

Motobahn

● ALUMINIUM

A metal can propel the future of mobility

Using aluminium in EVs can extend their range by offsetting battery weight



RAHUL SHARMA

THERE IS AN increasing demand for CASE (connected, automated, shared and electric) mobility. Automakers are also decarbonising their value chain. Aluminium is driving the change in both, because it offers the fastest, safest, environmentally-friendly and cost-effective way to increase performance, boost fuel economy and reduce emissions, while maintaining or improving safety and durability. It is the second most common metal used in automobiles, after steel.

The metal of the future

Aluminium's unique properties like high strength-to-weight ratio, superb corrosion resistance, exceptional design flexibility, anodising ability, thermal and electrical conductivity, and ability to be 100% recycled have made it the dream metal for automakers. Its versatil-



Aluminium round bars have light-weight properties that make it useful for industries such as automobile, aerospace, etc. Aluminium is the second most common metal used in automobiles, after steel

ity is being leveraged by companies to create a variety of auto parts, including radiators for engines, wheels, cylinder blocks for engines, transmission bodies, battery casting, and body parts like hoods, doors and frames.

Also, aluminium scrap from cars, buses, machines, equipment and cans can be recycled and undergo value-addition for further usage, including in the transportation industry. This makes aluminium one of the most sustainable metals, best suited for manufacturing green products such as electric vehicles (EVs).

Higher aluminium usage in EVs extends their driving range by offsetting battery weight, thereby

reducing the total cost of ownership even with the addition of extra safety features. A study has noted that every kilo of aluminium used in a car reduces the car's weight by one kilo (because steel is twice as heavy). It translates to an increase in driving range (100 kg saved on any EV can translate into an additional 10-15% increase in range). Aluminium is significantly cheaper and easily available, compared to alternatives like carbon fibre-reinforced composites and titanium.

Aluminium is also ubiquitous for EV charging infrastructure because of its numerous applications in electrical transmission and distribution networks.

The commitment of many

automakers to go carbon-neutral in the next 30-odd years is driving the demand for 'green' aluminium that has a significantly low carbon footprint. Major automakers across the world have set up supply chains for procuring green aluminium. Poised to cater to this demand are low carbon aluminium brands such as Restora by Vedanta, India's first green aluminium.

Catalysing EV revolution

At over 4 million tonnes per annum capacity, the Indian aluminium industry is young, agile and well-resourced to cater to the emerging needs of the country's automotive aspirations. With manufacturing excellence, robust product offerings and innovation prowess bar none, many domestic producers are developing high-end alloys and specialised applications customised to the needs of the automotive market.

For example, crash-resistant alloys, primary foundry alloys, cylinder-head alloys, etc, have helped the domestic automotive industry access indigenously produced high-quality value-added products with a lower carbon footprint and enhanced supply-chain reliability. Besides reducing import dependence, value-addition done

domestically will also help realise scale benefits and dis-intermediate the value chain, leading to overall lower costs. For instance, aluminium parks being developed by domestic producers can become manufacturing hubs for secondary/tertiary producers and original equipment manufacturers to manufacture auto components and parts for automakers.

As countries accelerate towards their net zero targets, decarbonisation of the transportation industry will be a crucial pathway towards decreasing overall carbon footprint and reliance on fossil fuels. The market for special aluminium alloys in the automotive segment is poised to expand. In such a scenario, it is imperative that India's policy frameworks promote domestic manufac-

turing, value-addition and applications of aluminium by addressing the rising cost of raw materials, an inverted duty structure and burgeoning taxes. This will help harness the limitless possibilities of aluminium and make India an international hub for EV manufacturing, thus shaping the future of sustainable mobility.

The author is CEO, Vedanta Aluminium. Views are personal