

**INNOVATION.
NOT DUPLICATION.™**



NEWMONT CRUSHER LINER PERFORMANCE

H-E PARTS INTERNATIONAL (H-E PARTS) SPECIALIZES IN PROVIDING WEAR MANAGEMENT SOLUTIONS. H-E PARTS LINER DEVELOPMENT PROGRAM HAS BEEN DEVELOPED TO OPTIMIZE LINER DESIGNS ON A SITE BY SITE BASIS AND INVOLVES THE ONGOING ANALYSIS OF SITE OPERATIONAL REQUIREMENTS, MACHINE OPERATING PARAMETERS, AND WORN LINER PROFILES.

CUSTOMER PROBLEM

Newmont Ahafo gold mine located in Ghana operates Metso 54x74 primary and MP800 secondary crushers and were experiencing excessive wear and inconsistent life with their after-market supplied primary crusher mantle and concave liners.

Similarly, to improve the utilization of the MP800 secondary crusher, increase wear life, reduce bush failure occurrences as well as improving the mill efficiency, H-E Parts was engaged to provide a suitable solution.

PROPRIETARY MODELING

To assist Newmont with improving their liners, H-E Parts engineers performed an on-site evaluation of the existing after-market and OEM liners using innovative 3D laser scanning technology. The subsequent data was then evaluated in our proprietary ChamberVision™ and CrusherVision™ software, enabling our engineers to predict chamber shape through the full design life.

LOCATION	Ghana
SITE	Newmont Ahafo
APPLICATION	Metso 54x74 gyratory and MP800 cone crusher
PRODUCT	CME™ crusher liners

LINER IMPROVEMENTS

EXTENDED GYRATORY LINER LIFE

The 54x74 after-market gyratory concaves were lasting ~5.1 million tonnes (5.6 million tons) across three mantles (72, 74 and 76") with concave change-outs required every 9-10 months. H-E Parts incorporated various design modifications and were subsequently supplied to Newmont. Having now completed several runs, the liners are achieving ~12 million tonnes (13.2 million tons) and averaging ~21 months per concave set before requiring change-out.

Notably, this is being achieved using only two mantles (72" and 74") with 50% - 60% life remaining on the 74" mantle, which presents an opportunity for further life improvements in the future, which H-E Parts are exploring.

H-E Parts achieved Newmont's desired goal of extended liner life and in-turn delivered a set of liners which significantly reduced total cost of ownership. This resulted in direct liner cost savings of USD \$900,000 per year for Newmont, but also delivered indirect savings via reductions in change-out labor, consumable costs, craneage, reduced exposure to risk and allowed maintenance teams to shift focus to other tasks.



	LINER LIFE (MONTHS)	LINER LIFE IMPROVEMENT (%)	AVG. TONNES THROUGHPUT (TONS)	THROUGHPUT IMPROVEMENT (%)
COMPETITOR	10		~5.1 million (5.6)	
H-E PARTS	21	110%	~12 million (13.2)	135%

APPLICATION SPECIFIC MP800 LINER DESIGN

Following on from the success of the gyratory liners, an on-site application study by H-E Parts engineers found that the MP800 crushers were being intermittently fed around 50% - 60% of the time, which was causing adverse effects on the lower bushing due to excessive heat produced by high head spin. Site additionally requested that the new liner design incorporate a final product size reduction from 21.5mm (.85") to 12mm (.5").

Start/stop operation affects liner life through abrasive wear between the feed starting and the crusher achieving choke fed conditions. To combat this and achieve site goals, H-E Parts designed a liner that effectively reduced the active chamber volume and allowed the crusher to be run at a tighter gap under chocked conditions allowing the crusher to be better utilized and resulting in improved milling efficiency.

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