Case Study

Improve cyanide consumption through automation

Thailand

EXPERTISE, ANALYSIS AND SUPPORT

Orica's experienced technical team worked with the management of the 'C' Gold Mine in Australasia to install and monitor two analysers, the OCM5000 (see figure 1) and the OCM6000 (see figure 2), with the objective of:

- reducing the consumption of cyanide in the leaching process and SMBS in the destruction circuit by providing a tighter, automated control process
- monitoring and recording WAD cyanide concentration in the tailings dam for ICMC compliance.

These powerful tools, developed by Orica provide reliable measurement and control as verified by a study undertaken by the Parker Centre metallurgical research facility.

However, analysis itself does not deliver results. Orica's experienced technical team worked with the site before, during and after the installation to ensure that the full benefit of these products was realised.

Figure 1 – OCM5000 Free Cyanide Analyser

Free CN measurement from 0 to 10,000ppm for leach circuit optimisation.

WHAT WERE THE KEY OUTCOMES?

21% reduction in cyanide consumption

40% reduction in reagent usage

Significant ongoing cost reductions

Recording WAD concentration in tailings for ICMC compliance

THE OUTCOME

The OCM5000 provided an immediate decrease in cyanide consumption with an average reduction of between 0.05–0.1kg/tonne. This correlates to cyanide cost savings of approximately $600K. The OCM6000 WAD analyser repaid itself in just six months due to savings of about $140,000. The outcomes above also played a key role in 'C' Gold Mines ICMC compliance certification in 2007 (See figure 3 overleaf).

Figure 2 – OCM6000 WAD Cyanide Analyser

"The installation of the online cyanide analyser at the leaching circuit has allowed us to optimise the cyanide addition and its concentration in the tanks with more precision and ore-efficient manner, rather than by practising the manual titration as the basis of analysis. The reduction in cyanide consumption has also allowed for a reduction in use of cyanide detoxification reagents while at the same time minimising the cyanide released to the tailings dam."

W.S, C. Gold Mine
Metallurgical Manager

The above quotation is not intended as a verbatim transcript of comments, but as a summary of a discussion which took place.

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ADVANTAGES OF USING ORICA'S TECHNICAL TEAM FOR SITE SUPPORT ARE:

Experience in installing and operating over 60 analysers worldwide

Best practice knowledge transfer due to Orica's wide customer network

Better utilisation of limited on-site resources

Fig 3. Annual Cyanide Consumption (Kg/T)

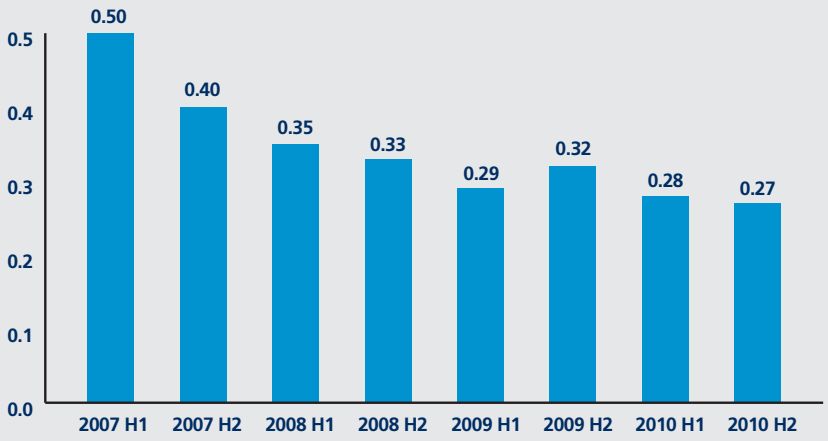

Figure 3: Reduction of cyanide usage with the OCM5000

WHO WAS THE CLIENT?

The 'C' Gold Mine is located in Thailand and is the country's largest gold mine. Its processing plant is a conventional CIL operation with a capacity of 2.5Mtpa of ore with a grade of 1–2 grams per tonne. The ore is processed using conventional Carbon-In-Pulp (CIP) technology and the tailings are treated using the SO_2/Air cyanide destruction method.

The mine strives for the world's best practices in operations, health & safety policies and environmental controls, and became ICMC compliant in 2007. The mine has a policy of zero discharge of liquids.

WHAT CHALLENGE DID THEY FACE?

The key requirements for the mine site were to:

- Reduce the cyanide consumption in the leaching process thereby lowering the cyanide concentration of the tailings entering the destruction process
- Reduce the SMBS consumption in the destruction process
- Monitor and record the WAD cyanide concentration in the tailings.

HOW DID ORICA SUPPORT AND HELP?

Orica undertook a customer needs analysis to determine the suitability of their products to meet the mine's needs and how to best implement the program. The OCM5000 and OCM6000 analysers were identified as the best solution.

Orica installed and monitored the analysers before training the on-site staff to maintain the equipment. Orica continue to provide on going support.

Document reference: 200347