a fully electric McLaren will require lightweight batteries to be compatible with the design and core characteristics of our vehicles, alongside a high-performance propulsion system.

Today's batteries enable vehicles to prioritise energy (range) over power, while what is required for a fully electric McLaren is a battery which combines both energy and power.

Energy dense batteries (range) support our hybrids, including the new Artura, and are enabling our vehicles to have increasing electric capability. However, for a fully electric McLaren these energy dense batteries at their current size and weight would mean a fundamental change to our designs beyond the attributes expected by our customers. This is where we see the need for the development of the aforementioned combined energy and power battery. In time, it is likely that other OEMs will seek similar battery options as the development of these vehicles evolves.

Time and a capable supply chain are required to research and develop lightweight batteries capable of delivering both high range and high power.

While the Government's Automotive Transformation Fund (ATF) is welcomed, there needs to be increased investment into emerging advanced battery technology which could benefit the UK in multiple ways.

Increased investment and support from both the public and private sectors will help stimulate the UK electric supply chain, which is embryonic today, and will also support skills growth both within in the supply chain through reskilling and upskilling but also harnessing new talent within our universities and colleges.

With the right conditions McLaren, as renowned technology pioneers, and companies like us, can help provide the UK with the world leading expertise it is looking for in this sector, helping anchor a strong EV supply chain in the UK that supports design as well as development and becomes an exportable commodity in the future.

This technology would also have cross-sectoral application with the potential to support sectors including aerospace and off highway.

Public policy clearly plays a pivotal role in stimulating innovation, and the ATF is a step in the right direction to support electrification challenges with the commitment to a Giga Factory.

Whilst electrification is at the core of the road to 2030, there is also a package of solutions that could support an acceleration to 2030 in the short-term while R&D is ongoing for the next generation of batteries.

We are pleased to see this reflected in the Advanced Propulsion Centres (APC) technology roadmap and would welcome a more comprehensive strategy around these other technology areas.

For example, alternative fuels can have a game changing role in the decarbonisation of transport immediately. They are key to decarbonising the existing fleet of vehicles as they can be implemented with limited impact to current engine platforms and technology. With the right policies in place to incentivise consumer uptake, this could be an extremely economical solution for both the Government and consumers.

McLaren is aware of initiatives underway in Finland, Sweden the USA and China, including some where construction of "full scale" systems are underway. We would

encourage the UK Government to avoid falling behind and undertake its own initiatives, and to look at creating a value chain that would benefit the UK's net zero ambitions.

The development of alternative fuels for road cars in the UK would also be able to fit into the bigger picture of decarbonisation, with the potential for a solution to support HGVs, marine transport and aerospace.

However, zero emission technologies (batteries, hydrogen and synthetic fuels) must mature as, mentioned above, current electrified powertrain solutions do not deliver the right balance of weight and performance that our customers expect, and which would help turbo charge development for the UK car industry. Promoting investments in future technologies, therefore, should remain a pillar within future policies with increased Government support for early R&D investment in lower technology readiness levels (TRL).

Early TRL funding is important, if there is a visible route to market, i.e. a strong joined up input from industry into either academia or catapults. This would ensure that technology being developed is that which is sought after by OEMs and can benefit from OEM direction and support. Ensuring this approach, would enable an increase of marketable technology being developed in the UK. This would also help establish the UK as a leader within low carbon technology, and one with a strong exportable eco-system.

A strong refreshed industrial strategy could support this, alongside continued availability of funds which are vital to incentivise world class organisations to collaborate on new technologies, attract greater foreign direct investment, develop the supply chain and maintain access to the talents that will allow the UK to become a world leader in global science and innovation collaborations.

Supply Chain Capability

While the technology availability is part of the challenge to achieve zero emissions, another fundamental part of this puzzle is the supply chain.

Developments that McLaren is pursuing on full electrification of our products have so far highlighted the absence of a UK supply chain in niche, high-value electrified propulsion systems which threatens industry's ability to develop cost efficient solutions.

