



# Aluminium demand shows sign of upswing

- Arun Powar  
Project & Technology Consultant  
Metal Processing Industry

**A**run Powar, has 36 years of experience in aluminium industry both in India and abroad. He is presently Project and Technology Consultant for Non-ferrous Metal Processing Industry. He served as Head - Corporate Technology for



Hindalco Industries Ltd. He spearheaded Aluminium Sheet and Foil Rolling Project in Malaysia, a green field project, and worked with RDSO (Research, Design and Standards Organisation, Indian Railways) on Aluminium Coal Freight Wagon project for the Indian Railways on behalf of Hindalco. He also served as Governing Council Member of Aluminium Association of India and initiated work on Technology roadmap for India.

The growth of aluminium in terms of per capita consumption in India remained more or less stagnant at 0.7 – 0.8 kg for more than two decades, recently touched 1 kg showing sign of growth. However, the real story is far from encouraging considering only 2.5 – 3 percent consumption of the total global consumption as against China's stupendous jump from 5 percent share in 1990's to 25 percent in 2009. Although, blessed with abundant and rich bauxite reserves, India is yet to cash on the tremendous opportunity for the consumption in spite of it's GDP growth next to China. The fact is that the tremendous advantage in promoting aluminium use across different application did not seem to have driven home for the nation to consider 'Aluminium' can play a major role in the 'Sustainable

Development in Indian economy ' and the Industry to acknowledge the serious threat from the Chinese industry to pursue the mission of developing the roadmap for 'Technology capability' to beat the competition .

In light of present day concerns about the environment and energy conservation, it is now being widely acknowledged that aluminium can play a major role in providing direct/indirect influence on these concerns through it's unique features in introducing variety of applications with it's greatest asset being the recyclibility without any loss of it's intrinsic properties or value. To drive home the point, the Indian aluminium industry should also take a note about the China's Aluminium plan and it's phenomenal growth in aluminium, which grew exponentially not only just the metal production

despite poor grade of bauxite ore but also it planned for product and machinery manufacturing of global repute at economic cost. It is therefore, that unless Indian aluminium industry recognises the ominous situation arising out of the growth in neighboring countries, especially China and not gearing up to meet these challenges effectively, would turn out otherwise to be disastrous to address the survival against their onslaught let alone to grow further.

To counter the competition and to enhance value in economy building efforts, it is not too late to establish innovative programmes in core processes involving primary (Mining, Refining and Smelting) operations and secondary (Casting, Rolling, Extrusion and related forming, joining, surface modification etc. technologies.) operations in aluminium business. While 'Technology' as most commonly understood can be bought is about know-how and equipment, it cannot just help to acquire global status, unless it differentiates in scientific know-how that is embodied in people, business processes, plant, laboratories and equipment which in true sense reflects its capability to introduce new processes, products/applications etc., for providing a better value than its competition.

Thus, in formulating India's vision besides being a global player in terms of size, should also include achieving international standards in terms of aluminium consumption. A response paper should be framed around these above key issues in the context of the aluminium industry's vision, the framework for sustainable development and the life-cycle of aluminium. And it should take place at both national and industry level. One element of this process will be opportunities for the industry and

interested parties to exchange views, linked to the political agendas of the industry and its stakeholders, which will lead to a series of actions and further dialogue.

