

Growing aluminium demand forecasts the future metal requirements of EVs and hybrids

For anyone keeping pace with the automotive sector - or general news for that matter – it's easy to predict the future. Electrification is here to stay, with sales of full EVs and hybrids growing exponentially year on year. This revolution has forced OEMs to create entirely new vehicle platforms to accommodate new, innovative powertrains - resulting in mass redesigns across all of the major brands. This focus on delivering optimised platforms for future dynasties of electric vehicles is bringing aluminium components to the fore, and of course, the Tier 1 suppliers such as Mark Aluminium Die Casting (MADC) who provide them.

The aluminium industry is experiencing a growth in demand from the world's major car manufacturers. According to Aluminium Insider, in 2018 OEMs were utilising an average of 250 kg of aluminium per EV vehicle, totalling an overall 250,000 tons usage throughout the year. EVs are forecast to reach a 30% market share by 2030, which translates to a projected demand for aluminium up to 10 million tons from car manufacturers that year. ¹ CRU Group estimates that hybrid and electric vehicles incorporate 25-25% more aluminium in designs that traditional internal combustion engine cars. ² Aluminium is displacing steel as the metal of choice in electric car manufacture.

So, what are the key benefits of aluminium that are pushing this growing demand?

A key concern for designers of new hybrid or EV vehicles is lightweighting. A lightweight design offers inherent benefits because it helps to offset the mass of the batteries and the powertrain of the vehicle. A reduced weight means less power is required to deliver performance, offering downsizing opportunities, while overall range between charges is also increased. Making an electrified design more lightweight delivers a cycle of benefits that improve overall usability and efficiency – a key concern for widespread public adoption. Roughly, the density of aluminium is half that of steel, so by utilising aluminium body panels, floor plans, sub frames, heat sinks, water pumps and oil pumps, OEM's can deliver substantial weight savings.

Aluminium offers a host of other benefits. OEMs are reporting that aluminium can deliver twice the energy absorption of steel in a crash situation, improving safety characteristics.³ As battery technology advances, aluminium is being brought to the fore in new designs. Aluminium enclosures for EV batteries are being introduced to market⁴, while scientists are now developing highly efficient aluminium based air flow battery technologies for eventual widespread introduction. Everywhere you look in the hybrid and EV sector, aluminium is the one commodity everyone wants.

What does this mean for Tier suppliers then?

Fundamentally, aluminium's growth is an opportunity that Tier suppliers cannot afford to miss. It's one that has been seized by Colwyn Bay based MADC, which has been providing aluminium die cast water pumps and oil pumps to support the latest generation of hybrid vehicles reaching the market. To support EV's, the business casts thousands of heat sinks for OEMs, which aid in dissipating the thermal energy produced by the electric power train. Over the past few years, the business has had to adapt to a changing automotive landscape, a process that all suppliers will have to undertake, following the path of their OEM customers.

David Lewis, Plant Manager at MADC, was approached for comment: "*Whichever way you interpret the automotive sector at the moment, supply of aluminium components is only going to grow. Ultimately, it falls to businesses, such as ourselves, to provide the increased casting capacity and speed of delivery to ensure this growth in demand is handled smoothly. For both OEM and Tier suppliers, aluminium is becoming a top priority, and will remain so for the foreseeable future.*"

¹ Aluminium Insider <https://aluminiuminsider.com/aluminium-industry-riding-to-higher-demand-in-electric-vehicles/>

² Aluminium Insider <https://aluminiuminsider.com/aluminium-industry-riding-to-higher-demand-in-electric-vehicles/>

³ Reuters <https://uk.reuters.com/article/uk-autos-metals-electric-vehicles-analys/aluminium-wrestles-with-steel-over-electric-vehicle-market-idUKKBN1H31OM?rpc=401&>

⁴ EENewsPower <https://www.eenewspower.com/news/first-sheet-aluminium-battery-enclosure-electric-vehicles>

Photograph Caption:

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About Mark Aluminium Die Casting

Mark Aluminium Die Casting offers a flexible small-to-large volume Aluminium die casting service. We provide design advice, tooling and specialist technical support. We differentiate ourselves by our service levels and responsiveness, we also maintain high quality standards and of course, finding ways to be extremely cost competitive. We can also test, pack and stock your items ready for immediate call-off delivery.

Cast aluminium parts have been manufactured at our site in Colwyn Bay, Wales for over 30 years. The company currently operates a modern furnace and a series of large high pressure aluminium die casting machines producing parts for automotive, electrical and electronics applications. In-house design, high-pressure aluminium die casting, engineering, manufacturing, assembly and testing, plus a large stock facility are all located on one site.

We employ a mixture of UK, EU and Chinese manufactured dies and moulds in order to meet a wide range of price, precision and volume demands.

For longer runs and super precision applications, the best quality tooling is always required, which we source locally. However in order to remain cost competitive and support companies that wish to re-shore their manufacturing base – in order to become more flexible in terms of volumes and reduce lead times and supply chain vulnerability – we also offer a manufacturing service based on a highly cost competitive production model.

Mark Aluminium Die Casting offers a full design, manufacture and test service for the OEM and replacement markets where volumes range from 1,000s to hundreds of 1,000s of parts. We also have a large engineering, assembly and packaging facility, logistics and a huge on-site stock capacity.

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