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SA cyanide technology found at gold plants worldwide

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Manufacturer of online cyanide and pH analysers Process Analytical Systems designed the TAC 2000 cyanide analy-ser controller three years ago. The TAC 2000 is a new model, following on from its predecessor developed 14 years ago.

Today both models have been installed in eight different countries around the world and form part of a complement of over 100 analysers installed on gold plants over the last 14 years. Process Analytical Systems directors David Kotzen and Achim Sehm say their company's technology is well proved. "The reduction in cyanide consumption following installation has been reported on by clients giving papers at international conferences. The savings are achieved on conventional leach, as well as heap-leach circuits. "The TAC 2000 automatic on-line cyanide analyser allows for improved control of cyanide addition, through more frequent automatic sampling of the plant and the application of a control algorithm for cyanide addition," notes Sehm.

He says this allows for better use of the reagent, and results in cyanide savings and better recoveries from a more stable plant operation. The equipment also improves safety for plant personnel, through automation of cyanide dosing, without manual intervention. The analyser tightly integrates a control function to provide a complete end-to-end solution for the sampling, analysis and control of cyanide dosing in gold plants, reports Kotzen. The electronic equipment is PLC-grade to ensure reliability in analysing and controlling the most expensive reagent used in gold leaching. The TAC package is shipped as a complete system, which includes all of the necessary parts and consumable spares for one year of operation. The patented TAC sampling system is also reported as being well proved.

The sample is only delivered when requested by the analyser, thereby reducing the aggregate flow through the filter membrane and extending its life. "The sample probe is immersed about 2,5 m below the pulp surface. A pump is then used to suck the sample through a filter membrane, which is fitted at the tip of the probe. "The filter membrane is automatically cleaned after each cycle," adds Sehm. The analyser is contained in corrosion-free enclosures. The analysing element of the system is an on-line titrator, which performs an inflection point titration for cyanide with silver nitrate, reports Sehm.

Kotzen explains the method of operation.

The sampling system delivers the sample to the on-line titrator.

The TAC 2000 measures off the sample volume, then the on-line titrator performs the analysis for cyanide, with silver nitrate as titrant. The result of the titration is used in a digital control algorithm to determine the correct amount of cyanide to add into the circuit to achieve the plant's required set point. The results are then displayed.

The analyser automatically cleans its glassware and electrodes, giving a low maintenance load. "It also features battery backup to ride through short power interruptions. "The system recovers from a power failure automatically, continuing with its analysis and control functions," notes Sehm.

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