

GTD900 UPGRADE PROJECT

DMC / Alumina / Coal

Location NSW Hunter
Industry Coal Processing

THE CHALLENGE

Site operated two GT710 cyclones installed in parallel fed off a single pump with feed distributed through a Y-piece in both primary and secondary circuits. A Y-piece isn't ideal as a feed bias can be present, leading to increased wear in one cyclone. This results in poor cyclone efficiency which leads to a poor performing DMC circuit. Good maintenance practice is to replace any cyclones in parallel at the same time so that differences in internal configurations doesn't compound any feed bias issues.

A pair of cyclones were being replaced every 18 months. This site utilised an A, B and C spigot, which was replaced after 10 mm of wear, which was approximately every 6 months.

Site wanted to remove the Y-piece, simplify the maintenance of the cyclones and have the ability to increase the DMC's throughput if required. There are 12x GT710 cyclones installed at this site across two modules. 4x Primary and 2x Secondary cyclones per module.



Overview	
Application	Dense Medium Cyclone
Material / Ore	Coal
Product Handled	+0.5 mm ROM Feed
Plant Feed Rate	600 t/h per module
Feed Duty	Pressure: 10D / Solids 400 tph / Solids SG: 1.5 t/m ³ / Product Yield: 35-80%
Current Issue	2 x GT710 DMC's with common Y-piece in fed line. Control and Maintenance issues.
Current Material / Lining	25 mm thick 92% Alumina tiles
Maintenance Frequency	18 months / Cyclone and 6 months / Spigot
WS Material Selection	25 mm thick 92% Alumina tiles
Outcome	Single GTD900 with single feed line. Ease of Maintenance and throughput increase.

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THE SOLUTION

HMA sized and selected a single cyclone to replace the two existing GT710 cyclones installed in parallel. A GTD900 cyclone was chosen which required modifications / replacement of the launders, feed pipe and structural steel work to suit the new foot print.

HMA undertook all this work and supplied site with fully certified drawings for the complete scope of works including Cyclones, Launders and new structural work. The underflow launders were redesigned with the constraint of using the existing underflow discharge pipes. The overflow launders were replaced with minor changes due to the condition of these launders. The Y-piece was removed and new feed pipes installed as required.

The performance of the cyclones was in line with HMA's expectations and site had the ability to increase pressure and throughput to test the new cyclones. The maintenance for these cyclones has been streamlined and the issue of feed bias, etc. has been removed. This has resulted in a reduced OPEX budget associated with these cyclones and also the potential to increase the cyclones installed life depending on the feed conditions, such as increased operating pressures.

STANDARD WHITEN		
Parameter	Before	After
Application	2 x GT710	1 x GTD900
D ₅₀	1.46	1.44
Ep (75-25)	0.005	0.004
Imperfection	0.011	0.009

