



“ We are co-creating and collaborating to develop materials of the future that enhance efficiency and enable a greener future. ”

— **Rohit Pathak**, CEO, Copper Business
Hindalco Industries Limited



Hindalco Industries Limited is the metals flagship company of the Aditya Birla Group. A US\$ 28 billion metals powerhouse, Hindalco is an industry leader in aluminium and copper. The company's state-of-art copper facilities include a world-class copper custom smelting and refining complex (one of the largest globally) along with a captive jetty, and multiple copper rod mills (making it No. 2 globally in copper rods outside China). Moreover, in aluminium, the company ranks among the largest global aluminium majors as an integrated producer with a footprint across nine countries outside India, and is the largest player of recycled aluminium globally. The company is now pioneering into state-of-art facilities for recycling e-waste and components for air-conditioners (ACs) and electric vehicles (EVs).

Hindalco has always been at the forefront of innovation. This is evident from the company taking the 'Innovation' thematic sponsorship space at ELECRAMA 2025, where it will showcase its commitment to the future of the electrical industry. In this interview with IEEMA JOURNAL, **Rohit Pathak, CEO, Copper Business, Hindalco Industries Limited**, shares how the company exemplifies this innovation mindset, its focus on R&D in the power sector, technological advancements, and more...

Hindalco Industries' world-class innovation has enabled it to create future-ready products and solutions. How does the company exemplify this innovation mindset? Tell us about your initiatives in this direction.

Hindalco has always been at the forefront of innovation, driven by its commitment to sustainability, efficiency, and customer-centricity. Our research and development and technology (RD&T) activities are managed by dedicated technology teams at our four Hindalco Innovation Centres. Our innovation mindset is reflected in our efforts to develop lightweight, high-strength aluminium solutions, special high-conductivity copper alloys, and cutting-edge specialty alumina products that cater to emerging industries such as EVs, renewable energy (RE), electronics, and advanced building and construction infrastructure. Initiatives such as the creation of specialised alloys, manufacturing processes that focus on continual improvements, and investments in cutting-edge technologies (including using digital technologies) have helped us develop some innovative solutions, many of these co-developed with our customers to cater to their unique futuristic needs.

Tell us about the company's focus on R&D in the power sector? How much of the company's turnover is invested in R&D, and possibly, specifically for the power sector?

The power sector has been at the core of India's transformation journey. At Hindalco, we are co-creating and collaborating to develop materials of the future that enhance efficiency and reliability, and accelerate our journey towards a greener future. Our high-performance alloys and products for EVs, railways, and modern electrical grids - are all key to lowering greenhouse gas (GHG) emissions. Hindalco is in a great position to leverage the strength-to-weight advantages of aluminium and copper over other materials in promoting energy efficiency. With Novelis, Hindalco is the highest recycler of aluminium across the world, making it one of the lowest GHG-emitting players globally in aluminium.

We have an installed capacity of about 200 MW of solar power, and some of our locations use RE for more than 50 percent of the total energy requirements. Our first-of-its-kind energy transition initiative integrated with pumped hydro storage is on track to begin the ramp-up of 100 MW of round-the-clock carbon-free power to our smelter in Odisha. This project was recognised with the 'Energy Transition Changemaker' award at COP28, underscoring the significance of this transformative initiative.

Apart from focusing on new energy reduction technologies for aluminium smelters, our R&D work has led to the development of AA1100 and AA1060 grade foils for battery applications, as well as the introduction of Hindalco's HIL1X HC alloy for battery foil (patent pending). This alloy is known for its exceptional strength and conductivity properties in Li-ion battery current collectors. We have also developed the first 23 mm copper-silver alloy using our Contirod technology for railway electrification. We also developed some special alumina products for making flame-retardant wire and cable coatings.

Overall, last year we spent about Rs60 crore on R&D in India towards such innovations and close to Rs850 crore globally for R&D across aluminium and copper.

Hindalco Industries has also developed a new aluminium zirconium alloy for HTLS wire rods for manufacturing power conductors used in power transmission lines. What are the properties of these rods and how will they benefit customers?

The new aluminium-zirconium (Al-Zr)-based high-temperature low-sag (HTLS) conductor has been developed by Hindalco, specifically designed for power conductors used in power transmission lines. The alloy offers exceptional thermal stability with high-temperature resistance, enhanced mechanical strength with a long service life, excellent electrical conductivity, and high resistance to corrosion with reliable performance. For customers, this translates to lower maintenance costs, increased longevity and enhanced grid performance, making it a sustainable and cost-effective choice for modern power infrastructure.

How can Artificial Intelligence (AI) and other technological advancements play a key role in facilitating innovation?

Aligning with our objective of making our plants future-ready ('Plan of the Future'), we have extensively adopted new-age digital technologies and AI to significantly improve our operational processes and enhance workforce productivity while at the same time driving process and product innovation.

We have implemented industrial internet of things (IIoT) systems in plants for real-time remote plant monitoring, contextualised visualisation of key performance indicators (KPIs) for analysis, and support data-based decision-making. The digital twins for our smelter, power plants and green anode plants assist in simulating physical operations and optimising process parameters. We have improved the reliability of our plant's critical equipment by digitalising over 350 assets and creating predictive maintenance models. The deployment of vision analytics projects, leveraging computer vision technology in areas such as quality detection, recovery improvement, anode tracking and unsafe practices tracking is making our plant efficient and a safe workplace.

We have more than 25 advanced analytics projects implemented across Hindalco in complex processes using innovative methods for yield optimisation, energy and defect reduction. We are also leveraging generative AI for metals market intelligence for better insights generation, legal function support, and summarising daily plant operations for exceptions monitoring.

Lastly, what are your plans at ELECRAMA 2025?

At ELECRAMA 2025, Hindalco is proud to take the 'Innovation' thematic sponsorship space, showcasing our commitment to the future of the electrical industry. Our exhibit will highlight breakthrough products such as HTLS wire rods, sustainable aluminium solutions for the power sector, special high-conductivity copper alloys, foils for Li-ion batteries and advanced technologies shaping the energy infrastructure. We aim to engage with industry leaders, partners, and customers to share insights, foster collaborations, and demonstrate how Hindalco is driving innovation for a sustainable and energy-efficient future.