

CASE STUDY

IMPROVING METSO GYRATORY TONNAGE 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.

First Quantum Minerals Limited (FQML) Kansanshi mine-site located in Zambia, were experiencing various issues with their OEM supplied mantles not performing as required. FQML approached H-E Parts to provide a solution that would resolve throughput issues, whilst at the same time rationalize stock of liners due to the varying mantles and styles previously supplied by the OEM.

H-E Parts set about designing a custom solution to achieve this desired operating state, which culminated in H-E Parts offering and site subsequently implementing a one-piece CME™ mantle design, with standard style concave liners. The supplied three mantle set ensured inventory management problems were rectified with previous non-matching upper and lower mantle installations effectively negated.

Throughout the following years, H-E Parts continued to work with FQML, providing step changes through the implementation of improved mantle and concave designs, and material selection improvements. These changes continued to increase crusher throughput but had the added benefit of improved SAG mill performance due to more effective crushing practices.

CONTINUOUS IMPROVEMENT AND LINER DEVELOPMENT

Due to changes in crusher operating parameters, 5 years after the initial mantle development, H-E Parts suggested that a liner development program be implemented to facilitate further improvements. This incorporated state-of-the-art laser scanning in conjunction with H-E Parts proprietary ChamberVision™ and CrusherVision™ software, allowing H-E Parts engineering specialists to offer a solution to achieve customer end goals and further reduce total cost of ownership.

Following the analysis of previously supplied CME™ liner profiles, taking into account current operating parameters and customer desired end goals (higher tonnage and lower power draw), a new set of 3 corrugated mantles with an accompanying set of 2 row concave liners were offered and accepted by FQML. The mantles and concaves were put into operation successfully and delivered on required goals. In a two-year time span, the sites concave life has been stable with a dramatic increase in tonnage from 5.3 million tonnes (5.8 million tons) to achieving over 8 million tonnes (8.8 million tons). This translates to a 51% increase in throughput with minimal impact on liner life.

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LOCATION	FQML Kansanshi
MINE TYPE	Copper Mine
APPLICATION	Metso 54x74 Gyratory Crusher

