Online Grade Control in Mining by Energy-Dispersive X-ray Fluorescence – New Approach to Fulfil Old Dreams of Real Time Results.

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At present the analysis of samples in mining operations takes minimum 30 minutes if the XRF units are located close to the mineral beneficiation plant or up to several days if the samples needed to be sent to an external laboratory. Latest trend is to bring the analyser closer to the process and to integrate it. EDXRF instruments are suitable to deliver instant results based on online measurements. When installing the spectrometer above conveyor belts or material streams the sample composition can be scanned continuously.

Latest developments especially in technology for energy-dispersive X-ray fluorescence spectrometry has offered the chance to develop dedicated EDXRF spectrometers for online applications in mining and coating. Silicon drift detectors with increased count rate capability, better multichannel analyzers with fast signal processing for enhanced linear range plus more brilliant X-ray sources are leading finally to better analytical precision. This enhanced analytical performance paired with the compact size and low installation requirement makes modern EDXRF instruments the ideal choice for process control close to the production line in order to increase the efficiency along the process.

The analysis of low and high grade iron ores and the separation from waste rock according to the cut-off levels is quickly possible within seconds total measurement times. Copper ores and the final concentrates can be quickly controlled, the decision to feed the mined material to the flotation can be done close to the process improving the productivity of the mining site.