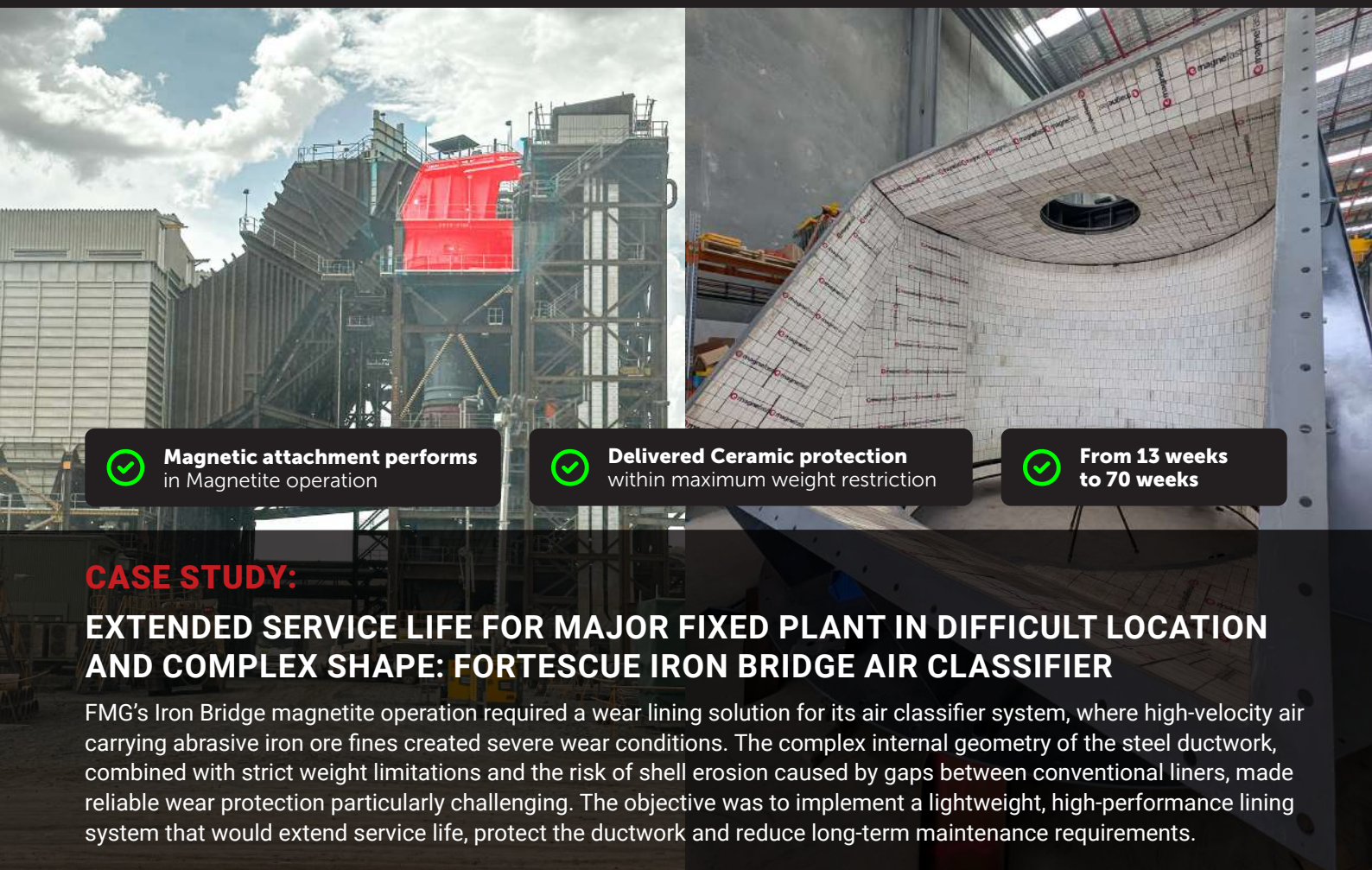




Magnetic attachment performs
in Magnetite operation



Delivered Ceramic protection
within maximum weight restriction



From 13 weeks
to 70 weeks

CASE STUDY:

EXTENDED SERVICE LIFE FOR MAJOR FIXED PLANT IN DIFFICULT LOCATION AND COMPLEX SHAPE: FORTESCUE IRON BRIDGE AIR CLASSIFIER

FMG's Iron Bridge magnetite operation required a wear lining solution for its air classifier system, where high-velocity air carrying abrasive iron ore fines created severe wear conditions. The complex internal geometry of the steel ductwork, combined with strict weight limitations and the risk of shell erosion caused by gaps between conventional liners, made reliable wear protection particularly challenging. The objective was to implement a lightweight, high-performance lining system that would extend service life, protect the ductwork and reduce long-term maintenance requirements.



