

Thermo Scientific LESA

Online Light Element Slurry Analyzer for Iron Ore Processing

The Thermo Scientific LESA provides accurate, real-time elemental analysis of multiple iron ore slurry streams for optimization of beneficiation processes. Using the Prompt Gamma Neutron Activation Analysis (PGNAA) technique, the LESA has a distinct advantage over traditional analyzers by being able to measure elements lighter than calcium. This elemental analyzer will enable improvements in product quality, recovery and lower production costs.



Features

- Analyzes problematic, light elements such as: Al, Si, K, S, Na, Mg, P, Cl



A valuable tool in the following areas of iron ore beneficiation

- Silica reverse flotation
- Sulphur removal circuits
- Gravity recovery circuits such as spirals and up-stream classifiers
- Low and high intensity magnetic separation circuits

Benefits

- Increased recovery
- Reduced reagent consumption
- Reduced variability in product quality
- More stable circuit operation and performance.



The Thermo Scientific LESA is a proven, robust, analyzer that provides simultaneous analysis of multiple elements in wet beneficiation plants. One of the first units ever installed, back in 1995, is still in service today, more than a decade after its initial installation. Multiple streams, usually four, can be analyzed when a multiplexer is included. A single stream configuration is available for critical streams.

Improvements with the LESA

The LESA was originally developed in the early 1990s following a need by the industry for an analyzer that can measure the lighter elements. Continuous improvements in the area of electronics, processing and detectors make this the most effective analyzer for the iron ore industry.

The multiplexer, used for multiple stream applications (up to eight in some applications), has been designed to give low maintenance operation combined with short cycle times.

Fixed slot samplers are located on the multiplexer feed for each stream. This permits collection of shift composite sample for metallurgical accounting purposes.

The multiplexer also provides de-aeration of frothy process streams to ensure a high level of accuracy.

The analyzer has many components in common with the widely used Thermo Scientific Cross-Belt Analyzers (CBX and CB Omni) such as the detector, digital signal processing and electronics. Remote diagnostics down to the detector level are possible, enabling the analyzer to provide superior and accurate service. All of these factors add up to improved performance and reliability and a quicker pay-back on your investment.

Benefits

- Unlike the common XRF technique, most light elements can be measured
- PGNAA technique not affected by variations in mineralogy, matrix or particle size (up to 5 mm)
- When used with a representative primary sampler (e.g., Thermo Scientific SamStat-20C) the multiplexer can be used for metallurgical accounting purposes for a cost savings

Thermo Scientific LESA

Analyzer Performance			
Number of Streams	1-4 with multiplexer (8 maximum under favorable conditions)		
Analysis Time per Stream	2-15 minutes, application dependent		
Sample Flow Rate	From 1 m ³ /hr to 20 m ³ /hr		
Detection System	NaI scintillation		
Accuracy	Element	Assay range	Absolute Error (RMSD)
	Fe	50% to 70% by weight	0.5%
	Al ₂ O ₃	0.5% to 5% by weight	0.6%
	SiO ₂	0.5% to 5% by weight	0.5%

Utilities Required	
Electrical Power	Analyzer enclosure: 230 Volts AC ±10%, 50 or 60 Hz Multiplexer and pump: factory selectable 380/415/440/460 Volts AC ±10%, 3-phase, 48-62 Hz ±2 Hz (3 wire plus earth) Power Consumption: 4-stream, max. 8 kW
Air	For multiplexer pneumatics. Instrument Quality Air (clean and dry to 0.1 microns with dew point <+2°C) Pressure nominally 600 kPa (87psi), 500 to 800 kPa acceptable. Consumption: 50 litres per hour at working pressure
Water	Clean plant water. 300-800 kPa at 15 litres per minute, intermittently for pipe flushing
Radioisotope Source	Cf-252 neutron source
Standards	Radiation shielding designed to IAEA safety standards. Electrical rating: IP66, NEMA 4. Quality assurance: ISO 9001
Environment	Measured media temperature 0°C to +60°C, Electronics ambient temperature -30°C to +60°C

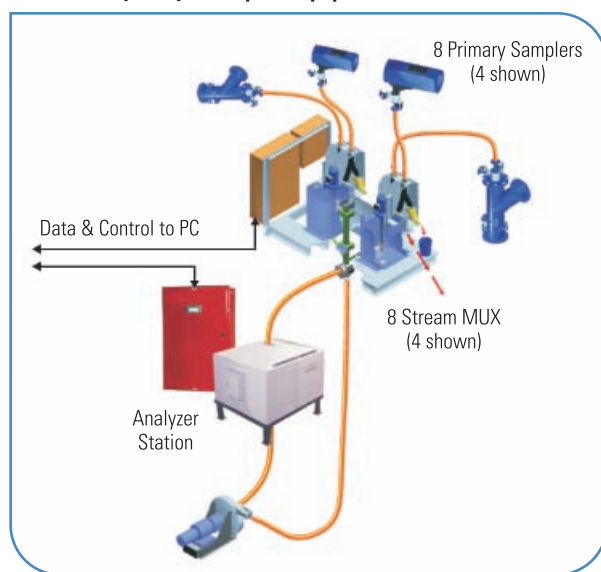
Communication	
Electronics Enclosure to Operator Console (customer supplied)	RS-422 twisted-shielded pair cable (Belden #8104 or equivalent) 2,000 m (1.24 miles) maximum or Fiber Optic 62.5/125 multimode (minimum of 2 fibers) 4,000 m (2.49 miles) maximum; Wireless options available
Operator Console to Customer	OPC client/server link, major communication protocols, ODBC
Control System (customer supplied)	
Offsite Modem	One data-quality phone line or VPN internet link

Four-Stream Multiplexer Physical Specifications	
Dimensions	2700 mm (106.3 in) length x 1360 mm (53.5 in) width x 1950 mm (76.8 in) height
Weight	1500 kg (3307 lb)

Analyzer Physical Specifications	
Dimensions	1850 mm (73 in) length x 1600 mm (63 in) width x 2080 mm (82 in) height
Weight	3200 kg (7000 lb)

Circulation Pump Physical Specifications	
Dimensions	1500 mm (59.1 in) length x 850 mm (33.5 in) width x 960 mm (37.8 in) height
Weight	300 kg (661.4 lb)

Iron ore slurry analyzer (in-plant equipment)



©2007 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Results may vary under different operating conditions. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representatives for details. Literature Code PI.8060.1207

Australia +61 (0) 8 8208 8200 +61 (0) 8 8234 3772 fax	Chile +56 (2) 335-3388 +56 (2) 335-1590 fax	Europe +49 (0) 6104-923680 +49 (0) 6104-923682 fax	USA +1 (800) 488-4399 +1 (858) 452-9250 fax
Canada +1 (604) 669 6395	China +86 (0) 21 6865 4588 +86 (0) 21 6445 7830 fax	India +91 (20) 6626 7000 +91 (20) 6626 7001 fax	www.thermo.com/minerals sales.pid.adelaide@thermofisher.com