

FLEXIBILITY AND PERFORMANCE FOR PROCESS AND QUALITY CONTROL IN METAL PRODUCTION

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In process control the accurate and fast analysis of the iron and steel is important, but the process benefits as well from the determination of the elemental composition of raw materials (ores, coal, limestone) and important materials like slag, ferro alloys, refractories and sinters. One single instrument has to provide full flexibility for all kinds of samples. Sequential X-ray spectrometers cover all modern analytical tasks in metal works, with exception of extremely fast furnace control. All the different materials can be analyzed with one single instrument. The modern sequential WDXRF spectrometers combine high analytical performance with reliable operation and high instrument uptime through protection of all spectrometer components against contamination and damage by dust and liquids.

New developments for multilayer optics enhance the analytical range for specific elements. The curved germanium crystal XS-GE-C provides 20-40% more intensity for the elements P, S and Cl. Unrivalled long term stability for the elements Al and Si are guaranteed by the multilayer XS-CEM crystal. The new XS-400 optics enhances the sensitivity for all elements from K to U by more than 30 %.

Stainless steels have higher resistance to oxidation (rust) and corrosion in many natural and man made environments; however, it is important to select the correct type and grade of stainless steel for the particular application. High oxidation resistance in air at ambient temperature is normally achieved with additions of a minimum of 13% chromium, and up to 26% is used for harsh environments. Nickel also contributes to passivation. Therefore highest precision is needed for major elements, e.g. like Ni to save money due to high costs. A unique universal calibration model based on variable alphas covers the complete elemental and concentration range for metals, such as ferrous and non-ferrous metals without compromise on accuracy and precision. Results and examples on performance will be shown.