LOCATION: Western Australia
YEAR: 2026
APPLIC.: Air Classifier System
SOLUTION: Magnefast™ Ceramic Liners
MATERIAL: Magnetite Ore

ISSUES ON SITE:

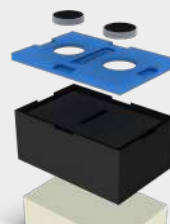
The original air classifiers were lined with a trowel-applied cementitious wear lining that was both labour-intensive and time-consuming to repair. Due to the complexity of the lining system, maintenance could not be completed in situ. Instead, the entire air classifier had to be removed from the top of the duct and replaced with a spare unit an expensive heavy lift operation requiring extended planned shutdowns at a remote site.

The Site Engineers were looking for a more practical and efficient wear protection solution that could:

GOALS:

-  Extend wear liner service life beyond two years

-  Reduce the time required for liner repairs and replacements
-  Eliminate the need to remove the air classifier for routine maintenance
-  Maintain the existing weight limitations to avoid additional heavy lift requirements
-  Enable rapid in situ replacement of liners in high-wear areas
-  Improve safety by eliminating hot work, external scaffolding, and work at height that requires crane hire.



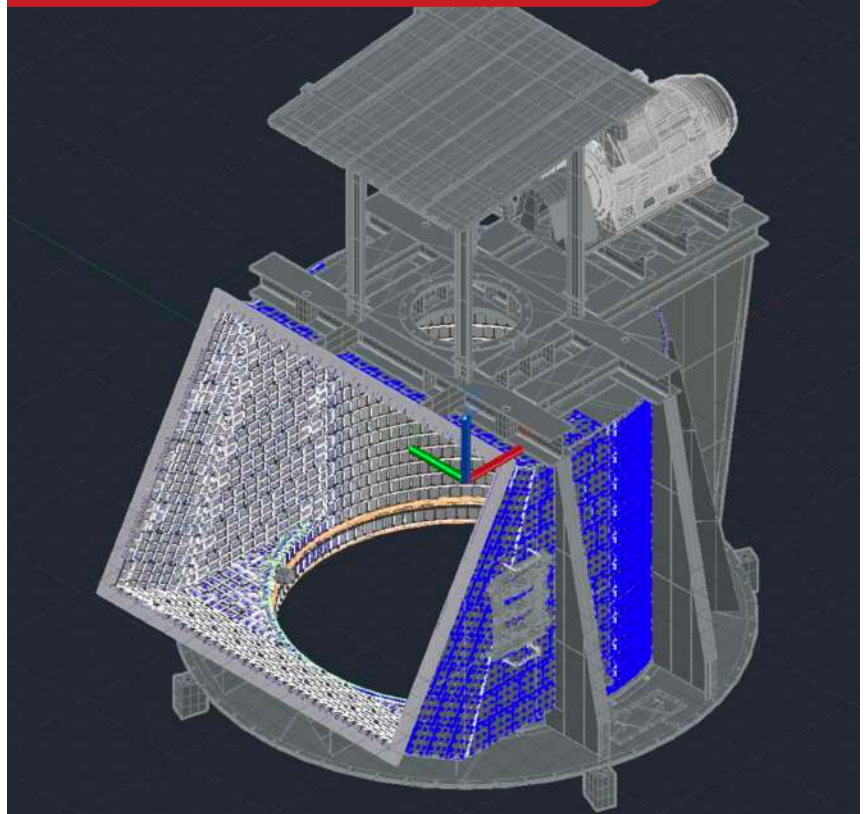
THE SOLUTION

After evaluating a range of wear lining systems, FMG engineers selected the Magnefast™ Wear System for a full air classifier reline and site trial.

Magnefast™ was selected based on the following:

- ⓔ The weight of the ceramic lining system was below the 4100kg limit
- ⓔ Ceramic liners could be fitted quickly and easily to the complex Air Classifier profile as shown in the 3D model
- ⓔ Magnefast™ ceramic liners could be installed/removed and/or rotated quickly and easily (less than 20 seconds) with the potential for in situ replacement of liners in high wear areas
- ⓔ Simple tools (pry bar and rubber mallet) and low OH&S risk
- ⓔ Range of wear lining materials available with Magnefast™ attachment

3D Render of Chute with Magnefast™ Liners Installed



Air Classifier Bare Shell - No Wear Lining



Air Classifier with Corrosion Resistant Primer

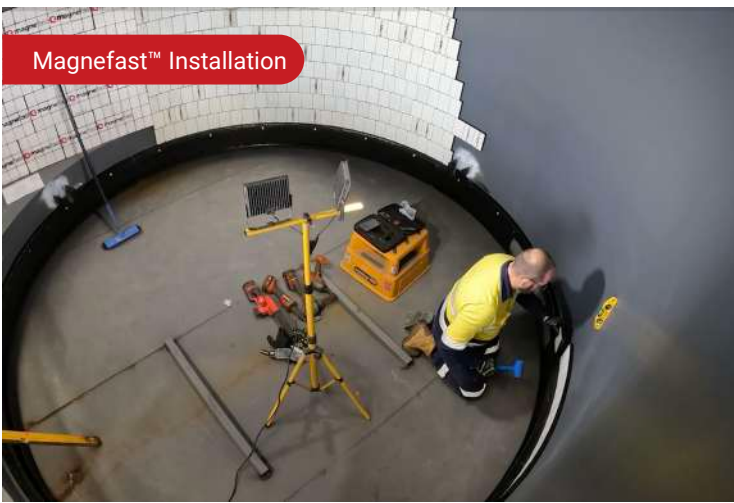


To complete the upgrade, the air classifier steel body was delivered to a facility in Perth facility, the approved Magnefast™ applicator and distributor in Western Australia.

