STEEL MONT GmbH

INDUSTRIAL SOLUTIONS CATALOGUE

ELEMENTAL ANALYSIS. SIMPLIFIED

ABOUT US

Steelmont is a global trading and logistics group with core activities are commodities trading, trade finance, project finance and logistics spanning several products and industries.

Because Steelmont has global presence through its appointed agents in the United Kingdom, Germany, Ukraine, United Arab Emirates, India, Italy, Turkey and Russia, it has access on first-hand information on global markets on a real time basis.

With an established expertise in commodities trading, Steelmont has a particular interest in steel, mineral ores, ferroalloys, coal, coking coal, chemicals, fertilizers, construction materials and mining and metallurgical equipment.

Our international experience and professionalism in trading, coupled with a suite of additional services such financing, sourcing, marketing, global logistics and shipping enables us to provide the most cost-effective solutions to our customers.

Continuing this tradition of launching innovative solutions, Steelmont is proud to announce its new division on industrial solutions. Based on Prompt Gamma Neutron Activation technology, Steelmont has developed analysers that can determine the elemental composition of materials (coal, cement, mineral ores, metals etc) in real time with accuracy and reliability. The analyser has been designed in close consultation with engineers, nuclear scientists and technicians and can be configured to meet specific customer requirements along with continuous support for achieving the best operational results.

ONE STOP SOLUTION

For all elemental analysis problems

Increasing focus on quality, efficiency and profitability have induced industries to adopt robust process control procedures more than ever. It is through stricter control over every step of the manufacturing process that companies can their lower production costs, boost efficiency and maintain quality. One means of implementing such quality control methods is through real-time elemental analysis of the materials.

Based on the path-breaking Prompt Gamma Neutron Activation Analysis technology, our team presents its range of next generation analyzers that can perform real-time elemental analysis of materials across a wide variety of industries such as coal, cement and mining and minerals.

Coal Industry

Cement Industry

Mining and Minerals

Steel Industry

Soil Composition

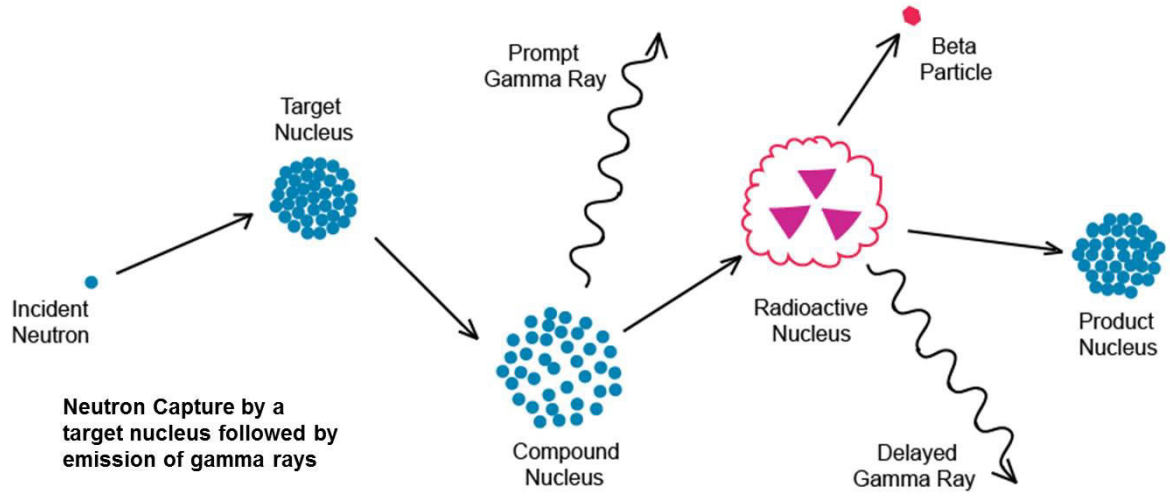
Slurries

It doesn't matter if the material is a small sample, in continuous bulk or in form of a slurry, our expert team has developed a product for each use case scenario – ranging from the static sampler to the online belt analyzer. Combining our expertise in PGNAA technology along with superior customer support, our team strives to push existing boundaries in the field by making applications smaller, lighter, practical and universal.