Collaboration across different sectors is also crucial and should be facilitated by Government. The Government should make these competitions cross-sectoral, as sectors are often seeking similar solutions for decarbonisation and working together can produce world-class results, as seen with the Ventilator Challenge.

Finally, we think the committee should be aware that the supply chain may also be impacted by future FTAs, if the Rules of Origin for batteries are stringent. Currently in the TCA, the Rules of Origin phasing implies that the UK OEMs will have to source their cells and batteries (which have significant content value) from the UK and the EU.

If the UK were to have a similar FTAs with other countries that imply that cells and batteries must be sourced from the UK or country X then UK SVMs will have no choice but to source from the UK in order to access preferential tariffs set out with the EU/UK TCA and other similar FTAs. A significant challenge with this is that 2027 is not far away, and the UK's supply chain capability for electrification products is still in the embryonic stage.

Customer Requirements

On average, a McLaren customer owns five other cars, several of which will be used more heavily for the day-to-day commute and will most likely be zero emission vehicles. The usage of our vehicles differs heavily to those produced for the mass market.

Our customers will purchase our vehicles not out of necessity, but due to an ‘emotional’ need for how it feels to drive, the advanced technology, the lightweight body, the speed and the sound it makes. The vehicles will be driven less frequently, and with less mileage travelled annually. The advanced technology used to build and power them, however, is technology that over time has the potential to be adopted within the mass market and cross-sectorally. An example of this is our lightweighting capability, and our work with composites which receives cross-sectoral interest through forums such as the Composites Leadership Forum.

It is the difference in usage, and our innovation advancement that is the reason why the technology to support our vehicles to fully transition to zero emissions does not exist, and it is too early to tell which solution will provide the most effective results allowing the vehicles to maintain as much of the character our customers want today.

The actions required by Government and private operators to encourage greater uptake of electric vehicles and the infrastructure required to support them;

While McLaren may not have a fully zero emission product until the latter half of this decade, our road cars will be fully hybrid by 2026.

To encourage the use of vehicles in electric mode and help move consumers behaviour to one of “charging up” and not “filling up”, there must be a visible increase of charging publicly available charging infrastructure in the right locations including on-street charging, public car parks, workplaces, railway stations, service stations. A visible increase will provide consumers with the confidence, even before they transition to an electrified vehicle, that charging will not be an issue particularly in urban areas – this would also encourage the charging of Plug-in-Hybrids, and the increased use of them in electric mode.

We are encouraged by Government programmes such as ‘Project Rapid’, as this will support faster charging especially as the kWh of a battery increases to allow for more range and power. There will likely be a tipping point when battery ranges will be on a par of with the distance provided by an internal combustion engine, meaning consumers may be charging at the same frequency as they do today i.e. once per week. Before we reach this point, charging capacity needs to be at a level where you can “charge up” away from home with little disruption to your journey time.

While the scope of the inquiry specifically mentions infrastructure for “electric vehicles”, the committee should be mindful that there will be a package of zero emission solutions. Therefore, it would be prudent to encourage the Government to increase its focus on the infrastructure that it also required to support hydrogen, and synthetic/alternative fuels.

While synthetic fuels may be easily administered via the same means as diesel and petrol today, it would be useful for business plans to understand the Government’s thoughts on hydrogen and should therefore commit to publishing its national hydrogen strategy soon.

Conclusion

We hope you will see that there are multiple challenges facing SVMs like McLaren, from technology availability, to supply chain capability.

Increased combined public private focus on these areas, with the right targeted funding schemes alongside a renewed Industrial Strategy that covers all automotive requirements is what is required now, alongside an increase in charging infrastructure in key locations.

Despite 2030 still being nine years away, investment in and strengthening of the UK's technology offering needs to be accelerated across all aspects including technology R&D, supply chain development, infrastructure role out and consumer behaviour.

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