Aluminium will fast-track journey to net zero

The versatile metal is being increasingly deployed across manufacturing sectors to lower the carbon footprint

Vibha Dhawan

This year has seen some strange weather patterns. For instance, Delhi, a city known for its scorching summers, curiously witnessed fog and significantly lower temperatures one morning in the first week of May, which is usually the hottest month of the year. With the reality of climate change now no longer a question of "if" but "is", the world is more receptive to the need for urgent action.

According to a 2017 World Bank report, 'The Growing Role of Minerals and Metals for a Low Carbon Future', aluminium is one among a select group of metals that will lead the global transition to a low-carbon future.

With its high strength-to-weight ratio, ductility, malleability, conductivity, inherent resistance to corrosion and infinite re-cyclability, aluminium has established itself as the versatile metal at the heart of cutting-edge, 'green' technologies — from renewable energy and electric vehicles to power storage. It will prove most instrumental in accelerating the energy transition across several value chains. Driven by global decarbonisation policies, aluminium demand is set to grow exponentially in the near decade. It is also acknowledged as the go-to metal for established sectors including construction, transportation, packaging, electricals, defence and aviation.

This has seen the metal being increasingly deployed at the forefront of global efforts to move to sustainable technologies with a lower carbon footprint. These efforts are frequently aligned with the larger goal of 'net zero', which India has committed to achieving by 2070, in pursuit of which several new policy and citizen-facing measures are being taken across ministries.

VANDE BHARAT INITIATIVE

Even the Indian Railways has set its sights on becoming a net zero carbon emitter by 2030. The steps that will see it chugging forward in this direction include procurement of power through renewable sources, shifting from diesel engines to electric locomotives and promotion of overall energy efficiency across its operations. Railway authorities anticipate the expected requirement of renewable capacity to be around 30,000 MW by 2030.

LIGHTER. All-aluminium coaches

The Vande Bharat initiative is a significant step forward in this direction. Encompassing four generations of semi-high speed electric trains, the project is already underway with back-to-back launches of the first generation across India. The most advanced versions of the series in the project will feature all-aluminium coaches, which aside from making them lighter will also allow for a more aerodynamic design, making them faster and more energy efficient. Their lower weight will also ensure they are much quieter than today's trains.

The Vande Bharat series of trains are emblematic of all the possibilities that aluminium represents. At present, the per capita consumption of aluminium in India is only around 2.7 kg, whereas the global average is about 11 kg. India has ample reserves of bauxite, which is further processed into alumina and subsequently into aluminium. There is also more than sufficient production capacity to meet the domestic demand, which is projected to touch nearly 10 million tonnes per annum within the decade. Domestic aluminium producers are, however, frequently derailed by high input costs, competition from cheaper imports, and inverted duty structures. Addressing these issues will help India fast track its journey to net zero.

The writer is Director General, The Energy and Resources Institute. Views are personal.