



# DYNAMIC MANUFACTURING INDIA

RNI NO.: MAHENG/2017/73912

Volume 5-Issue 2 March/April 2021 Price ₹100

[www.meshmixmedia.com](http://www.meshmixmedia.com)

## THREE MEGA TRENDS - IS INDIA'S AUTOMOTIVE INDUSTRY PREPARED

**VEDANTA MAKING INDIA  
THE GLOBAL HUB OF ALUMINIUM  
MANUFACTURING**



**RAHUL SHARMA**  
Dy. CEO - Aluminium Business,  
Vedanta Ltd

Cover Feature | VEDANTA LTD

# Vedanta making India the global hub of aluminium manufacturing

In conversation with Rahul Sharma, Dy. CEO – Aluminium Business, Vedanta Ltd

Modern human life is increasingly needing to be centered around sustainability. In our quest to further the capabilities of humankind and shape a better future for all, the metals and manufacturing industries play a crucial role. The metal that has fast evolved to become the second most important metal in the world today, is aluminium, the 'Metal of the Future'. Aluminium is poised to see exponential growth as the demand for its versatile properties finds diverse applications across critical sectors like aerospace, defence, automobiles and electric vehicles, electrification, building & construction, renewable energy, and many more..

The unique properties of aluminium like high strength-to-weight ratio, superb corrosion

resistance, wonderful mechanical properties which lend themselves well to formability, and infinite recyclability, coupled with the sustainable process of mining bauxite (the ore from which aluminium is made) make the metal indispensable for our greener future.

Post pandemic, as the global supply chains get reworked and India makes rapid strides towards establishing its position as the world's manufacturing hub, Vedanta's Aluminium Business is leading the way as India's largest producer of aluminium and value-added aluminium products. The domestic aluminium industry has been deemed a Champion Sector by the Government of India and has a crucial role to play in propelling the country towards becoming a USD 5 trillion economy. There is immense potential to double



the metal's exports to the tune of \$10 billion in forex earnings in the near future. Sustainable mining of the country's expansive reserves of natural resources like bauxite and coal, combined with significant primary and downstream manufacturing capacity, availability of skilled human capital, logistics infrastructure, and leveraging India's geographical location as a trade powerhouse, can lead to India becoming the global aluminium hub.

**Largest Producer of Aluminium with a Strong Value Chain**

As the country rapidly progresses on all fronts to achieve Hon'ble Prime Ministers vision of 'Atmanirbhar Bharat' in all sectors where it has inherent capabilities, Vedanta Limited leads the charge for the metals and mining industry. The largest producer of aluminium in India, Vedanta Aluminium leverages its world-class assets, which include state-of-the-art aluminium smelters in Odisha and Chhattisgarh and a world-class alumina refinery in Odisha, to produce a diverse range of high-quality value-added products that find applications in a host of industries – from automobiles to electrification. At over 1.9 million tonnes per annum (MTPA), Vedanta Aluminium and Power produces more than half of the country's aluminium, commanding nearly 48% of the domestic market share and 3% of the global market share.

"Vedanta's Aluminium Business is leveraging its world-class smelters and power plants, to marry sustainable and efficient manufacturing processes with its technology leadership, to produce a whole range of primary aluminium and value-added products. We are relentlessly working towards realization of the national vision of an 'Atmanirbhar Bharat' as the country's partner in progress, propelling it towards a greener and more sustainable future," says **Rahul Sharma**,



**RAHUL SHARMA**  
Dy. CEO – Aluminium Business  
Vedanta Ltd

**Dy CEO – Aluminium Business, Vedanta Ltd.**

With mammoth production capacity and industry expertise which is well-supported by state-of-the-art engineering, technological prowess, and deep capabilities of innovation and R&D, the company fulfills its mission of spurring emerging applications of Aluminium as the 'Metal of the Future' for a greener tomorrow.



Vedanta's world class 2 MTPA capacity alumina refinery in Lanjigarh, Kalahandi (Odisha), has been transformative not just for the industry, but also for thousands of people hailing from the region. This highly efficient refinery feeds Vedanta's aluminium smelters at Jharsuguda (Odisha) and BALCO (Chhattisgarh). It is widely hailed for having catalyzed development of one of the most impoverished regions in the country and bringing to it the forefront of socio-economic fray.

The manufacturing capability of Vedanta's ~3000 acre large aluminium operations at Jharsuguda (Odisha) comprises a 1.6 MTPA smelting operation, which makes it the world's largest single-location aluminium smelter outside China. It is also the only Indian producer in the global '1 Million Tonne' production and export club.

Vedanta acquired majority stake in BALCO from the Government of India, adding to the manufacturing firepower of the company. Post Vedanta's takeover of a 51% stake, BALCO has clocked unprecedented quantum growth, from 100 kilo tonnes per annum (KTPA) in FY01 to 575 KTPA in FY20. Acclaimed as one of India's greatest disinvestment and privatization success stories, this turnaround was scripted by unlocking significant operational efficiencies and deployment of cutting-edge technologies.

