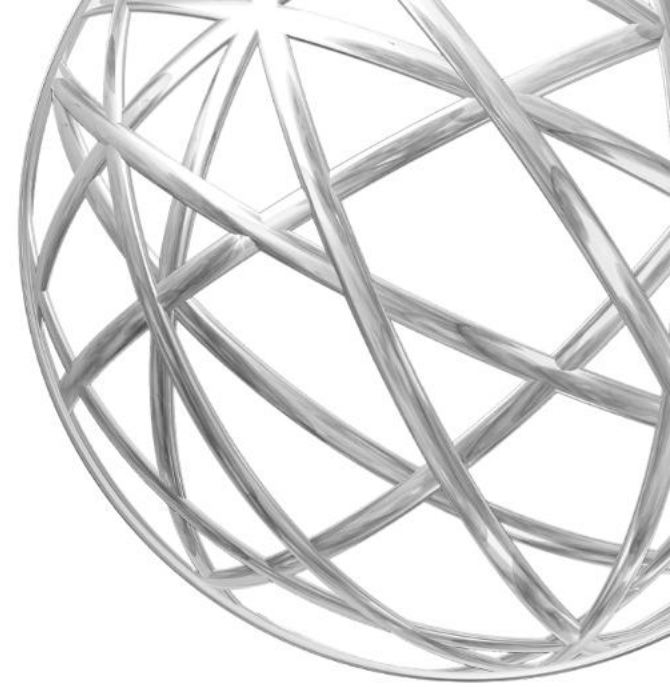


Sustainable Aluminium Dross Management Guidance

A practical value-chain framework to reduce formation, preserve metal value, manage risk and advance circularity

For aluminium producers, recyclers and dross processors



INTERNATIONAL
ALUMINIUM

Dross is unavoidable — value loss is not

Dross formation cannot be eliminated, but disciplined operations and appropriate technology can materially influence recovery, waste and safety outcomes.

01
Maximise aluminium recovery

02
Reduce waste generation

**Integrated
management
unlocks value**

04
Support circular economy goals

03
Improve safety performance

Tailor management by dross stream

White dross, black dross, salt cake and non-metallic residues differ in composition, recovery potential and regulatory context.

Stream	Typical source	Management implication
01  White dross	Primary production and cast-house operations	Higher metal recovery potential; preserve value through rapid cooling and disciplined recovery.
02  Black dross	Secondary aluminium recycling	Variable composition; align processing route with feedstock quality and recovery objectives.
03  Salt cake	Rotary furnace processing	Salt-rich residue; control storage, treatment and downstream disposal or reuse obligations.
04  Non-metallic residues	Conventional and emerging recovery technologies	Seek beneficial use in cement, refractory materials, metallurgical additives and other industrial pathways.

Takeaway: adapt management to material characteristics, recovery potential and local operating conditions.

Manage dross as a value chain

The guidance links operational controls, recovery technology and stewardship into one continuous improvement loop.



Continuous improvement closes the loop

Start where the largest benefit is created

Preventing oxidation during furnace melting and molten metal handling delivers the strongest combined economic and environmental benefit.

Operational levers

01 Transfer

02 Turbulence

Minimise splashing and surface disturbance during charging and mixing.

03 Oxygen exposure

Reduce unnecessary exposure of molten aluminium to air.

04 Temperature

Control furnace temperature and avoid excessive superheat.

