Equipment Details

MAGNETIC SEPARATION

mtRED

Dry magnetic separators that provide the sharpest separation.

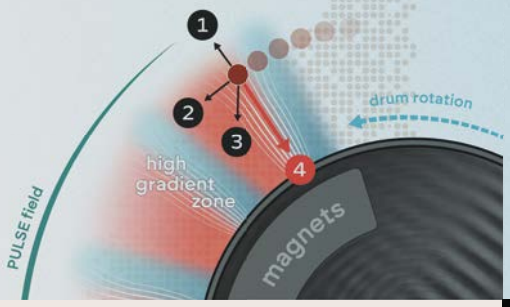
Mineral Technologies
A Downer Company

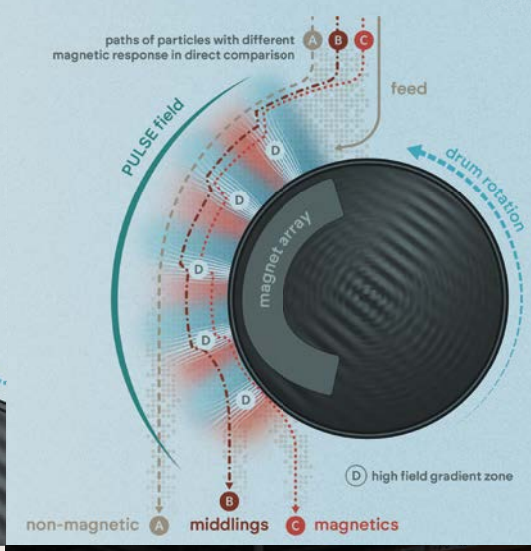
Process Design | Engineering | Equipment

Delivering certainty in fine mineral recovery

How it works

- Feed Controled
- Rotation applies centrifugal force
- Field captures the magnetics
- Pulsing shakes non-magnetics free
- Product Streams Divide





The flowsheet may be right but your drum may be the constraint.

mtRED (Ex Reading)

The Rare Earth Drum Magnetic Separator recovers weakly magnetic and fine particles that conventional drums miss. It delivers cleaner separation between magnetic, middlings and non-magnetic products without redesigning your plant.

Advanced magnetic array

The magnetic array is engineered to balance field intensity with a strong field gradient. Multiple high-gradient zones create repeated particle interactions and more cleaning opportunities during each revolution.

Field intensity exceeds **0.7 Tesla** at the drum surface, supporting selective separation rather than simply delivering a higher gauss number.

$$F = \frac{x^V}{2\mu_0} \cdot \nabla(B^2)$$

This is given — This is where our engineers control things

Technical Features

Your magnetic separation may appear stable while valuable material continues to report to tails or middlings accumulate in the circuit. The limitation may not be the flowsheet, but how effectively particles interact with the magnetic field under real operating conditions.

The mt RED gives you the pulse field gradients, stable particle trajectory and operating range needed to sharpen the separation without adding unnecessary stages.

Relevant when

- Recovery targets are missed despite stable operation
- Valuable material is still reporting to tails
- Middlings are building up in the circuit
- Fine or weakly magnetic particles are involved
- High wear on metal drums costs

The Engineering Principle

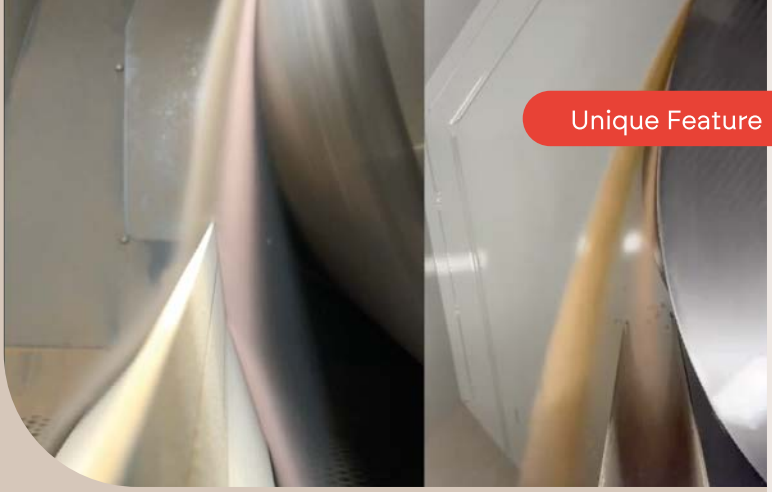
Field strength creates the conditions for separation. Field gradient determines how strongly a moving particle responds. Centrifugal, gravitational and motion-induced forces are largely set by the operating conditions. Magnetic force (driven by the field gradient) is the component that can be shaped through magnetic-array and drum design.

C-Skin eliminates mineral flick for steady, consistent mineral separation

The proprietary non-conductive drum shell eliminates eddy currents at the drum skin. This removes the associated heat generation, annoying drag and operating instability.

With drastically reduced mineral flick and a stable discharge trajectory, particles report more consistently to the intended product stream. The wider usable speed range also gives the Process Engineer more freedom to optimise the cut point.

Unique Feature



Standard Skin | **mt** C-Skin

Mineral sands
Improve recovery and product quality in ilmenite, garnet and related mineral-sands circuits.

Scavenging and recovery
Recover valuable magnetic material from middlings or tail streams before it is lost.

Concentrate upgrading
Remove non-magnetic contamination from magnetic products to improve final purity.

Fine-particle processing
Improve separation where smaller particles and weak magnetic response limit conventional drums.

Benefits of Solution

Cleaner product streams
Eliminate mineral flick and reduce cross-contamination between magnetic, middlings and non-magnetic fractions.

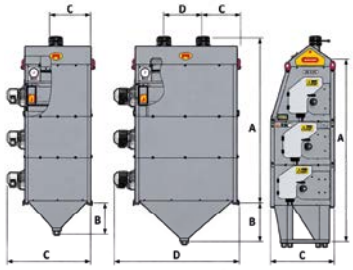
Freedom to optimise
Use a wider range of drum speeds without conventional thermal or stability constraints.

Reduced recirculation
Sharpen the cut point, reduce middlings build-up and avoid unnecessary retreat stages.

Stable, repeatable performance
Maintain a predictable split line through stable drum geometry and particle trajectories.

mtRED Configurations

Mineral Technologies offers modular mtRED configurations across a wide range of capacities and applications.



Parameter	**400 mm** drum	**600 mm** drum
Drum length	1,000 / 1,500 mm	1,000 / 1,500 mm
Separation stages	1, 2 or 3	1, 2 or 3
Nett weight	750 – 2,600 kg	950 – 3,500 kg
Overall height (A)	1,460 – 3,060 mm	1,680 – 3,680 mm
Underfloor clearance (B)	500 / 700 mm	600 / 750 mm
Width (C)	1,100 mm	1,350 mm
Overall length (D)	1,770 / 2,300 mm	1,920 / 2,450 mm
Power consumption	1.5 / 2.6 / 3.7 kW	2.6 / 4.8 / 7.0 kW
Dust extraction	150 m³/h	150 m³/h

Mineral DNA

We start with the mineral not the equipment.

FACT: No two ore bodies behave the same. That's why one-size-fits-all solutions rarely deliver the best recovery.

Let us help you discover your ore body's Mineral DNA, and whether the mtRED is the right technology to recover more of what matters.

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