

Hitachi Zosen
INOVA

HZI InovaRe

Profitably Recovering Secondary Raw Material from Waste



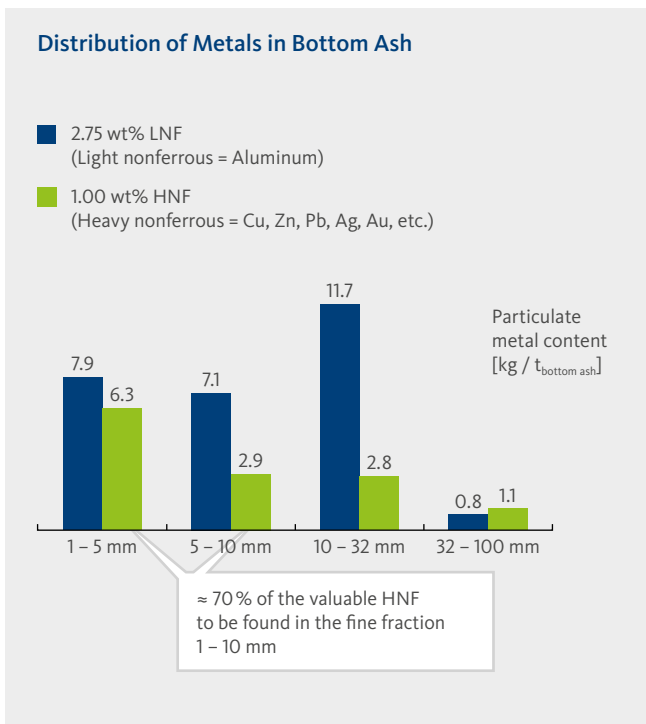
From Waste to Resource Management

It has long been known that the residue from the combustion process is much more than simply bottom ash, and actually contains valuable metals and minerals. InovaRe is a modular system from Hitachi Zosen Inova that enables operators to boost the profitability of their energy-from-waste plants by efficiently treating discharged bottom ash.

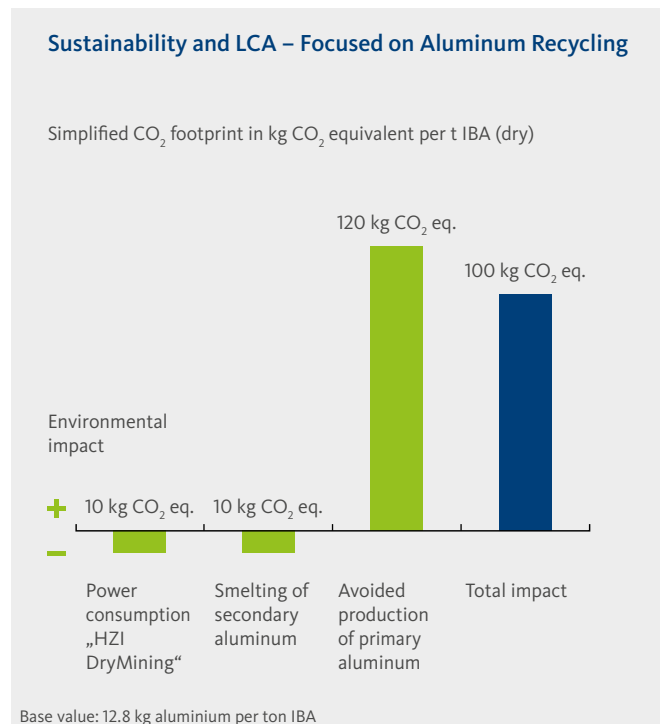
Recovering metals from bottom ash is an increasingly significant aspect of urban mining for operators of energy-from-waste plants. The process has four key benefits:

- It enables the profitable recycling of valuable raw materials such as copper, aluminum, and gold
- It reduces the amount of residual bottom ash that has to be transported and stored in landfill
- It saves significant amounts of CO₂ compared with primary production thanks to recycling
- It secures a high-quality mineral fraction suitable for subsequent reuse

Hitachi Zosen Inova (HZI) delivers these benefits with its InovaRe technology. This modular system for treating bottom ash, recovering and recycling minerals and metals is based on four underlying products: dry bottom ash discharge, dry mechanical bottom ash treatment for conventional wet discharge, HZI Grate for Riddlings, and HZI DryMining. The latter two focus on the <10mm fine fraction, which makes up around 40% of the total bottom ash and contains a significant portion of the valuable metals.