THE SCIENCE BEHIND

Prompt Gamma Neutron Activation Analysis

Our devices determine elemental composition of samples, bulk-load material and slurries using Prompt Gamma Neutron Activation Analysis (PGNAA) technology. Under this method, a neutron source (e.g. CF 252 or electronic neutron generator) generates thermal neutrons and irradiates a material. The irradiated materials emit secondary gamma radiations of different energies and intensities which can be detected using gamma detectors.



Because the gamma radiation spectrum thus generated is unique for each element in the periodic table, it is possible to determine the elemental composition of materials in a fast, accurate and reliable manner. Having been used for process control in the coal and cement industry for decades, the PGNAA technology has an established track-record of providing real-time data on elemental composition to producers. This enables them to optimize their raw material quality mix, boost efficiency and reduce production costs.

The most important difference between “prompt gamma neutron activation analysis” (PGNAA) and other methods is that neutrons interact directly with atomic nucleus, rather than the just the electron shell as is the case for electromagnetic radiation, such as X-rays.

THE DIFFERENCE?

Benefits of using neutron-based analysers

Elemental analyzers based on Prompt Gamma Neutron Activation are superior to traditional XRF and XRD spectrometers for a number of reasons:

1. Neutron based methods can perform simultaneous detection of almost all elements in the period table.

2. No sample preparation is needed. This saves time and effort for our customers who prefer instant real time information on elemental composition in a reliable and accurate manner.

3. The penetrating nature of the neutrons means that the device can conduct true elemental analysis with uniform sensitivity irrespective of particle size, shape, phase or composition.

4. Neutron based methods consider the entire ample at the nuclear level rather than just the surface. This allows it to accumulate hundreds of thousands of events per second so as to determine the composition of the entire flow. The result: No sampling errors.

5. Since PGNAA technology provides real time minute to minute information of elemental composition of materials, it enables rapid process control. This helps producers control the quality of raw material mix in real time, reducing costs and boosting efficiency.

INDUSTRIAL USE CASES

to optimise plant operations and achieve operational targets

Our line of neutron-based analyzers caters to a wide range of industries such as coal, cement, steel, mining and minerals, biofuels etc. This means that the same established method of using prompt gamma neutron activation can be used to optimize different processes such as sorting, blending, fuel management, pre-mix and raw-mix control etc.

COAL INDUSTRY

- Stockpile Management
- Sorting and Raw Coal Monitoring
- Coal Blending for Power Plants
- Monitoring Coal at Shipping Ports etc.

CEMENT INDUSTRY

- Quarry Management
- Effective Kiln Control
- Stock-pile Management
- Raw Mix Control and Blending

MINING AND MINERALS

- Quarry Management
- Grading of Materials at Shipping ports
- Real time ore analysis at extraction site
- Stockyard Quality Control and Management
- Quality Control for Sintering in Steel Plants

OTHER APPLICATIONS

- Slurry pipe-lines in pelletizing plants
- Elemental Analysis of Soil Components

ONLINE CROSS-BELT ANALYSER

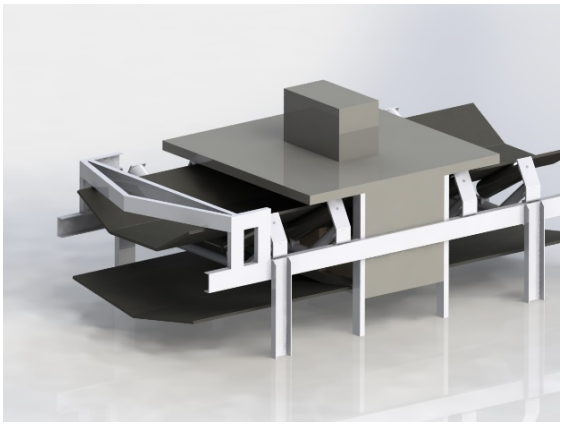
For elemental analysis of bulk materials

Our next generation online cross-belt analyzer provides real time elemental analysis of a range of bulk materials with excellent precision, reliable results and at an affordable price. Based on prompt gamma neutron activation methods, our team has designed a compact device that can determine elemental composition of raw materials such as coal, cement, iron ore and minerals in real time.

