

ALLSCAN
SLURRY

The smart next generation PGNAA slurry elemental analyser

Innovative on-line elemental analysis technology for
mineral slurry processing

- Superior analytical performance
- Simplified calibration procedure
- Low cost of ownership

PGNAA technology for on-line compositional analysis of slurry in pipes

On-line PGNAA technology continuously measure the concentration of individual chemical elements of interest in mineral slurries and concentrates.



HOW PGNAA WORKS

Prompt Gamma Neutron Activation Analysis (PGNAA) is internationally accepted as the preferred option for high performance on-line elemental analysis. PGNAA works by exposing the material feed slurry in the pipe to neutrons emitted from a radioactive isotope or Neutron Generator.

When neutrons collide with an element in the material gamma rays are emitted with specific energies unique to that element - in effect creating a spectral signature for that element. The higher the concentration of an element in the material, the greater the number of gamma rays emitted with the corresponding specific energies. By measuring the specific energies of the emitted gamma rays and the intensity of each specific energy, an accurate analysis of the chemical elements of the material is generated in real-time.

WHY REAL TIME INSTRUMENTS?

For more than 20 years, RTI's customers have come to rely on us to help them recover maximum yield and deliver real-time results. This has meant savings of millions of dollars in reduced ore penalties, increased productivity and the ability to minimise waste. We have earned a reputation on experience in supplying and servicing high-tech, high-end analysers in a vast scope of industries throughout the world.

RTI provides the total package of analyser plus radioactive sources, and we take care of all radiation related requirements.



USED IN A WIDE RANGE OF APPLICATIONS

On-line elemental analysis is used in a wide range of mineral processing applications throughout the supply chain, from extraction through to mineral manufacturing.

- Monitoring of ROM streams including screening
- Stockyard QC management, including sorting and blending
- Optimising at key quality locations in minerals processing plants
- Quality control in metals production, for example blast furnace sinter process
- Product grading at bulk terminals and ship load outs

SUITABLE FOR MOST ORES AND MINERALS

Online PGNA is suitable for coal and most mineral ores, including:

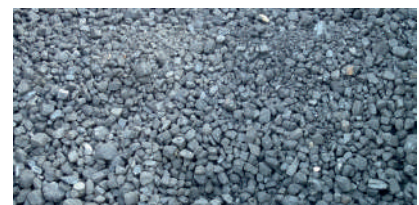
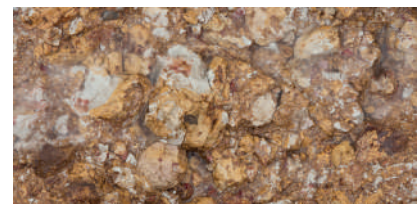
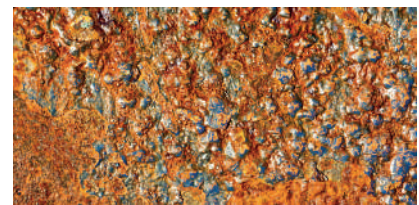
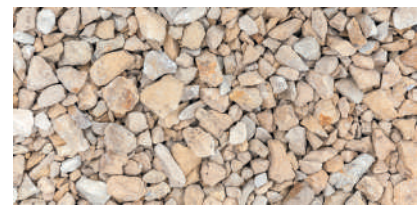
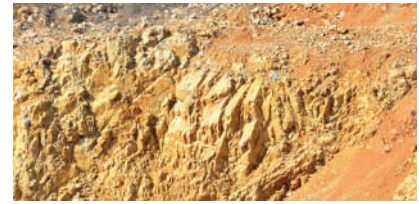
- Iron ore
- Bauxite
- Copper
- Manganese
- Phosphates
- Sulphide and Laterite Nickel Ores
- and more

Detectable and measurable elements include:

