



Mt Weld Rare Earth Mine Case Study

At a glance

Mt Weld, located in the Goldfields Region of Western Australia, is one of the highest grade rare earth mines operating in the world. In 2014, the mine faced a potential production closure if it did not address critical storage capacity issues within its tailings dam.

A global search for answers revealed the best solution was Phibion's Accelerated Mechanical Consolidation - and it was right on their doorstep.

Key metrics

In just two years following the introduction of Phibion's MudMaster® at Mt Weld, the mine reported the following key results:



70%
water recovery rate



50%
reduction in
tailings volume



+40KPA
shear strength ensuring
stability for rehabilitation



CHALLENGE



Mt Weld tailings comprise unrecovered rare earth minerals and waste ore, mostly occurring as very soft, fine grained, porous, friable siltstone. Almost half of the material is smaller than one micron (<1µm). These fine and hydrated minerals hold on to water, presenting a challenge for mine operator Lynas Corporation to consolidate tailings for storage and rehabilitation. Faced with the prospect of having to stop production unless mine tailing storage capacity could be increased, the Mt Weld team began a global search for solutions. Filtration, geotube centrifuges and other more novel technologies were discounted due to cost, operational and technical risk.

SOLUTION



With the simplicity embodied in the idea that "necessity is the mother of invention", the Mt Weld team found the best solution was conveniently on their doorstep and available without the Capex required with other conventional solutions.

Inline coagulation and flocculation, using a bi-product chemical from the mining operation, followed by Accelerated Mechanical Consolidation, delivered through Australian-owned Phibion's MudMaster®, transformed the Mt Weld tailings management system.

In the two years since partnering with Phibion in 2018, the Mt Weld TSF fill rate remained steady, despite increased mining activity. This meant the mine was also able to defer construction and capital costs of a second and subsequent tailings dam by two years.

BENEFITS



1

REDUCTION IN TAILINGS VOLUME

50% reduction in total tailings volume, despite increased overall tailings deposition from operations

2

IMPROVED TAILINGS MANAGEMENT

Increase in stored density allowed Mt Weld to defer construction of additional tailings storage facilities

3

COST

Virtually no up-front capital outlay to deploy Accelerated Mechanical Consolidation



"Our particles are really small - almost half the material is smaller than one micron. There's also a significant proportion of hydrated minerals. These fine and hydrated minerals like to hold on to water, making it challenging to remove the water and consolidate tailings for storage and rehabilitation. We looked across the globe for solutions... and none worked well enough. Our clever team found the solution on our doorstep." - **Amanda Lacaze, Managing Director of Lynas Corporation Ltd**

Phibion delivers:

Tailings Management Technology and Services

- Advanced in-situ mechanical dewatering technology
- Making tailings dams safer, smaller and sustainable - real results in realtime

Accelerated Mechanical Consolidation (AMC) dewatering technology

- Reduce tailings volume & footprint by up to 50%
- Recover water by 40%
- Increase density by 50%
- Increase strength up to 35kPa

Global reach with offices in Australia, Jamaica, Chile and Brazil

- Manufacturing facility in Brisbane, Australia

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SCAN TO LISTEN

Lynas Corporation Ltd
Managing Director Amanda
Lacaze describes the
importance of Phibion's
Accelerated Mine
Consolidation at Mt Weld:

