

Journey of Hindalco as an Integrated Aluminium Producer

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Abstract

Hindalco, a flagship company of Aditya Birla Group, began its journey in 1958 from Renukoot, Uttar Pradesh state of India, as a first integrated plant of Independent India. Renukoot plant received bauxites from Lohardaga mines and hydropower from G B Pant Sagar Dam project to produce 40 ktpa alumina refinery and 20 ktpa aluminium smelter. Over the years, through successive organic expansions the company reached to 242 ktpa by 1999. This was followed by expansion through acquisition of INDAL and Novelis, a biggest expansion by an Indian company to become the largest Flat Rolled Products (FRP) producer in the world. In the last two decades, Hindalco continued its expansion by adding Utkal alumina refinery and new state of the art AP36 smelters at Mahan and Aditya.

During this journey, a range of technologies were adopted to achieve the best technical and financial performance. For alumina extraction from Boehmitic bauxite of Lohardaga, the company mastered double digestion technology. We were first in world to test the Gas Suspension Calciner technology of FLSmidth and commissioned a plant in 1986 replacing the rotary kiln technology for production of smelter grade alumina. Many technical initiatives and strategic collaborations helped Utkal alumina refinery to become one of the lowest cost producers of alumina.

The best plant practices and technical inquisitiveness helped us to develop and implement in-house technologies like copper insert collector bars, magnetic compensation loop, energy efficient cell lining designs, etc. for both old and new smelters. These technology developments helped to not only reduce specific energy consumption but also achieve high quality metal with special LME grading, including best quality P0202 grade metal from Mahan smelter.

The technological partnership of our downstream plants with Novelis and Aleris has realized a range of new products and applications. We are leading the lightweighting of mobility sector in India by introducing aluminium bulkers, trailers, railway wagons and range of products for Electric Vehicles (EV) like battery foils, separators and enclosures.

As a responsible producer, we have a special focus on sustainability with a target of net zero in emission, discharge and land fill by 2050. Various technology initiatives from generation and storages of renewable energy, 100 % utilisation of bauxite residue, decarbonisation technologies areas assisted company to rank number 1 in Dow Jones Sustainability World Index, consecutively for the last 3 years. Adoption of Industry 4.0 driven digital technology transformations in various areas of aluminium value chain and customer centricity, is also facilitating to achieve these challenging targets.

Keywords: Hindalco, Aditya Birla, Indian Aluminium Industry, Sustainability, Industry 4.0.

1. Introduction

Hindalco Industries Limited, the metals flagship company of the Aditya Birla Group, has a consolidated turnover of 28 GUSD during Fiscal Year (FY) 2023, making it an industry leader in aluminium and copper producers. Hindalco is one of the largest integrated primary aluminium producers in Asia. Hindalco’s Pan-India presence, encompasses the entire gamut of an integrated operations, from bauxite mining, alumina refining, aluminium smelting, and converting primary metal into value-added products via rolling, extrusions, etc. The finished products include alumina, primary aluminium in the form of ingots, billets and wire rods, value-added products such as flat rolled products (FRP), extrusions, and foils. Metallurgical alumina is used for aluminium smelting process, whereas chemical alumina and hydrates are used in range of industries including water treatment, fillers in cables and plastics, refractories and ceramics, glass among others.

Hindalco also owns state-of-art copper facility comprises a world-class copper smelter which is one of Asia’s largest at a single location and a captive jetty [1]. The Birla Copper unit produces copper cathodes and continuous cast copper rods, and other by-products, including gold and silver. It is also India’s largest private producer of gold. Aluminium contract on the London Metal Exchange (LME), while its copper quality is also registered on the LME with Grade-A accreditation. Hindalco’s product portfolio serves industries like electrical, mass transportation, automotive, packaging, cookware, defence, building, construction and architectural. Hindalco has introduced numerous new products in the Indian market, including branded roofing sheets, branded kitchen foils and input material for automotive body and railway wagons. Some of these products are branded, such as Eternia windows, Maxloader and Hindalco Extrusions under the extrusions segment, Everlast Roofings under the FRP segment, Freshwrapp and Superwrap under the aluminium foil products segment, as well as mainstream products and co-products segment from Birla Copper have garnered strong customer acceptance.

2. Hindalco’s Journey

Hindalco’s story dates to the young Indian democracy of the 1950s. During 1958, the premier industrialist of India, Shri G D Birla made a significant contribution to the vision of an industrial India by setting up its first aluminium production facility at Renukoot, in collaboration with Kaiser Aluminium Corporation Ltd of USA. It was developed as an integrated aluminium facility located at Renukoot and named as Hindustan Aluminium Company Ltd (presently, Hindalco Industries Ltd). The energy requirement for aluminium smelting, was met through green source, the Rihand hydroelectric power plant, situated in the proximity. The integrated facility at Renukoot comprises of an alumina refinery, smelter, downstream products manufacturing as well as the power generation plant supported by co-generation facility. Over the last few decades, Hindalco has undergone several technology upgrades, brownfield and greenfield expansions as well as acquisitions, illustrated in Figure 1.

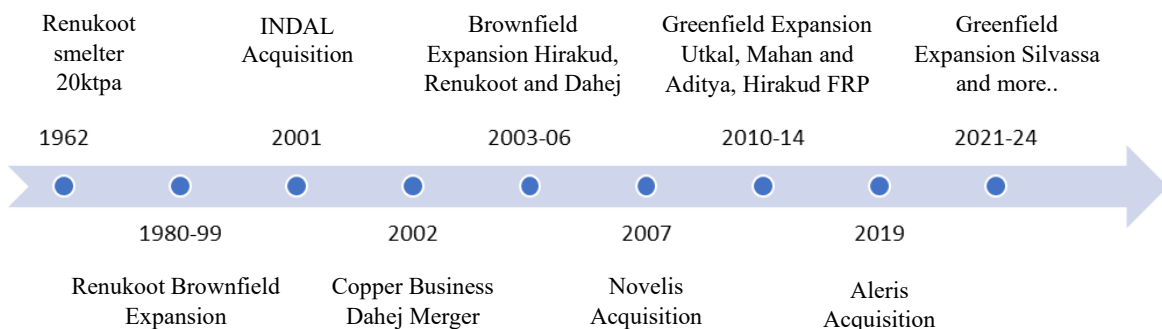


Figure 1. Hindalco journey over a period of more than six decades.

aluminium smelters at Mahan and Aditya. During this journey, the focus had always been to remain an integrated aluminium producer to achieve the best technical and financial performance. The best plant practices and technical prowess helped us to develop several innovative in-house solutions and implement those to improve the process technologies across the aluminium value chain. Hindalco has consistent focus on sustainability with a target of net zero emission, discharge, and land fill by 2050. The sustainability initiatives and adoption of advanced technologies has helped company to achieve Dow Jones Sustainability World Index (DJSWI) rank 1, consecutively for the last 3 years.

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