

Grate for Riddlings (GfR)

Advanced metal recovery



Principles of the advanced metal recovery process

The incinerator bottom ash (IBA) produced by Waste to Energy (WtE) plants is a source of valuable non-ferrous metals including aluminium, copper, silver and gold. The majority (around 70%) of these metals are typically found in the fine fraction of the IBA.



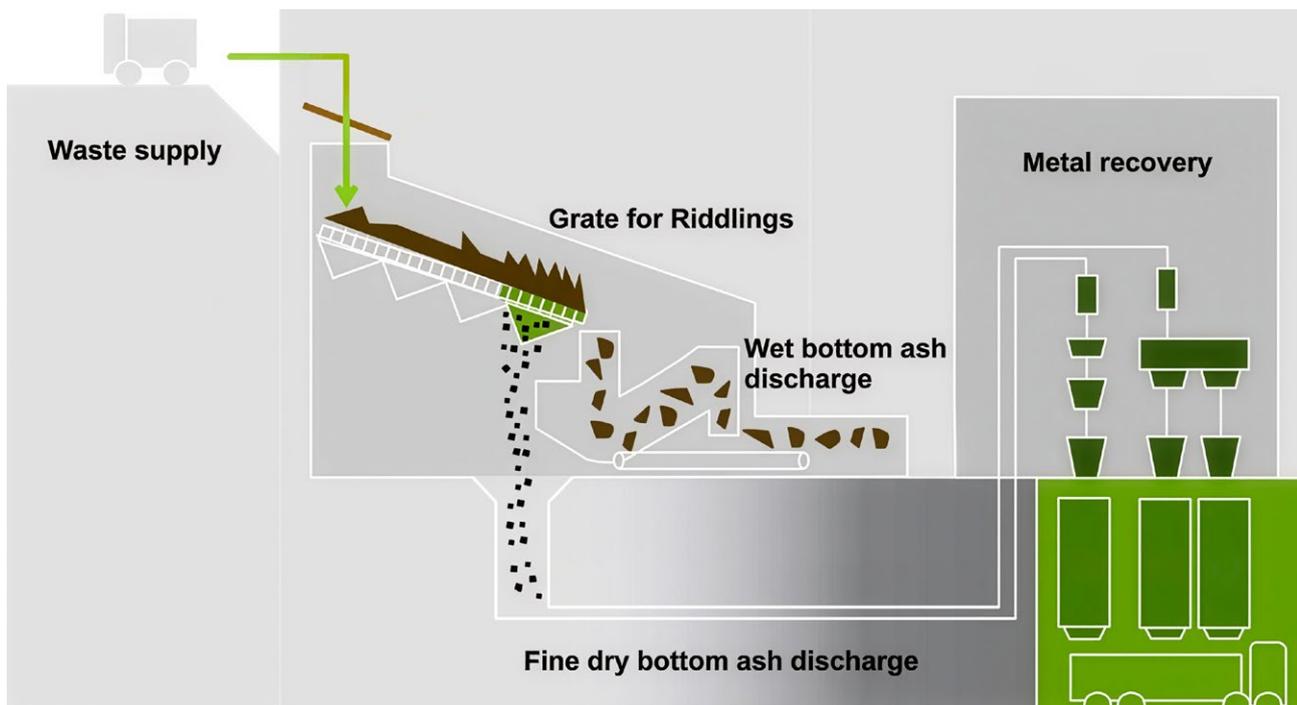
As part of the X2metal™ process the Kanadevia Inova Grate for Riddlings (GfR) is a useful modification designed to improve metal recovery in WtE plants with conventional wet IBA discharge. It works by introducing a screening grate element with slits of a defined width to the final combustion grate zone. This enables the valuable fine IBA

fraction, which accounts for around 40 wt% of the total IBA, to be extracted in a dry state. Separation is assisted by the mechanical sieving movement of the grate superimposed on the feed and by special “deflectors” on the grate. Dust-tight, dry discharge of the separated fine fraction for further processing ensures high metal recovery rates and high-quality recovered metals.

The remaining bottom ash is discharged using the conventional wet extraction method. GfR optimises both the quantity and quality of the recovered metals. By reducing the metal and water content in the remaining residue, it also lowers transport costs and landfill gate fees.

Benefits
More efficient metal recovery
High precious metal content
Preserves metal quality
Reduces transport costs & landfill gate fee
Provides environmental benefits and supports circular economy

Principle of a Grate for Riddlings setup



Grate for Riddlings (GfR) – key figures

Dry IBA extraction	
IBA fine particles extracted with GfR	< 10 mm
IBA mass fraction extracted with GfR	40 wt%
Efficiency of GfR in sieving IBA fraction	> 70%
Minimum quantity of IBA for the integrated X2metal™ process	> 10,000 tons/a

Metal recovery	
Nonferrous metal content in GfR product	up to 5.5 wt%
Precious metal content in GfR product	Copper: 570 g/kg Silver: 1,830 ppm Gold: 120 ppm

Economics	
Payback period	< 4 years

Environmental	
Reduction in water consumption	> 30 wt%
Reduction in landfilled residue	> 8 wt%
CO ₂ savings on recycling of nonferrous metals	2,471 kg CO ₂ eq/ton NFM ¹⁾
CO ₂ savings on recycling of ferrous metals	1,549 kg CO ₂ eq/ton FeM ¹⁾

All data are derived empirically from our experience; however, they depend to a large extent on waste composition.

¹⁾ According to a study from the Institute of Circular Resource Engineering and Management (CREM) in Hamburg



Kanadevia Inova AG

Hardturmstrasse 127
8005 Zurich
Switzerland
P +41 44 277 11 11
info@kanadevia-inova.com
www.kanadevia-inova.com