Source: HZI's own measurements



Source: Study by HZI Research & Development

**Dry Mechanical Bottom Ash Treatment:
Proven Technology**

HZI's dry mechanical treatment system enables the effective recovery of minerals and metals from bottom ash extracted using the conventional wet discharge method. These can then be processed further or recycled as secondary raw materials and materials for use in construction. A further advantage is that the low investment and maintenance costs, coupled with the savings in process water, markedly increase the overall efficiency of the plant.



Dry mechanical bottom ash treatment (Poznan, Poland)

Efficiently Recovering Valuable Metals

Around 70% of the valuable non-ferrous metals, such as aluminum, copper, and zinc, as well as silver and gold, are to be found in the <10mm fine fraction of the bottom ash (see chart on the left). With conventional discharge methods, this fraction is largely lost to setting reactions with inert minerals or oxidation processes. This makes separating the metals much more difficult, resulting in poor recovery rates. There are two solutions available:

- dry discharge with integrated or downstream sieving
- HZI Grate for Riddlings



HZI Grate for Riddlings (Zuchwil, Switzerland)

HZI Grate for Riddlings: The Best of Both Worlds

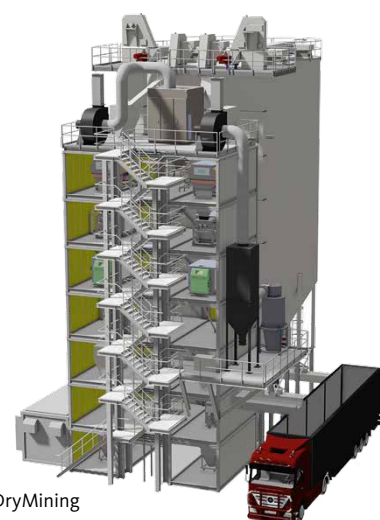
HZI Grate for Riddlings (GfR) separates the fine fraction directly from the grate to give access to the valuable small particles. The GfR is compatible with both new and existing grate installations, involving a modification to the final grate zone. The fine particles fall through narrow gaps of predefined width between the grate elements, helped by mechanical back and forth movements and special deflectors on

the grate, and land in a substructure. A precisely designed flap set-up ensures the process is dust-free. The sieved fine fraction is then extracted for further processing. In addition to high metal recovery rates, dry extraction also ensures the recovered metals are of above-average quality. Discharge of the >10mm fraction of the bottom ash can take place using the existing wet process, with recovery and disposal carried out as before or in an HZI DryMining installation.

HZI DryMining: Innovation Boosting Profitability

HZI DryMining is a fully automated dry treatment tower for use with wet or dry discharge of fine bottom ash, and can be managed directly from the control room or using a local control panel. It has a processing capacity of 10 t/h, with two lines allowing the discharged bottom ash to be fractionated and treated in several phases. The ferrous metals are separated first, with non-ferrous metals then sieved and sorted by density to ensure the recovered particles are of high quality.

Both can benefit from HZI DryMining: individual plants that have no suitable metal recovery installation nearby and groups of plants that want to share the investment costs. Thanks to the weather-proof installation and the use of identical components in both lines, the tower has low maintenance requirements and spare part costs. The guarantee of long running time coupled with additional income from the sale of the recovered metals can significantly enhance the profitability of an EfW plant.



HZI DryMining