### **Technology and Innovation, the Cornerstone of Manufacturing**

The untiring efforts of the in-house R&D team have allowed Vedanta to continually explore newer applications of aluminium by focusing on product refinement and development to cater to the evolving needs of customers as well as of emerging sectors. Some of its recent developments include the aluminium cylinder head alloy for better emission performance of automobiles, special wire-rod variants for usage in electrical transmission lines

in coastal belts, crash-resistant alloys for electric vehicles, and high-performance billets for boosting productivity of extrusion industry.

Vedanta Aluminium has instituted a 'Centre of Innovation Excellence' with the aim of inventing the next big thing in aluminium to create a competitive edge for the company. The Centre sees the culmination of ideas from key verticals like Research & Development, Technical, Operations and Marketing. The business has also created a 'Centre of Quality Excellence' which brings together Digitalization, Process Control, R&D, Business Excellence, Customer Technical Service, and Innovation, to ensure global best standards of quality across its value chain, from procurement to sales. Vedanta Spark, a start-up incubator, has also been created to foster ideation and accelerate our adoption of emerging technologies. The response to the incubator has been extremely encouraging and the company is already working with over 20 start-ups on various business solutions for the industry.

Clint David McLachlan, Chief Technical Officer for the business says, "Innovation and excellence are the hallmarks of the exceptional performance-oriented culture at Vedanta Aluminium. Our vision is to not only develop business applications, revenue models and new products, but truly invent indigenous technologies in-house that are perfectly customized to our assets and processes. This vision resulted in the formation of Vedanta Aluminium's Technical Cell, where the Innovation departments of all Business Units joined hands with Business Excellence (BE) and R&D teams to focus on business improvement projects, sustainability, and value addition to the company."

As a digital-first business, Vedanta Aluminium has been a discerning adopter of next-gen technologies and smart solutions, aimed at bolstering the company's stronghold on the leading edge of competition. Vedanta's Jharsuguda complex is India's first (and the world's third) aluminium producer to deploy GE's Digital Smelter Solution, a cutting-edge technology which uses digital twin technology, predictive and prescriptive analytics to enhance energy efficiency, reduce raw material consumption and arrest wastage of material through remote advisory system. It has also implemented OSI soft's PI (Process Information) System at the Jharsuguda plant, a one-of-a-kind application of industrial IoT solutions that is expected to deliver greater operational improvements and breakthroughs by using machine learning and predictive analytics to boost operational efficiency and productivity. The PI system is expected to provide plant managers, executives, and engineers with greater visibility through real-time data management while



### Vedanta Aluminium Business

- India's largest producer of aluminium and value-added aluminium products with 2.2 MTPA installed smelting capacity
- A leader in the manufacture of value-added aluminium products used across core industries like Automotive, Transportation, Electricity Distribution, Building & Construction, etc.
- Manufactures vast portfolio of high-quality products such as Billets, Primary Foundry Alloy (PFA), Wire Rods, Slabs, Flat Rolled Products, Flip Coils, Ingots, etc.
- Operates one of the world's largest aluminium smelters which has a capacity of 1.6 MTPA, and single-handedly producing 37% of India's aluminium
- Its Jharsuguda plant is the only Indian smelter in the global '1 Million Tonne' production and export club
- Vedanta's aluminium brands are listed on the London Metal Exchange (LME)

effectively reducing the expense and time taken for data collection and analysis.

Similarly, the Business is incorporating a bouquet of smart analytics and intuitive solutions across the width of its operations, fast transitioning its plants to become future-ready. It is the first metal and mining company in India to implement the full scope of S4HANA, automating all functional processes. It has built end-to-end digital Logistics Control Towers for coal, alumina, and bauxite with Machine Learning and OR (Operations Research) based mathematical modelling that have enabled Vedanta to do simulation-based planning, reduce costs and pilferages and improve efficiencies, impacting topline and enabling paperless operations.

Speaking on smart manufacturing Avijit Deb, Chief Digital Officer, adds, "At Vedanta Aluminium, we are committed to maximizing the growth potential of our customers and helping the industry at large scale even further. In our quest to become the world's best in aluminium, we are on a mission to improve our productivity, optimize resource usage and develop solutions perfectly tailored to the needs of the market. As a digital-first company, Vedanta Aluminium is on the leading edge of the technology curve, leveraging smart manufacturing to become leaner, more agile, and resilient, in a fast-evolving marketplace."

### A Hawkeyed Focus on Value-addition for Market Growth

Vedanta Aluminium is well on its course to become the world's lowest cost, most sustainable, and fully integrated aluminium producer, with a hawkeyed focus on developing the perfect product solutions for its customers. The Business is rapidly expanding its value-added product portfolio, in addition to an already diverse array of high-quality aluminium products in the form of Billets, Primary Foundry Alloy (PFA), Wire Rods, Slab, Rolling Sheets,

Flip Coils, and others. It is the largest producer of wire rods globally and India's leading exporter of billets to developed markets like the US and Europe. All of its products undergo rigorous quality assurance and compliance checks that are at par with global standards to guarantee customer satisfaction.

The Business epitomizes the national mission of self-reliance and localization of raw material procurement by harnessing domestic capabilities. For instance, Vedanta has indigenously developed Primary Foundry Alloys (PFA) for the automotive industry, and AlSi3 ingot for the steel industry, which are shining examples of high-quality domestically manufactured products catering to needs of Indian industries. These alloys were hitherto being entirely imported into India.

With a mission to convert 100% of its product portfolio into value-added products, Vedanta Aluminium has already crossed the 50% threshold.

### The Green Metal for a Greener Tomorrow

Manufacturing excellence being a key focus area, Vedanta Aluminium accords equal



importance towards sustainability imperatives centered around Governance, Health, Safety, Environment and Community Welfare. Every action and business decision are governed by the ethos of 'Zero Harm, Zero Waste and Zero Discharge', with which Vedanta delivers sustainable and responsible growth that nurtures communities and ecosystems side by side. The business follows policies and sustainability standards laid down by the parent company, Vedanta Resources Ltd. through its robust Sustainable Development Framework.

Vedanta's aluminium smelter in Jharsuguda is the first in Asia to receive the prestigious ISO 50001 certificate for Energy Management System. Last year, BALCO achieved the lowest specific power consumption in potlines, setting a benchmark among aluminium producers in the country. A potline is a long building, or collection of buildings, which contain a series of 'pots' or large electrolytic cells, in which aluminium is produced. Dedicated efforts towards energy conservation have resulted in reduction of thermal and electrical specific energy by 20% and 24% respectively over the last 5 years, at its alumina refinery in Lanjigarh. The Business has also made strong strides towards reducing its carbon footprint. Between FY19 and FY20, the Business clocked a reduction of indirect energy consumption of 8 million Giga Joules. Deployment of global best practices and efficiency methodologies have helped the business reduce its GHG intensity by 20%, from a 2012 baseline. The Vedanta Group has also been ranked amongst the world's top 15 metals and mining companies by the Dow Jones Sustainability Index 2020.

#### **Building the Future with a Young Workforce**

Vedanta Aluminium is powered by an extremely talented and dynamic workforce. It is probably the only aluminium producer in the world where highly skilled young professionals drive the operations of such large-scale smelters and power plants. This unique feature of the company mirrors India's potential as a hotbed of young talent having the

skills and the ability to compete on a global scale.

A stellar example of inclusion and equal opportunity employer, Vedanta Aluminium has one of the highest gender diversity ratios among the domestic manufacturing sectors. Women professionals hailing from some of the country's finest institutions drive core functions, from smelter operations to security and firefighting. The Business believes in fostering a culture of meritocracy and entrepreneurship, which gives dynamic and ambitious professionals ample opportunities to own and drive key business priorities from very early on in their careers. Groomed by seasoned professionals of global repute, they are the true powerhouse propelling the organization forward.

#### **Charting India's Self-reliance Journey with the 'Metal of the Future'**

As India steams ahead to become a global manufacturing powerhouse, the aluminium sector is set to flex India's manufacturing muscles for the world. Besides driving the country's self-reliance in all things aluminium, Vedanta Aluminium has induced the growth of an entire ecosystem of MSME suppliers and customers. The business has triggered exponential GDP growth and improvement in quality of life in the regions where it operates.

"As India recovers from the impact of the worst global public health crisis in recent times, 2021 will see the reworking of global supply chains leaving India well placed to become a global leader in non-ferrous metals like aluminium. The metals sector will be fundamental to the revival of the Indian manufacturing ecosystem, realization of the dream of an AtmaNirbhar Bharat and positioning India as a global manufacturing powerhouse. To make this dream a reality, Vedanta Aluminium and Power is determined to work in close collaboration with its technology partners, consultants, and customers to lead a globally competitive aluminium industry into the post-pandemic world," adds **Rahul Sharma, Dy. CEO - Vedanta Aluminium Business.**

The recent mining reforms will bring more bauxite and coal mines for auction, which shall pave the way for ensuring raw material security of a fast-growing domestic aluminium industry. Along with this, further policy intervention like rationalization of power cost, reducing coal cess, institution of BIS Standards for scrap imports, correction of inverted duty structure and correction in the calculation of average sale price of metallurgical grade bauxite, etc. will go a long way towards ensuring competitiveness of the domestic industry when pitted against global aluminium giants, and establishing its dominance on the world map.