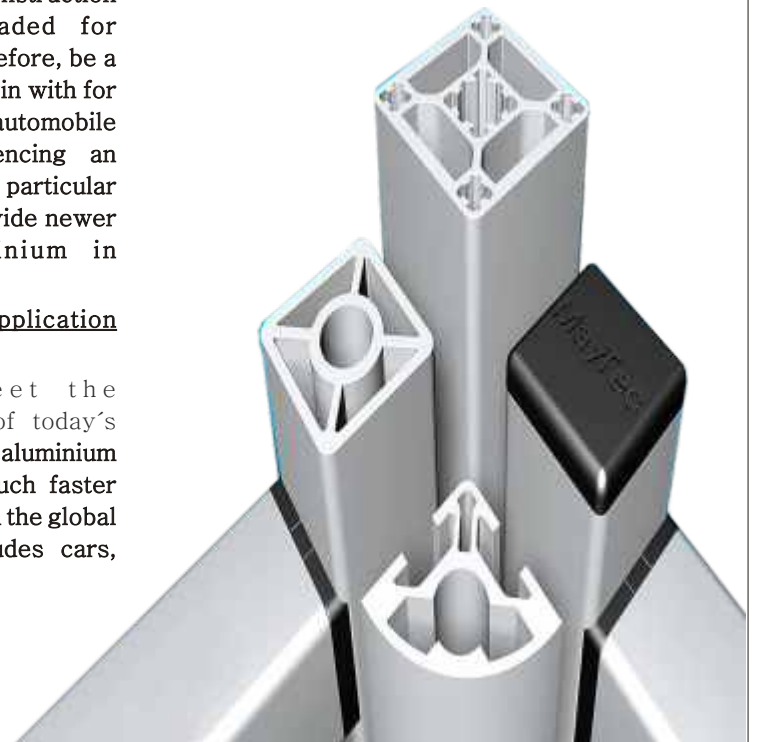
Use of aluminium in almost all the sector will not only save energy but also maintain cost because of its versatile nature of element in comparison to most of the other materials. Growing consumerism will drive all the industries to make use of energy conservative and environment-friendly material. As demands for more technologically complex and ecologically sustainable products increases, opportunities for aluminium will expand more and more, because of its uniqueness of recyclability in its almost original form and due to its light weight in conservation of energy and environment.

Finally, looking at the pattern of consumption in India, there again seems to be tremendous opportunity for the aluminium growth. Traditionally, the major sector in India over the years has been the power transmission sector. Transport, building and construction and packaging sectors where global aluminium consumption thrives, till now they have low relevance to India. The Indian transport and construction industry, which is headed for promising growth, can therefore, be a major demand driver to begin with for aluminium industry. Indian automobile industry is also experiencing an explosive growth and this particular sector has potential to provide newer applications of aluminium in automobiles.

Current and Future Application Trends

**Transport:** To meet the unprecedented demands of today's transport world, the use of aluminium has been growing at a much faster rate than any other sector in the global market. The market includes cars,

“In light of present day concerns about the environment and energy conservation, it is now being widely acknowledged that aluminium can play a major role in providing direct/indirect influence on these concerns through its unique features in introducing variety of applications with its greatest asset being the recyclability without any loss of its intrinsic properties or value.”



“Cleaning and maintenance cost of aluminium is comparatively low. This is one factor architects are looking into; as the life cycle of aluminium used in building and construction is quite long.”

trucks and trailers, trains, buses, aircraft and boats. The cars and trucks are the most important category in the recent growth. Aluminium usage per vehicle has nearly trebled in a decade. The unique properties of aluminium are now having a major impact throughout the road transport industry and in whole range of applications. Whether used for the manufacture of tippers, refrigerated vehicles, tankers or curtain siders, aluminium cuts down weight and brings substantial fuel savings. It improves long-term performance, reduces maintenance, downtime and environmental impact, is easier to repair and provides high residual value.

Continuous development of new applications as well as replacing other material with aluminium have been the major thrust in the western world. In light of present day concerns for energy conservations and environment control, new generation cars/vehicles will be soon built with aluminium chassis and body panels. In view of this significant growths are expected in everything from car structures, body panels to engine, blocks, pistons, cylinder heads, power trains, wheels chassis components, break rotors, radiators, AC components etc..

**Building and Construction :** In the western world, Aluminium's unique characteristics have been fully exploited in architectural and building construction applications. Use of aluminium structures and sections in construction reduce load on foundations making use of its lightweight and strength in alloys. Exterior clad paneling – roofing as well as facades and windows make use of its ability to resist environmental corrosion and to accept decorative and protective finishes. Extruded sections of aluminium are widely used in Interior decoration of building as it can be

extruded to almost unlimited and complex range of shapes and profiles. While roofing, facades and windows are considered among the largest segments of aluminium's use in building and construction, the metal is also used in a variety of other ways. It is used in doors, curtain walls, sun-shading elements, beams and supports, balconies, heating and air-conditioning, drain pipes, spacing elements, ceilings and elevators. Now, it is also being used in the construction of high-rise buildings abroad. Specifically, aluminium extrusions are being used as flexible, portable fixtures to hold the moulds into which concrete is poured.

