

Metal Recycling

The scrap metal recycling industry in India can contribute significantly to the national economy and the reduction of the country's trade deficit, besides contributing significantly to conserving the world's natural resources.

- A Report by Metalworld Team

Environment conservation is a hot topic at the moment, with growing pressures from both political and social to take up responsibilities for preservation of the planet. All these years the industrial revolution has led to pollution and mindless resource depletion, which warrants for exercising far more caution in the way we live our lives. Undoubtedly, business and commerce cannot be done away with for the sake of preserving planet Earth. As a result the process of recycling resources has assumed more and

Conserving World's Natural Resources

more prominence over the last few years, particularly in the scrap metal trade which has been buoyed due to this.

Metal manufacturing is by its very nature takes a toll on the environment, creating toxic fumes and a certain amount of wastage that's not suitable to the planet. Reducing the scale of manufacturing happening around can bring about a reduction on pollution and waste that wreaks havoc on the earth. This creates a void which can be filled by recycled scrap metal. Says Ikbal Nathani, President, Metal Recycling Association of India (MRAI), "scrap metal is just as usable as fresh metal and far less taxing on the environment. Hence, it makes sense to promote the trade and use of scrap in manufacturing processes, rather than to continually produce more and

more fresh material at the expense of the environment. For this reason, recycling scrap metal is both cost effective for the buyer, and environmentally friendly all round."

"Metals have specific properties, which provide unique benefits and advantage for their recycling. Unlike other recycled materials, such as paper and plastic, metals can be repeatedly recycled without degradation of their properties. Metals from secondary sources are just as good as metals from the primary sources," he added

Ikbal Nathani has over 45 years of experience in steel & recycling industry. Metal Recycling Association of India (MRAI) promotes all types of metal recycling (ferrous, non-ferrous





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and ship-recycling) within India.

Scrap metal recycling which has been practiced since ages, embodies the spirit of sustainable development. The World Commission on Environment and Development has defined it as "development, which meets the requirements of the present without compromising the ability of future generations to fulfill their own needs." Recycling widens the efficient use of metals and minerals, reduces pressures on landfills and incinerators, which results in significant major energy savings compared to primary production.

Some of the important categories of scrap metal recycling include lead/acid battery recycling, nickel content battery recycling, electronic scrap recycling, used iron & steel recycling, scrap steel & iron recycling, mill prepared steel scrap recycling, railroad scrap & ship breaking, copper scrap recycling, bronze and brass scrap recycling, aluminum scrap recycling, zinc scrap recycling, magnesium scrap recycling, tin scrap recycling, lead scrap recycling, stainless steel alloy scrap recycling, titanium scrap recycling, tungsten scrap recycling, exotic metals scrap recycling, scrap gold recovery, silver recovery, scrap platinum group metals etc.

Industry Overview

The recycling of scrap metals has been in practice since ancient times and today it has turned into a multi-billion dollar business across the world. The recycling companies collect the metal scrap from individuals, machine shops, manufacturers, government entities, and other industries. Scrap metal is composed of several items that include, - aluminum cans, used pipe, automobiles, appliances, sheet metal buildings, pots, computer components, pans, bicycles, lawn furniture, copper wire, obsolete equipment, old structural steel building frames, tin cans, etc.

These recycled metals find applications in the production of automobiles, structural steel, aluminum siding, and toys.

"Recycling one tone of aluminum saves eight tonnes of bauxite ore, 14 megawatt hours of electricity, 6300 litres of oil and 7.6 cubic metres of landfill. Use of iron and steel scrap drastically reduces CO₂ emission by 58 percent, aluminium scrap by 92 percent, copper scrap by 65 percent and lead scrap by 99 percent," added Mr Nathani.

To promote scrap metal recycling and to further promote the greater awareness of the industry's role in conserving the future through recycling, MRAI is a national association that brings under one umbrella all the various regional recycling associations as well as individual companies as its members. It liaises with various Indian government authorities (MoEF, Steel Ministry, DGFT, State Pollution Control Boards, Port Authorities, Customs and others) on recycling related issues. Globally, MRAI works with Bureau of International Recycling (BIR), Belgium

and Institute of Scrap Recycling Industries (ISRI) USA.

Types of Scrap Metals

Scrap metal can be categorized into two types, viz. - ferrous and nonferrous. Scrap iron and steel are referred as ferrous scrap that include - scrap from old cars, steel beams, household appliances, railroad tracks, ships, and food packaging and other containers.

Nonferrous scrap metals include scrap metals other than steel and iron. Some common examples of non-ferrous scrap, include - aluminum (including foil and cans), copper, zinc, lead, nickel, cobalt, titanium, chromium, and precious metals. Although there is less nonferrous scrap than ferrous scrap, it is often financially more worthy. Millions of tonnes of nonferrous scrap metal is recycled by processors and consumed by secondary smelter, refiners, fabricators, ingot makers, foundries, and other industries.