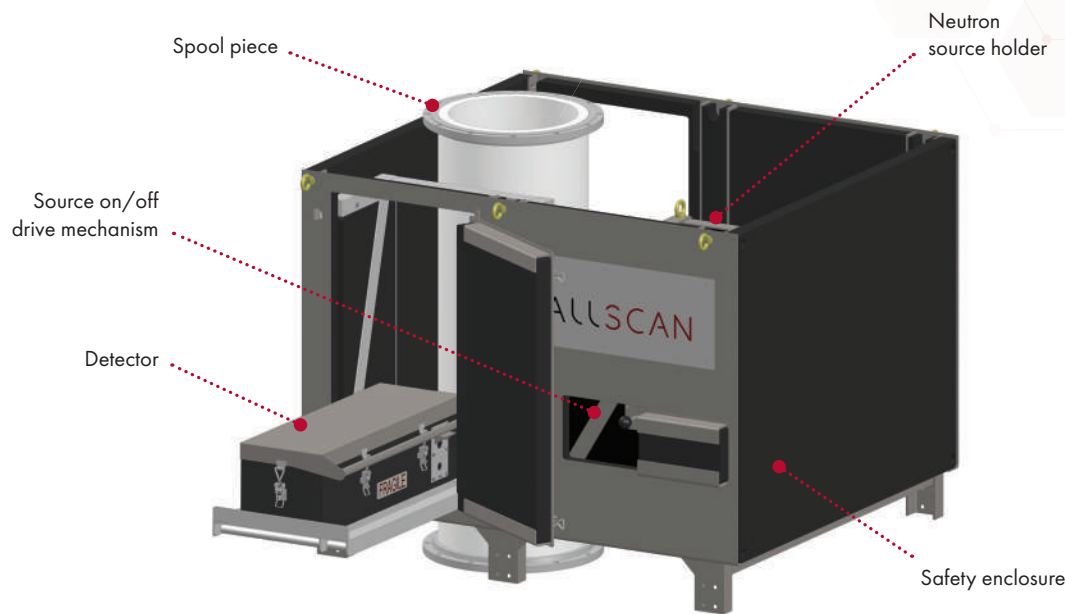
- | | |
|------|------|
| • Ag | • Na |
| • Cu | • Co |
| • Al | • Ni |
| • Fe | • Cr |
| • Au | • P* |
| • K | • S |
| • Ca | • Si |
| • Mg | • Ti |
| • Cd | • V |
| • Mn | • Zn |
| • Cl | |

**Even difficult to measure elements, like Phosphorus.*

Customer defined ratios can also be reported, for example, Al:Si, Ca:Mg and Ni:Fe.



Technical advantages that deliver real benefits



Higher performance on-line, real-time results

Accurate minute-by-minute results, for multiple flow rates. Advanced PGNAA design and Dura-G technology allows significant improvement in performance of full elemental analysis (Fe, Al, Si, K, S, Ti, Ca, etc.).



Easy to install

ALLSCAN is considerably lighter than conventional elemental analysers, and bolts on to most pipes without alterations or foundations required. Only 5 days for complete installation, commissioning and calibration.



Safe

Through improved design ALLSCAN employs a smaller source, reducing required shielding and overall cost of life of the analyser. Personnel can safely work next to the analyser without the use of toxic lead shields, which also makes it the lightest PGNAA on the market.



Simple calibration verification

No more labour intensive material sampling. The analyser accuracy is verified through the use of calibration standards enabling rapid checks and returning to production quickly. Dynamic sampling will align the analyser with laboratory results.



Low running costs

All military spec. components used in the analyser, eliminating the need for an air-conditioner and associated on-going maintenance in hot environments.



Rugged and reliable

Like all RTI analysers and gauges, the ALLSCAN has been purpose designed to work in harsh mine environments. 100% constructed from corrosion free materials, i.e. stainless steel.



Easy operation

User-friendly colour touch screen with intuitive menus, housed in a IP66 stainless steel control enclosure for field or remote mounting.

Flexible I/O and multiple interface protocols are available to suit the client's needs.



Remote access and back-up

Includes a 3G interface linked to a secure website for full remote diagnostics as standard. Cloud based back-up for safe archiving of important data. Customised monthly operational, integrity and data reports are provided through the remote access for support agreements.

MOST ADVANCED PGNAA SLURRY ANALYSER

Dura-G™ - a Unique Analytical Calculation Concept

A well-known challenge with the PGNAA technology is deconvoluting the highly complex raw spectrum, which includes not only the important elemental spectra, but also significant unwanted “noise/disturbance factors” from sample presentation, material density variations, surrounding structures etc.

