Case Study

HMA WEAR SOLUTIONS

COBRE PANAMA PROJECT

HMA Wear Solutions Piping Systems

Client	First Quantum Minerals
Location	Panama
Industry	Mining & Minerals - Copper & Gold Processing

THE PROJECT

HMA Wear Solutions was engaged by engineering design company Lycopodium on the ceramic piping specification for the Cobre Panama project by First Quantum Minerals Ltd. of Canada. This $6.3 billion copper project is anticipated to be one of the few new 'red metal' mines to enter production by the end of the decade. Lycopodium is responsible for the design of the mineral-processing plant at Cobre.

In May 2018, First Quantum revealed that the orebody was 3.695 mt @ 0.37% Cu (M&I Resources), and 3.182 mt @ 0.38% Cu (P&P Reserves). The strip ratio is 1:1, with competent rock and a 40-year-plus mine life. At that stage the project was already about 70% complete, clocking up 72 million-man hours and a Lost Time Injury (LTI) rate of 0.10. A milestone of ten million-man hours without a single LTI was achieved on 19 April 2018.

The ceramic piping specification incorporated pipe sizes ranging from DN80 to DN1200 and pressure design ratings of 700 kPa to 10,000 kPa. Supply milestones were to be placed on project payments thus ensuing the project management of this supply was paramount. This project incorporated several large clients for HMA Wear Solutions including First Quantum Minerals Ltd. of Canada and Lycopodium and an equally large new client in Panama Cobre.

Cobre is a large open-pit copper development in Panama. The concession is 120 km west of Panama City, and 20 km from the Caribbean Sea coast, in the district of Donoso, Colon province. The concession consists of four zones totalling 13,600 ha.

THE SOLUTION

HMA Wear Solutions is part of the HMA Group, specialising in the design and manufacture of abrasion-resistant lined equipment. It provides a range of products and materials such as rubber, polyurethane, white iron and ceramics to reduce costs and increase performance through improved design, optimal material selection and a unique manufacturing process.

HMA provides total product support, installation, and maintenance. Our aim is to achieve the longest possible operating life with the most cost-effective material. HMA Wear Solutions has reduced plant operating costs through improved design and optimal material selection, in combination with unique manufacturing equipment and processes.

Overview	
Application	Process Pipe Work
Material / Ore	Copper Porphyry Deposit
Plant Feed Rate	4,000 - 5,000 tph (Crushing Circuit)
Current Production	74 Mtpa Mill Feed & 150,000 tonnes of Copper Concentrate (2019)
Production Targets	100 Mtpa Mill Feed & 350,000 tonnes of Copper Concentrate
Ore Body	0.695 mt @ 0.37% Cu (M&I Resources) & 3.182 mt @ 0.38% Cu (P&P Reserves)
WS Material Selection	Alumina lined piping
Outcome	Zero damage during shipping and met our monthly milestone targets

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As Australia's largest engineering designer, manufacturer, and supplier of ceramic lined piping systems, HMA Wear Solutions have an expanding list of prestigious mining projects under its belt. Projects include Exxaro Leeuwpan (Cyclone contract), FQML Kansanshi (Cyclone feed pipes), PT KDA Ombilin (PF piping) BMA Caval Ridge (Tailing thickener underflow pipework upgrade), Sedgman Peak Downs CHPP Upgrade (Reflux classifier), Newcrest Telfer (Cyclone feed bends upgrade), Coal & Allied Mt Thorley (Supply and installation of cyclones), the MainTek Moranbah North Plant Upgrade, Newcrest Cadia (Cyclone feed and discharge lines) and Rio Tinto Kestrel (Co-disposal line project), to name but a few.

HMA Wear Solutions service offering encompasses design, manufacturing, scheduling, procurement, execution, commissioning, and condition monitoring. Some key focus products are slurry and pneumatic pipelines, dense medium and classification cyclones, distributors and chute work, all complemented by the engineered product support, condition monitoring, site services such as industrial tiling, and pipework installation.

With over 40 years experience and innovation has enabled us to overcome many design and manufacturing problems associated with ceramic-lined pipe and equipment, ensuring a 'guaranteed fit' every time. HMA Wear Solutions piping systems and engineering support has become the industry benchmark. The selection of superior products and manufacturing processes has result in reducing plant operating costs. The success of our piping supply for local and international projects has proven the capability of HMA Wear Solutions to compete on the world stage.

THE SUMMARY

The $7.0 million plus, contract awarded to HMA Wear Solutions saw 1,115 pipes supplied over a two-year period, with a size range from DN80 to DN1200 and a design pressure ranging from 700 kPa to 10,000 kPa. According to HMA Wear Solutions International Sales Manager Mark Langbridge, a particular achievement of the project was zero damage during shipping, "with our milestone delivery targets achieved every month."

In February 2019, First Quantum announced that ore had passed through the primary crushing circuit at an initial feed rate of 4000 t/h to 5000 t/h, before being placed into the first completed milling circuit. This was followed by hot commissioning to move the ore throughout the plant until the first copper concentrates are produced. An efficient phased ramp-up is planned for Cobre Panama throughout 2019, targeting an annualised 74 Mtpa mill feed and a 150,000 tonnes of copper concentrate.

Operations include an international port, a 300 MW power plant, a large electric mine fleet, and in-pit crushing and conveying. By 2020, the process plant will be ramped up to an annualised 85 Mtpa mill feed, and a targeted 270,000 to 300,000 tonnes copper in concentrate production. This will reach 350,000 tonnes in 2021, and an additional investment by First Quantum post-2022 to achieve the revised 100 Mtpa mill feed.

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