05 Charging & alloying

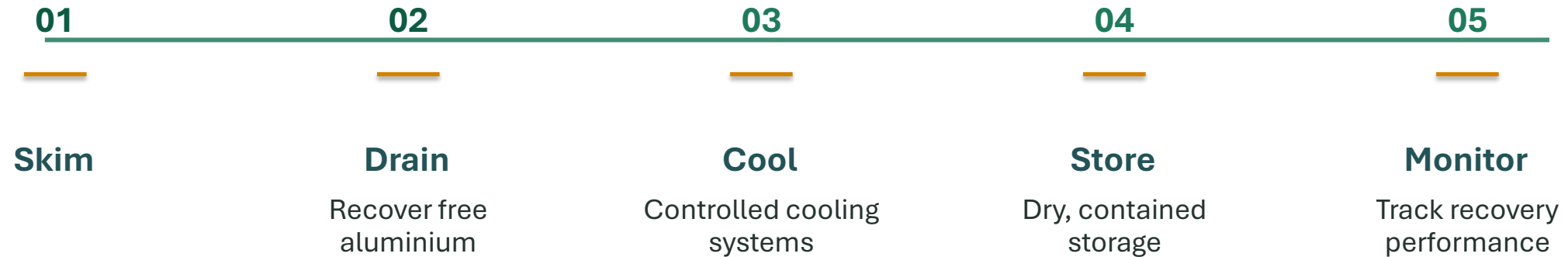
Optimise practices to reduce oxidation and metal loss.

06 Furnace

Use appropriate furnace technology for the type of aluminum material being processed

The first minutes after skimming preserve value

Improper handling accelerates oxidation, reduces recoverable aluminium and raises safety risk. Rapid, controlled cooling protects the value in the dross.



Operator competency and operational discipline are decisive factors in recovery outcomes.

Select processing technology for the job

Available routes range from mature pyrometallurgical processing to plasma, hydrometallurgical, low-salt and salt-free options.

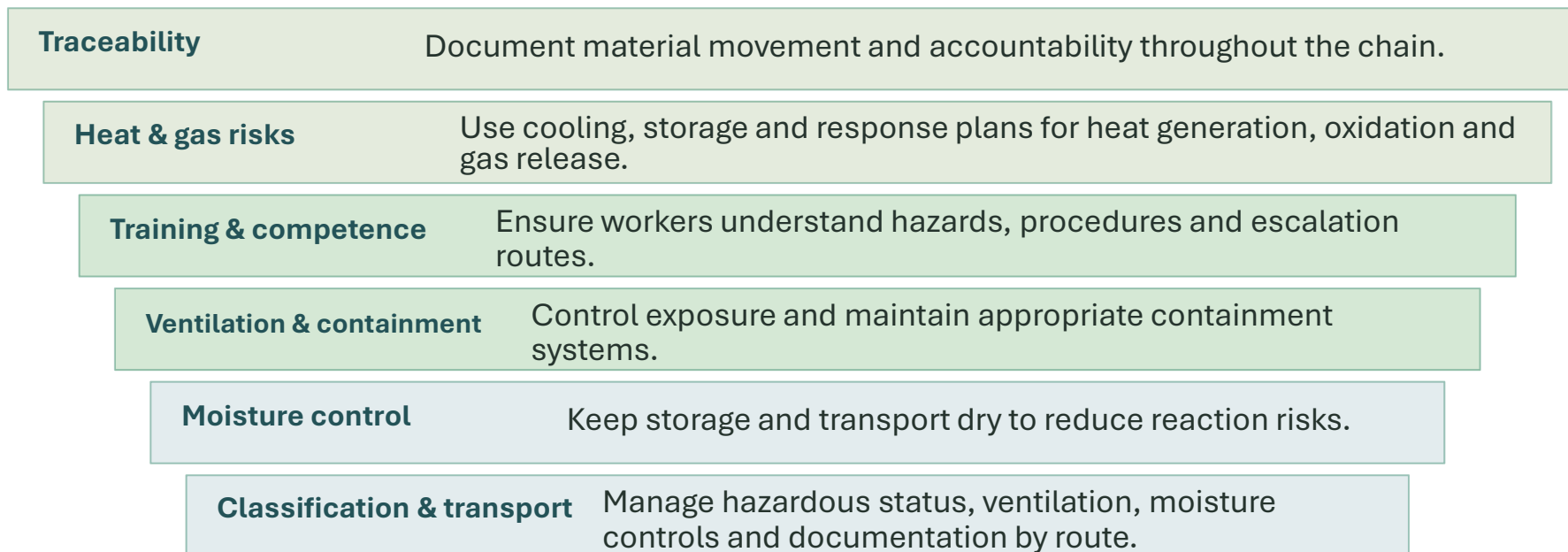
Option	Best fit	Watch-outs	Decision tests
Tilting rotary furnace	Dominant option where high recovery and maturity are required.	Manage salt residues, energy use and downstream residue handling.	Recovery yield; residue generation; economics.
Plasma / advanced systems	Useful where emissions and residue impacts are strategic priorities.	Validate capital cost, energy profile and operating support.	Environmental footprint; regulatory fit; readiness.
Hydrometallurgical routes*	Supports residue treatment and targeted resource recovery.	Control reagents, effluent, water use and local permitting. potential to form obnoxious or flammable gases.	Resource yield; treatment duty; compliance.
Low-salt or salt-free routes	Attractive where residue minimisation or compliance pressure is high.	Confirm feed sensitivity, robustness and achievable recovery.	Aluminium yield; energy use; reuse potential.