These “presentation effects” can often be stronger than the “composition” effects. The Dura-G™ technology built into AllScan however smartly separates these effects, i.e. it allows for all of the spectral components of the complex Prompt Gamma spectrum to be correctly allocated to Compositional or Presentation effects.

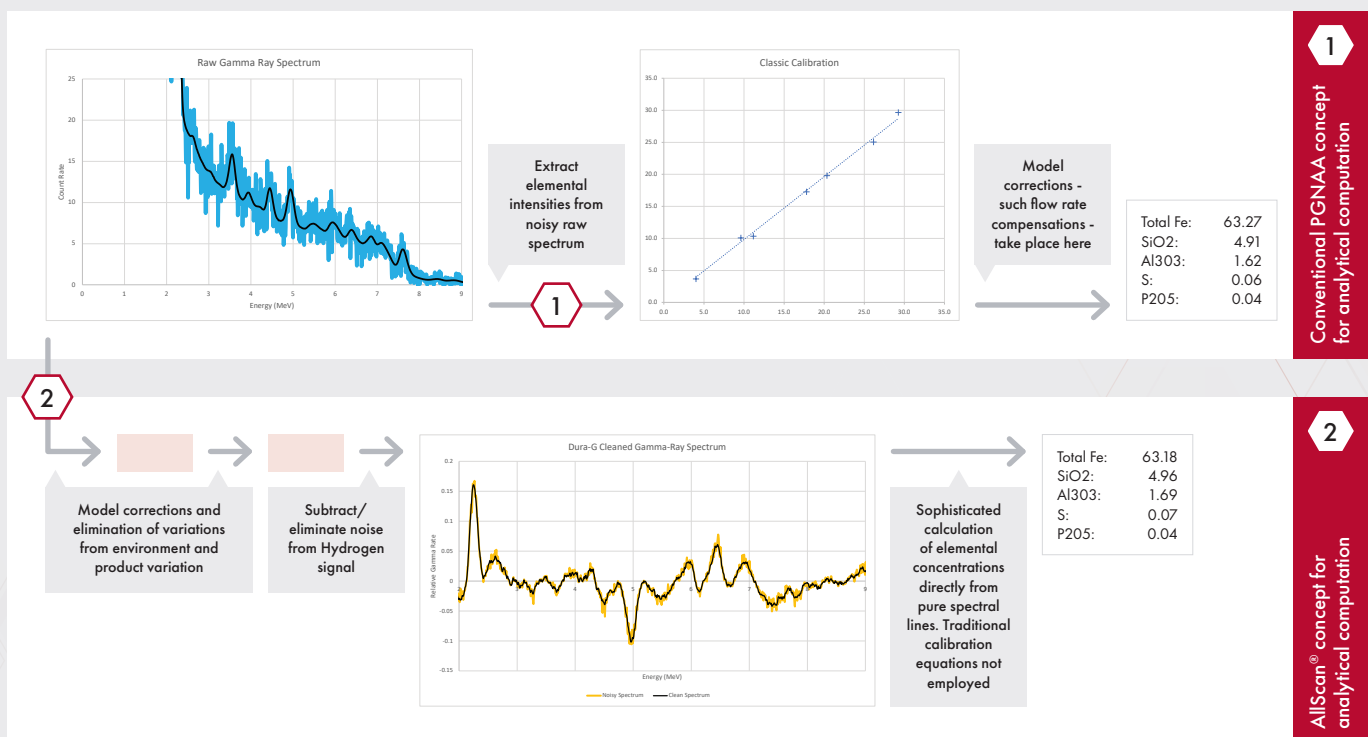
Thus by the removal of the “noise components” from the complex raw Prompt Gamma spectrum, Dura-G creates a cleaned-up spectrum, which:

- increases the signal to noise ratio of the measured compositional signal and improves the de-convolution of same to provide output data with reduced measurement error compared to the traditional raw spectrum
- supports a sophisticated calibration sample free calibration methodology to provide an elemental analyser that is not dependant on material or ongoing calibration techniques.

The Dura-G analytical calculation techniques employ advanced mathematical tools that have not previously been used in PGNA gamma spectrum analysis. The development of the AllScan and its innovative calculation scheme was made in cooperation with University of North Carolina (USA) and other world leading radiation experts.

