SOLUTION SPOTLIGHT

Real-Time Elemental Analysis Provides 100% Visibility on Conveyed Material

Introducing the AllScan system into the mine site resulted in:

100% Real-time visibility on conveyed materials

20% Reduction in processing variability

COMMODITY

Iron

TYPE OF MINE

Surface

APPLICATION

Feedback Control

Background

Iron ore operations rely on consistent product quality and efficient processing to remain competitive. However, traditional quality control methods—such as periodic lab sampling—often introduce significant delays. These time lags limit operators' ability to respond to changing material conditions, resulting in waste, inefficiencies, and increased rework. At one Australian mine, the inability to make timely adjustments was compromising operational control and output quality.

The Challenge

The mine's processing plant lacked real-time insight into the composition of conveyed materials. Lab sampling typically took hours to return results, by which time the opportunity to adjust processing parameters had passed. This caused frequent fluctuations in feed quality, inefficient crusher and mill settings, and inconsistent product grade. The operation needed a faster, more responsive feedback loop between material analysis and plant control.

The Solution

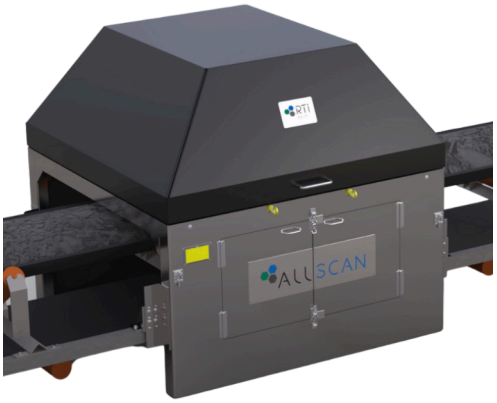
To address this, Real Time Instruments (RTI) deployed its AllScan Cf-252 elemental analyser at a key point along the conveyor system. The analyser delivered live, continuous data on iron content and other key parameters. Unlike batch testing, AllScan measured the composition of conveyed material in real time, providing immediate feedback to plant operators.

With live data available 24/7, the team could adjust crusher settings, feed rates, and blending strategies on the fly. This shift from reactive to proactive processing allowed for smoother transitions and improved control throughout the circuit. The AllScan system became an integral part of the plant's automation and decision-making infrastructure.

Implementation & Discovery

RTI collaborated with site engineers to identify the ideal installation point for AllScan, ensuring optimal measurement accuracy. The unit was calibrated for the site's specific ore type, and training was provided for operators and supervisors on interpreting the live data stream.

Initial readings revealed significant fluctuations in iron content—variations that previously went undetected due to the lag in lab testing. With AllScan, the team gained immediate awareness of material changes and quickly adjusted processing parameters, resulting in reduced variability and increased throughput stability.



The Results

The introduction of real-time feedback control through AllScan marked a significant shift in operational capability. With access to live, accurate data, the site was able to fine-tune its processing strategy, reduce inefficiencies, and realise measurable improvements across multiple performance indicators.

- **Optimised Processing Operations:** Material consistently met quality targets, reducing rework and boosting operational reliability.
- **Improved Efficiency:** Faster decision-making and better control over feed quality translated into reduced energy use and lower processing costs.
- **Higher Product Quality:** The consistent monitoring of iron content helped ensure a uniform final product, meeting export specifications more reliably

Tracking Plot Iron

Conclusion

By implementing RTI's AllScan system, the mine transformed its operational control strategy. With access to real-time data, the team eliminated the delays and guesswork of lab-based analysis, gaining the ability to respond to material changes as they occurred. This case proves the powerful impact of continuous analysis in delivering efficiency, quality, and control across the mining value chain.

Future Applications and Industry Impact

The success of AllScan in feedback control applications demonstrates the value of real-time elemental analysis in bulk materials handling. Across the mining sector, operations dealing with fluctuating ore grades stand to benefit from this approach. Whether in coal, bauxite, or base metal mines, live data allows operators to take decisive action in the moment, minimising waste and maximising yield. Other potential applications include:

- **Crushing and Screening Optimisation:** Adjusting equipment settings in real time to suit feed quality.
- **Ore Sorting:** Enhancing automated sorters with live elemental data to improve separation accuracy.
- **Blending Operations:** Achieving target grades with greater precision through dynamic blend adjustments.

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