Steel scrap is necessary in the process of making new steel and can be recycled several times without losing its properties. Due to its magnetic characteristics, the metal is easy to recover even from unsorted waste and residual waste from waste plants.

Aluminum foil, laminates will oxidize in an incinerator and discharge energy similar to coal. Aluminum cans will generally melt releasing some energy and when cooled can be separated from the bottom ash.

Market Outlook

The production of crude steel in 2009 in India stood at around 60 million MTS. Between January–October 2010, crude steel production stood at around 55.76 MTS, hence annual production for 2010 is expected to reach about 66–67 Million MTS. During April 2009 to March 2010 total ferrous / alloy / stainless / cast iron scrap imported into India was around 5.24 million MTS (out of which ferrous scrap was about 4.75 million MTS).

Says Zain Nathani of MRAI, "with the downward correction in international scrap prices in October 2010 along with the Indian Rupee appreciating against the US dollar,

Indian ferrous scrap buyers were very active in that period. Lots of sales concluded in the last 6–8 weeks at levels of US \$400–410/MT CFR India basis in containers. Around 7–8 bulk shipload sales were also done between US \$405–408/MT CFR India basis.”

“With the winter season now in progress and tight supply of scrap, international ferrous scrap prices for December/January 2011 shipments have firmed up once again and offers for new shipments are now at anywhere between US \$470–490/MT CFR India basis and further price increases cannot be rolled out.”

In 2009, around 95 million MTS of Steel Scrap was traded globally in 2009. In 2009–10, scrap imports into India were around 5.24 million MTS. While USA and EU have increased their share of global steel scrap exports, Japan has become a major player in East Asia. While Turkey continues to dominate steel scrap import market, Asia plays an important player in the region.

Savings from Recycling

The savings from scrap metal recycling stems from two common processes in primary metal reduction. First, the comminuting (particle size reduction) of minerals, often hard rock minerals, is usually essential for subsequent chemical and physical treatment. About 60 percent of the total energy used in the production of most metals is absorbed when crushing and grinding the ores. Second, primary production is preceded on reducing the metals from their chemically stable oxide or sulfide mineral form, an inherently energy intensive exercise. Thermo chemical reduction (e.g. iron ore in the blast furnace) is typically less demanding than electrolytic reduction however it still needs higher temperatures than secondary smelting.

Electrolytic reduction, which is used for zinc and aluminum, is very energy intensive. To exemplify, energy savings made when metals are produced from secondary sources compared to primary sources are—zinc 60 percent; steel 74 percent; lead 76 percent; copper 85 percent and aluminum 95 percent. In addition, the reduction in pollution made from recycling can be significant.



For aluminum, there is a 79 percent material conservation, a 95 percent reduction in emissions and a 97 percent reduction of effluents through recycling.

For steel, one sees a 90 percent savings in virgin materials, an 86 percent emissions reduction, a 40 percent effluent reduction, a 76 percent water pollution reduction and a 97 percent mining waste reduction through recycling. Of course, many of these advantages also transform into significant economic savings for producers.

When a recyclable metallic material makes up part of a stream emitted from an industrial facility, the material is pertained to as "new scrap," expressing that it never comprises part of a final product. Recycling such new scrap within the same facility, or to another facility as a raw material, is a typical example of waste minimization at source, widely recognized as the most efficient technique of pollution prevention. Reprocessing of "old scrap," material, which has come to the end of its beneficial life, diverts this metal from disposal in landfill. The increasing cost and problems of landfilling, and the degrading grade and increasing complexity of mineral reserves, will persist to tip the scales in favor of increased recycling.

Resource Recycling Parks

At a MRAI conference held last year in New Delhi, Dhawal Shah, Director, Metco Marketing (India) Pvt Ltd, laid the road map for a joint initiative between the government and the industry to promote recycling. The presentation covered the following points. The development has to be on reclaimed tidal flat land, and not farming or occupied land and close to sea port. The state and central

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government bodies including environment protection bureau, customs, ports authorities, industrial and commercial departments and the developers should work in tandem with each one operating from the part and also using common software, tracking all inward/outward movement of materials. The park has to have pipelines built connecting to central sewage and solid waste treatment plant built within the park. Non treatable waste goes further to an incineration plant. The recyclers, waste treatment plants as well as companies offering technical support should be given subsidies in VAT, income tax etc. The state-of-the-art infrastructure will enable to attract foreign investments.

Future Outlook

The scrap metal recycling industry in India can contribute significantly to the national economy and the reduction of the country's trade deficit. The industry can also contribute significantly to conserving the world's natural resources. Metal recycling the world over is primarily market-driven and this will continue to be the case for the foreseeable future. This strength, however, is largely a reflection of continuously increasing metals consumption and waste production. As long as the prices of scrap metal

