

ENVIRONMENTAL STEWARDSHIP



EXPLORING A CIRCULAR BUSINESS MODEL

Every year the metals & mining industry produces ~174 billion MT of waste. Not only are these waste volumes great, but they often contain traces of heavy metals and chemicals. At best, these wastes result in large tracts of land being used to safely store them, and at worst, they can cause significant harm to environment and society, in instances of run-off or a breach in the storage areas.

For many years, the industry has been evaluating solutions to minimize and reuse these wastes, however these have been imperfect, and often-times result in the generation of alternate waste-streams. It is estimated that nearly 40% of this waste can be recycled and converted into value-added-products.

In India, the unscientific disposal of hazardous waste has become a significant environmental issue. One reason is the growing unavailability of secure landfill sites to safely store this waste.

At Vedanta, we follow the waste hierarchy principles of reduce, reuse, recycle and dispose/store responsibly. Given the large volumes of waste we generate, we are always on the lookout for technologies or partners who can help us convert this “waste to wealth”. Enter Runaya Refining and their technology-enabled sustainable solutions for mineral waste processing.

RUNAYA – CREATING CIRCULAR ECONOMY SOLUTIONS FOR THE METALS & MINING INDUSTRY

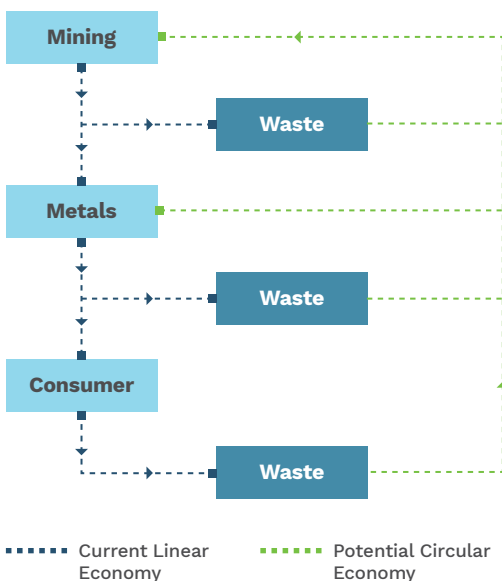
The world produces ~65 MMT of aluminium every year. Approximately 1.5% of the total quantity is lost in the form of aluminium dross – a by-product – that contains recoverable aluminium, aluminium nitrides and oxides, spinel, dimagnesium silicate, gupeiite, and sodium titanate. Aluminium dross is classified as a hazardous waste under the prevailing Indian Environmental regulations due to its potential environmental and health impacts. Current practice is to responsibly dispose this waste by sending it to State authorized recyclers/

re-processors who process the waste as per approved guidelines by the Central Pollution Control Board. Recyclers attempt to recover aluminium from the dross, but because they handle cold dross, the recovery is limited to ~20% metal by weight from the dross.

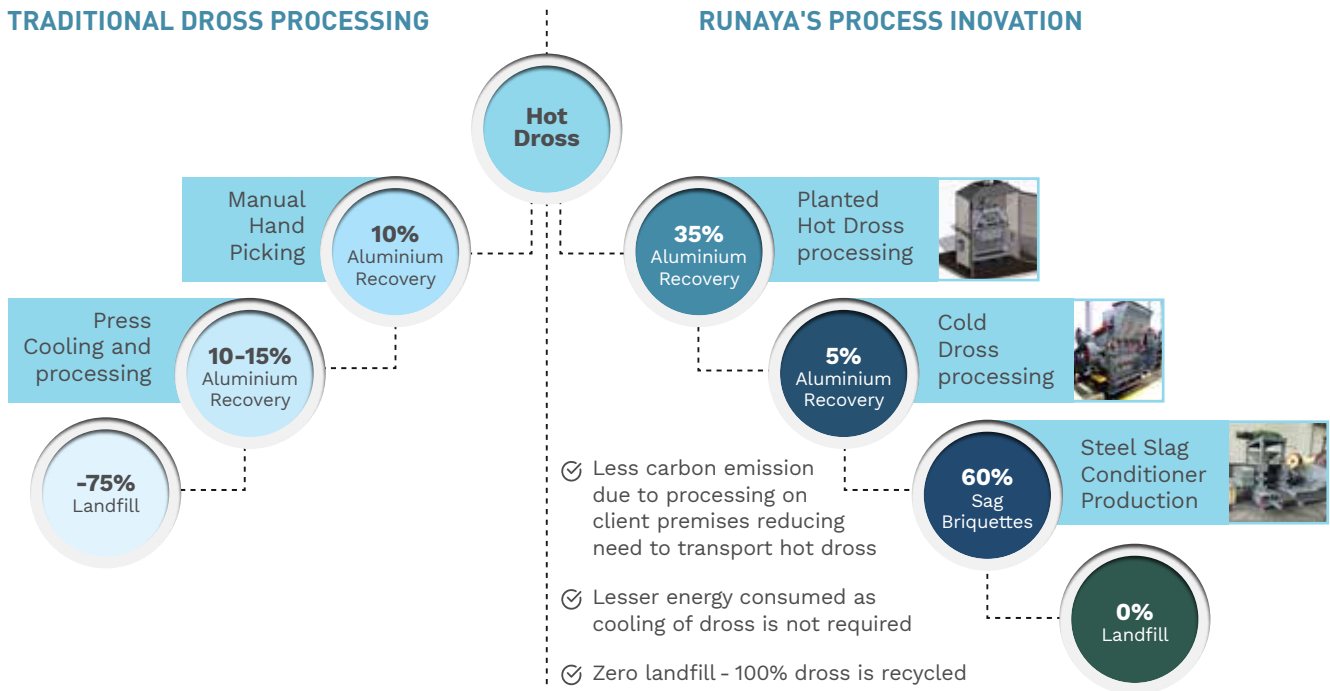
The proprietary high-end technology used by Runaya breaks up the recovery process into two-stages – (i) Recovery from the hot dross, and (ii) Recovery from the cold dross. The combined effect is that one is able to recover ~40% of the metal by weight (or 90% of the metal present in the dross). This is a significant jump, resulting in improving the economic viability of the process. Also given that it is processing the dross in its melted state in stage 1, there is a significant reduction in the energy requirements compared to other solutions in the market.

Additionally, in keeping with Vedanta’s “Zero Waste” philosophy, Runaya, which has a technological tie-up with TAHA International S.A (Luxemburg), is able to take the non-metallic portions of the residual dross and process it to produce briquettes that can be used as slag conditioner in the steel industry.

The end result is that 100% of the dross can be reutilized – through metal recovery and the creation of a value-added-product. This eliminates the amount of waste sent to secure landfills and is an environmentally safe way of utilizing a hazardous waste. It also decreases the dependence on the other raw materials used as slag conditioners in the steel industry – thereby living up to the ideals of circular manufacturing and circular economy.



TRADITIONAL DROSS PROCESSING



Runaya Refining Site, Odisha

A PARTNERSHIP ON THE BRINK OF A REVOLUTION

A circular economy is one that is restorative by design, aiming to keep products and components and materials at their highest utility and value at all times.

The solution being offered by Runaya is an example of what is possible for the aluminium industry and fulfills our vision of “zero waste” by eliminating a hazardous waste-stream. Vedanta is excited to partner with them and usher in a revolution for the resources sector in more ways than one.



“Runaya’s process is a game-changer for the Aluminum sector. Not only does it have the potential to eliminate a hazardous waste-stream, but it converts that waste into value-added products. It is a sustainable solution in the truest sense – addressing environmental, economic, and social aspects.”

Ajay Kapur
CEO Vedanta Aluminium & Power