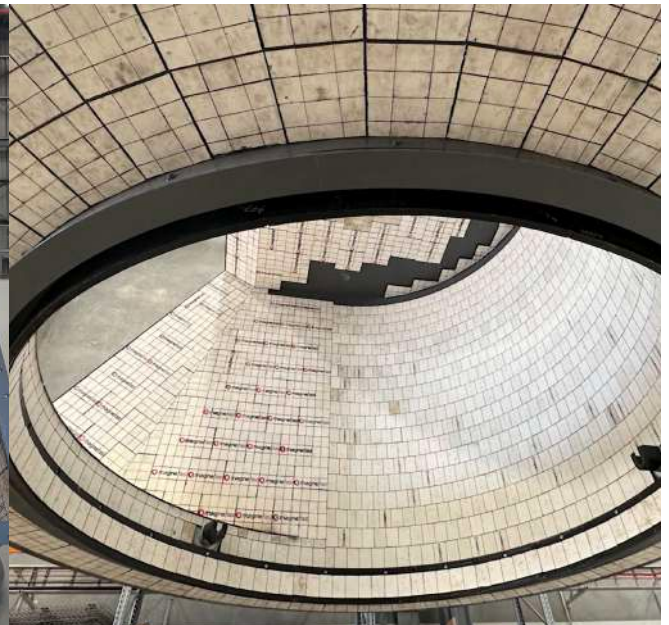
Using a detailed 3D model of the air classifier, a complete wear panel layout and individual panel drawings were developed to ensure precise fitment. The internal surfaces were then shot blasted, prepared, and coated with a corrosion-resistant primer before the Magnefast™ ceramic liners were installed across all internal wear surfaces.

The fully lined air classifier was delivered back to site and commissioned in January 2026, ready for operational service.

Magnefast™ Installation



Air Classifier with Magnefast™ Wear Liner System



RESULTS

The first inspection, conducted during the 14-week planned shutdown, confirmed the Magnefast™ Wear System was performing as intended under demanding operating conditions.

All ceramic liners remained securely in position, confirming no interaction with Magnetite dust during operation and were found to be in excellent condition, with only minor, localised wear observed on the leading edges of a small number of liners. The highest recorded wear was approximately 5mm, while the majority of the liners showed little to no measurable wear.

Based on the inspection findings, the site estimates the lining system will continue operating for at least four additional 14-week shutdown cycles before liner replacement is required. Extending the original wear life from X weeks (With concrete) to 70 weeks.

Furthermore, because wear is concentrated on one side of the liners, individual panels can be simply rotated in the highest wear areas to maximise service life and further extend maintenance intervals. This modular approach provides greater flexibility, reduces replacement costs and minimises future shutdown requirements.

Air Classifier at 14-week Shutdown



Maximum Wear Recorded: 5mm



FEEDBACK FROM SITE ENGINEERING

A lightweight, easy to install and remove ceramic lining system for the outlets of the Iron Bridge Dynamic Classifiers was required. Market investigations resulted in several short-listed options. Working with the team at Elastotec and their Magnefast lining system, the resulting bolt-less A95 Ceramic tiled lining system was selected, keeping the installed weight below the required maximum. Approaching the wear lining improvements with enthusiasm and an eye for detail, the Elastotec team delivered a high quality solution. One key factor is the gaps associated with traditional bolted-in liner systems, which in this application has significant asset longevity ramifications of not managed correctly. The neodymium permanent magnet backed Magnefast lining system by Elastotec resolves this, the gaps between the liners able to be kept to an absolute minimum, and not influenced by drilled bolt holes in the steel casing of the outlet. This allows much more design freedom and optimisation of the liners, not to mention any replacement of worm panels is done in a matter of seconds. The symmetrical, easy to handle liner panels are also able to be re-used and rotated in position to further optimise wear life.

Witnessing the installation and completing the delivery of one of 12 of these outlet heads with the team from Elastotec was a smooth and professional. A high quality, fully detailed lining system was delivered and is currently proving itself in operation over and above more traditional bolted steel or trowelled cementitious wear lining systems.

Eric Pynaker

FMG, Senior Project Manager



Meets strict 4100kg lifting requirements



Rapid In Situ Maintenance



Extended Wear Life
- up to 2 years



Gap-Free Wear Protection


 magnefast™