Case Study

Duracast®18 High Chrome White Iron Vortex® Grates for a 32ft AG Mill

Location	North America
Platform	32ft AG Mill
Conditions	High Abrasion/Hard Rock
Solution	Vortex® Grate cast in Duracast® 18 High Chrome White Iron

Situation

Bradken supplied a set of double-wide Vortex® Grates in chrome-moly DA85 material to a customer as a replacement for a single-wide high chrome straight radial grate competitor design. The DA85 Vortex® Grates did not meet the target wear life and the large slot aperture failed to meet the end-of-life performance metrics. The DA85 Vortex® Grates required more frequent relines reducing overall mill availability and caused an increased end-of-life recirculating load.

Solution

A new enhanced Vortex® Grate manufactured in Duacast®18 High Chrome White Iron was approved as a trial due to its improved wear and sustainability capabilities, as well as its reduced reline frequency leading to improved onsite safety. The design underwent several design iterations and intensive modelling simulations carried out by Bradken's engineering and operations team. Once approved, two Duracast®18 Vortex® Grates were supplied and installed with the full set of the DA85 Vortex® Grates to compare and measure the wear under the same operating conditions.

Results

Bradken's Duracast®18 Vortex® Grate performed well in operation and exceeded customer expectations in its end-of-life performance metrics. The Duracast®18 Vortex® Grates lasted 42 days longer in service compared to the DA85 Vortex® Grate; a 25% wear life improvement. They were also +15mm thicker in the critical wear zone when removed. The Duracast®18 Vortex® Grate also presented a 6mm smaller aperture size at end of life supporting improved grind performance.

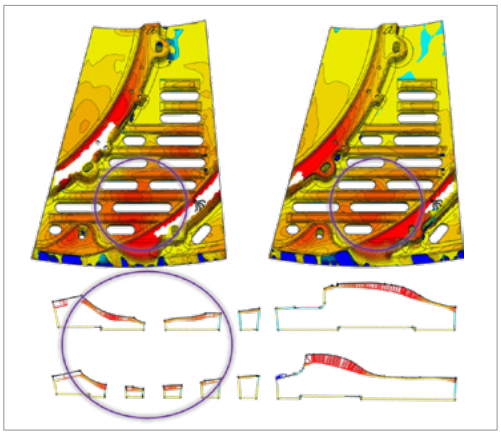
Overall, the new Duracast®18 Vortex® Grates projected a 40% improvement in wear life over the DA85 material, and improved grind performance levels if left in service, as well as reduced reline frequency and increased safety. A thorough inspection confirmed that the Duracast®18 Vortex® Grate remained sound, with no cracking evident.

Results

- 25% wear life improvement in service
- 40% projected wear life improvement
- Reduced reline frequency leading to improved onsite safety
- Improved grinding performance - 6mm smaller aperture size at end of life
- No cracked or fractured castings
- Improved sustainability performance
- 100% Recyclable

Inspection

Worn Grates



Scans

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