Dura-G is a unique modelling and calculation concept based on sophisticated algorithms that separate the effect of environment, and process variations on the measured spectra from the effect of elemental variations. In the processing, the significant noise attributable to hydrogen is also eliminated. The below illustration outlines how the unique AllScan concept differs from the conventional calculation concept used.

Advanced noise elimination = greatly reduced calibration requirements





ECONOMIC BENEFITS OF THE ALLSCAN

Utilising available seamless interface options, users of AllScan can access composition analysis of slurries on a minute by minute basis, rolling average and interval basis. Pending the specific application details some or all of these operational benefits will be experienced:

- Full stream analysis reducing the effect of sampling bias
- Direct on-line analysis without sampling latency
- No moving parts normally associated with other analysis methods
- Improved yield through pro-active control of process additive consumption
- Reduction in waste management cost
- Small footprint and low mass with reduction in structural steel requirements

Improved metallurgical accounting

With the lowest cost of ownership on the market AllScan offers the best return on investment to reach these important benefits.

PRODUCT SUPPORT AND REMOTE SERVICES

Real Time Instruments (RTI) has extensive experience in the design, manufacture, implementation and servicing of on-line analytical instrumentation and a proud history of supporting the global mining industry. State-of-the-art diagnostics and remote services include:

- On-board monitoring of detector and electronic status
- Web based connectivity to the AllScan support team for diagnostics and troubleshooting
- 3G mobile data interface eliminating remote access IT security issues
- Automatic generation of text messages (SMS) and emails with key status info and warning/alarm messages.

Global reach – global expertise

RTI specialises in the manufacture of world class on-line instruments and integration with process control systems. Our focus is predominantly the cement, minerals, coal, and power industries. We support our customers throughout the world via a global network of Sales Engineers and Technical Specialists.

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SPECIFICATIONS

Measurement Technique	Prompt Gamma Neutron Activation Analysis (PGNAA).
Analytical Data Reported	User defined. Most elements can be reported depending on concentration and accuracy required. Typical elements include Ag, Al, Au, Ca, Cd, Cl, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, S, Si, Ti, V, Zn, Moisture. User-defined modules can also be reported, e.g. Ca:Si, Si:Mg, Ni:Fe Optional trace elements include: Hg, As and Se
Weight	850 - 1000kg depending on pipe diameter used.
Source	Standard analyser is loaded with 20 μ g Cf252 (2.6 years half-life). For larger pipes or high performance applications 40 μ g Cf252 is used. Typically, an initial 20 μ g Cf252 source is topped up with 10 μ g after 2.5 years and again after 5 years. Disposal occurs at 7.5 years.
Source Holder	Automatic source drive with automatic fail safe in event of power loss. Physical isolation point. Complies with all radiation safety requirements.
Radiation Exposure	Typically below 5 μ Sv/hour outside and around the exterior of the analyser average 1.3 μ Sv/hr on or near the catwalk beside the analyser.
Communications	At the analyser - 10" graphite LCD colour touchscreen local operator interface analyser to customer PLC System – Modbus over RS-485 (default standard). Most industrial communication protocols over Ethernet (TCP/IP), RS-485, RS422, RS-232. Facility for OPC client/server link Remote Support - 3G wireless, built-in web server allows remote view or control from any internet connected PC, tablet or smart phone.
Operating Temperature	Sensitive parts of the AllScan [®] are sealed from the environment. The analyser is designed to operate in all outdoor weather conditions from -20 to +50°C (14 - 122°F) in high or low humidity or precipitation.
Power Control	Instrument quality 120/240VAC; single phase; 300W; 50/60Hz; at analyser.
Control Cabinet	IP66 rated, 316 stainless steel cabinet 800mm wide x 600mm high x 300mm deep (31 in wide x 23in high x 12in deep).
Frame	Industrial-grade 316 stainless steel framing, Non-corrosive 316 stainless steel fasteners, High-grade HDPE shielding.
No Massflow meter required	The AllScan analyser does not require a massflow meter input to function. Proprietary technology makes the requirement for a flow rate input obsolete.



LOCATIONS

AMERICAS | ASIA | EUROPE | OCEANIA | AFRICA | MIDDLE EAST

GLOBAL HEADQUARTERS

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