Equipped with high-tech gamma detectors and high-performance electronics, the online cross-belt analyzer has technical characteristics for accurate measurement of elemental composition of raw mixtures and bulk materials. Due to this, the elemental analyzer can be used in a range of applications such as sorting, blending, raw mix control etc. In addition, our in-built algorithm adapts automatically to changes in the composition of the mixture or material on the belt.

Features

- ✓ User-friendly interface
- ✓ Compact modular design
- ✓ High performance electronics
- ✓ Great precision and reliable results
- ✓ Remote monitoring and diagnostics
- ✓ Smart algorithm built into the software



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ONLINE CROSS-BELT ANALYSER

Technical Specifications

The device is an ultra-compact module that can easily be mounted on to a conveyor to monitor the full flow of raw material and concentrates. We understand that clients might have specific requirements. Keeping this in mind, our cross-belt analyzers come in both single detector and multi-detector configuration and can support a range of belt sizes and belt loads. Designed to operate automatically without intervention from an operator, the analyzer has a user-friendly interface – making it extremely simple to use.

Elements Detected	Si, Fe, Al, Ca, Na, K, S, Mn, P, Cu, Sn, Zn, etc.
Sensors	Scintillation Crystal to register gamma radiation that occurs after the material has been activated by neutrons
Nuclear Source	30-50 µg Cf 252 or Neutron Generator
Power Requirements	240 VAC, Single Phase, 6 Amps, 50/60 Hz at Analyzer
Operating Temperatures	-40° to +60° C (larger ranges available if required)
Belt Widths	500 to 2,500 mm standard and bed depths to 500 mm
Input/Output	Digital/analog signal compatible with nearly all automation systems
Total Weight of Device	Approx. 1,500 kg typical (dependent on belt size)

Please note that accuracy of device for measuring concentration of elements depends a lot on raw material composition and specific application.

CUSTOMER SERVICE

World class service and customer support from experts

Investing in us means more than just reliable result. It means investing in a relationship in which we continue to support our clients through bespoke customer service solutions. These include design solutions, tailored installation solutions and performance management.

DESIGN

- ✓ On-site measurements
- ✓ Engineering drawings tailored to site

INSTALLATION

- ✓ Supply of ancillary equipment
- ✓ Commissioning and Calibration
- ✓ On-site training from expert technicians

PERFORMANCE MANAGEMENT

- ✓ Remote monitoring and diagnostics
- ✓ Integrating device into plant control system
- ✓ Comprehensive maintenance contacts
- ✓ On-Site Servicing from expert technicians

CONSULTING SERVICES

- ✓ Advise on obtaining necessary permits
- ✓ Compliance with radiation safety regulations

MOBILE LAB ANALYSER

For instant elemental analysis of samples

Introducing a compact and mobile solution for elemental analysis of static samples is our Mobile Lab unit. Using the same neutron activation methods and high-performance electronics as the online cross-belt analyzer, the Mobile Lab is capable of performing elemental analysis of a wide range of material samples in a precise and reliable manner.

It does not matter if the sample has been extracted from a coal operation, a cement plant or a mineral ore site, the Mobile Lab analyzer can calculate the elemental composition of the chosen samples with reasonable accuracy within a matter of minutes. The underlining difference is that rather than using a stream of bulk material on a conveyor belt, the Mobile Lab analyzer uses samples of 15-20 kgs each obtained from within the production line to provide elemental composition results without the need of preparing samples. The user-friendly interface of the device means that the operator can be trained in mere 20-30 minutes.

CONTACT US

Our team of experts is available to answer any questions related to our industrial devices and help our customers find suitable solutions for their elemental analysis problems.

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