* Not used industrially

Principle: match technology to material characteristics, recovery objectives, environmental footprint and regulatory requirements.

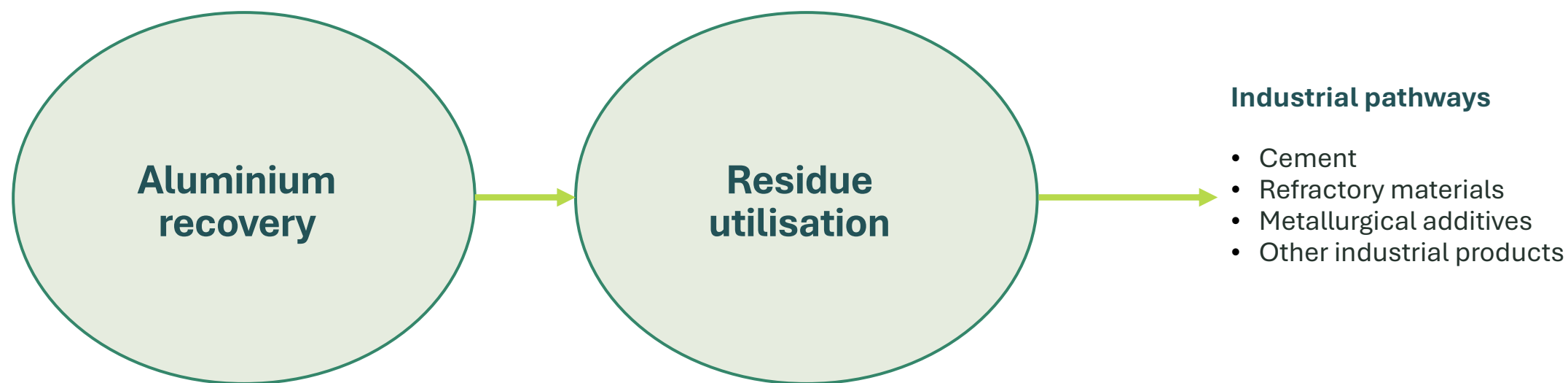
Safety and compliance require system controls

Dross can pose heat, oxidation, gas-evolution and moisture-interaction risks; classification and transport duties vary by jurisdiction.



View dross as a resource, not a waste stream

Modern recovery can maximise aluminium yield and create beneficial use pathways for non-metallic residues.



Management priorities

Reduce landfill disposal • monitor energy use and carbon intensity • evaluate low-salt and salt-free technologies • benchmark performance.

Put the guidance into an operating model

The key messages resolve into four mutually reinforcing management disciplines.

Operational excellence

Reduce formation, standardise handling and strengthen operator governance.

Technology & recovery

Select processes for the material, measure recovery and evaluate innovation.

Compliance & stewardship

Manage regulation, transport, storage, traceability and accountability.

Circularity & sustainability

Maximise resources, expand residue reuse and reduce footprint.

01 Baseline → **02** Standardise → **03** Measure → **04** Improve

Treat dross as a recoverable resource

Sustainable performance comes from reducing formation at source, preserving value through disciplined handling, selecting appropriate technology and closing the loop on residues.

- 01

Baseline dross formation and recovery performance.
- 02

Standardise skimming, cooling, storage and monitoring.
- 03

Evaluate technology and reuse routes against local constraints.

