

## Right Time to Invest in India for Greenfield Aluminium Smelters and EIL's Role as EPCM Consultant

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### Abstract

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India's per capita consumption of aluminium is too low compared to other developed countries like USA, Europe, China, Japan and Brazil. The continuing trend of economic growth and population growth, the overall demand and per capita consumption of aluminium are bound to increase in India. Furthermore, the demand of aluminium metal is greater than the supply in international markets. India can play a major role to bring down this demand-supply gap by increasing its production. Availability of bauxite, huge coal deposits, coupled with trained manpower, makes India an investment heaven for aluminium smelters. Indian business house is already seeking either to increase the existing productivity/production by debottlenecking, or brownfield/greenfield expansion. Engineers India Limited (EIL) as EPCM consultant for aluminium smelters has its vast presence in most of the smelter constructions in India. Recently EIL has also been involved in preparation of a detailed project report (DPR) on high amperage pots (APXE500) for smelter expansion. Under the flagship program of "Make in India" launched by the Government of India, EIL is ready to use its technical and engineering capability to develop vendors in critical activity such as fabrication of pot shell, pot superstructure, busbars and pot tending machines (PTM) and to develop Indian suppliers for various handling systems of raw materials such as alumina, coke, pitch, etc. EIL is also engaged to develop Indian contractors with technical back-up of foreign equipment suppliers (Solios, Outotec, Danieli Corus, etc.) to install green anode plant (GAP), fume treatment plant (FTP), etc. This paper will bring the details how EIL has brought down the CAPEX significantly with this combination of skills for high amperage potline. This paper will enable us to describe the opportunity and benefit in terms of CAPEX and OPEX to build a smelter in India, where EIL can contribute immensely to detailed engineering, procurement and construction management (EPCM).

**Keywords:** Greenfield smelter, High amperage potline, Basic and detailed engineering, Engineering procurement and construction management (EPCM) for smelters.

### 1. Introduction

Modern Aluminium Industry was born in 1886 with the invention of Hall-Héroult process. For more than 135 years of technology development efforts to increase productivity have never been stopped. During later part of twentieth century the industry was further transformed due to introduction of automation, PLC and computer aided control system to enhance productivity. The aluminium industry in India also tried to match with the global pace and from 2017-2018, the country has become net exporter from the position of net importer. Flagship program and well mechanized strategy by Government of India like "Make in India", development of smart cities coupled with rapid urbanization for growing middle class set the per capita consumption target from 2.5 kg to 5 kg in the next five years. To meet this huge demand the Indian aluminium industry needs to gear up to produce and meet the demand. This will avoid imports and make India self-reliant. Considering the compounded annual growth rate (CAGR) of consumption more than 8 % from 2013-2014 to 2017-2018. With the same pace it is expected that India will need

around 3.5 to 4.0 million tonnes of new supply of primary metal in the market. This makes more interesting the right time to invest in India for green field project.

## 2. Aluminium and Its Market

Aluminium metal is of significant importance in the present world economy. Aluminium finds wide range of applications as both a durable and consumable product. In comparison to other basic metals such as steel and copper, aluminium is relatively new metal with better opportunities for growth and expansion. Aluminium is light weight, durable and corrosion resistant metal that can be extruded, rolled, formed and painted for use in a wide range of applications. In almost all its uses, it is alloyed with other metals to increase its strength and mechanical properties. There are over hundred alloys in everyday use and the development of other alloys is a part of the continuing process to find new uses and to enhance the metal's demand.

## 3. Global Aluminium Market

The world Aluminium production maintains the steady trend of growth which is average 4.5 to 5.0 % for last 10 years annually and 2 to 3 % for the coming years. China continues to dominate world market with higher production and higher rate of consumption. China will produce almost 55 to 58 % of world's total metal production.

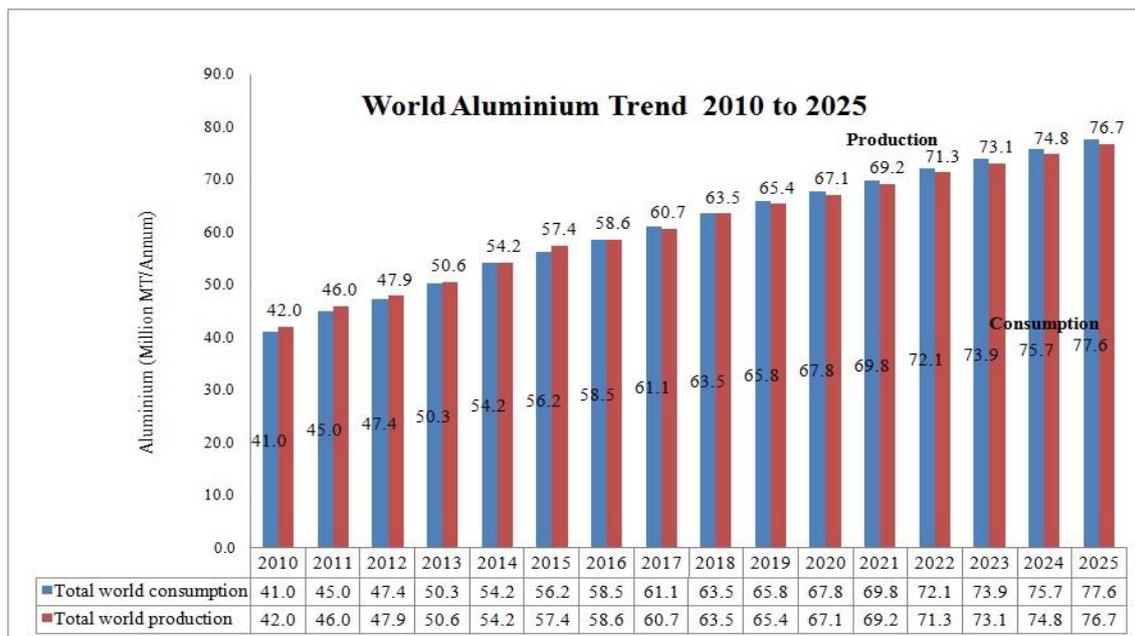


Figure 1. World aluminium trend 2010 to 2025

% for high amperage technology pot line. The total construction period has been considered as 30 months plus 6 months for pre project activity, which includes receiving of basic design and engineering package (BDEP) from process licensor in stages, and acquiring of land.

## 10. Conclusion

Indian aluminium production will continue to increase its installed capacity in the next two to three years. The lower capital cost per tonne of aluminium production makes it attractive to have a viable destination to invest in India. EIL being an engineering powerhouse with exposure in most aluminium smelters in India provides an added advantage to business houses for achieving lower investment cost. Availability of bauxite, huge coal deposits, coupled with trained manpower, makes India an investment heaven for aluminium smelters. GOI also acknowledges the fact that with proper policies and strategies in place, environment and other issues could be addressed simultaneously and country's growth path follow a new model based on equitable, inclusive and sustainable development.

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