Cleaning and maintenance cost of aluminium is comparatively low. This is one factor architects are looking into as life cycle of aluminium used in building and construction is quite long. Recycling of aluminium is also in favor of its usage as architects and designers are now carefully selecting materials in the design stage itself so that disposal of waste on demolition of building does not pose ecological problem

Global aluminium consumption in building and construction sector is 18 percent where as in India it is only nine percent. The global growth in this sector has been driven by a significant increase in the siding and facia market, gutters, doors and windows. Competition from alternative materials also represents less of a threat as most of the substitution has already taken place and aluminium remains vital for some applications.

In the non-residential sector, highway construction is a big driver of consumption, where aluminium is used for a range of applications from barriers to road signs. Construction will be the key to improved aluminium demand in India. Asia's most startling improvement in aluminium demand has come from China, where construction demand has helped to change the country from a net exporter in 1998 to a net importer in 2006 as infrastructure spending by the government has given a substantial boost to aluminium demand.

**Packaging:** Containers and packaging provide the bread-and-butter business for the aluminium industry. Aluminium has been the material of choice for growing segment of the packaging, from beverage can to foils in various gauges for beverages, foods, medicine etc and will continue to be so in coming years. When the packaging market took off in the early 1970s, it was beverage cans that led its advance and till date it remained the single largest application of the rolled product consuming 3 to 4 million tons per annum.

“Aluminium's unique properties – lightweight formability, absolute moisture barrier, ability to withstand high temperatures including direct flame applications, and the ability to be coated and embossed for functional and decorative purposes – combine superbly to create a totally effective and economical food service system.” The major market of beverage can is in North America followed by Europe. Recyclability of aluminium has been one of the major reasons for proliferation of cans in US. As energy costs are going up spirally and energy reserves are dwindling, recyclability of aluminum continued to be a major attraction for aluminium usage. Countries such as Brazil in Latin America are now catching up with this high-tech technology for can making. China have also geared up its manufacturing facilities with most modern technologies to meet the growing market demand. People in developed markets already consume as many soft drinks and beers as they comfortably can. The days are not far that there will be proliferation of this end use in India in coming years.

With change in life style and more and more working women in India, the concept of united family is becoming obsolete as people are working in places far away from home. Therefore, concept packaged food items will become popular to the new

generation. It has become need of the hour. India need to promote increase use of aluminium in applications for packaging food for sole reason of being the most suitable material for food preservation and long shelf life.

**Conclusion:** With the above factors having the impact, it will be important for Indian aluminium industry to develop a roadmap for the growth and sustainance. The current hyperactivity in the market needs to be seen in this context. Aluminium has the unusual advantage that the demand for new metal appears to be growing steadily in the long-term, at about 2.5 percent per year. And, given the price disadvantage, the industry need to emphasise on unique selling points, such as the metal's light weight or ability to be recycled, or the ability to produce tailor-made packages for individual customers. Realistically, the leading companies will compete on cost, the smaller ones on service. Over the years, industry margins has been on decline – from 60-70 percent down to 10 percent. Cost-reduction has become a way of life. Although aluminium is expensive both in money and environmental terms to produce first time around, but it is relatively cheap and easy to recycle. If the industry can help its customers reuse the same metal time and again, the customers' overall metal costs will go down, and everyone's green credentials get stronger.

While the opportunities are plenty, aluminium must continue to compete with various materials that will offer lower cost, lighter weight or other competitive advantages. Thrust, therefore, for Indian aluminium will be to improve the standards of existing aluminium applications and develop new and special applications for which technology capability will play an important role.



“Although aluminium is expensive, in both money and environmental terms to produce first time around, but it is relatively cheap and easy to recycle.”

