

Thermo Scientific GS Omni

GS Omni analyzer for unique light element analysis in slurry process streams

The Thermo Scientific GS Omni analyzer provides accurate, real-time elemental analysis of multiple slurry streams for both light and heavy elements. Using the Prompt Gamma Neutron Activation Analysis (PGNAA) technique, the GS Omni analyzer has a distinct advantage over analyzers using X-ray fluorescence by being able to directly measure elements lower than calcium on the periodic table.



Measuring the process, allowing for:

- Process Control of containment elements
- Product grades (minimizes penalty costs)
- Recovery
- Reagent dosage
- Circuit stability



Features

- Analyzes a range of elements in:
 - Iron Ore flotation and Iron Ore wet magnetic separation
 - S, Si and Al
 - Phosphate flotation
 - P, Ca and Si
 as well as various others light element applications in Sulphide Gold and Base Metal flotation.
- Accepts multiple streams when using an optional multiplexer
- Factory calibrated for slurry applications

Benefits

The Thermo Scientific GS (Gamma Slurry) Omni analyzer is the latest development of a proven, robust, analyzer that provides direct simultaneous analysis of multiple elements in slurry beneficiation plants.

The analyzer is available in configurations of 1-8 streams. The optimum number of streams is usually dependent on the stream concentrations, elements of interest, required cycle analysis time, plant layout and process control considerations.

This elemental analyzer will enable improvements in product quality, recovery and lower production costs.

Applications

The Thermo Scientific GS Omni analyzer is a powerful measurement tool in the following applications:

- Slurry beneficiation / Light element analysis
- Product quality / Penalty costs
- Tailings management

Slurries include:

- Iron ore
- Sulphur
- Phosphates
- Copper
- Calcium carbonate
- Magnesium
- Chlorine
- Industrial Minerals
- Rare Earths

GS Omni Components

The analyzer has many components in common with the widely used Thermo Scientific Cross Belt Analyzer (CB Omni) platform such as the detector, digital signal processing and electronics, neutron source, shielding blocks and software. The GS Omni analyzer can offer higher source strength and multiple detectors to increase accuracy or shorter measurement times when demanded by the application. The remote diagnostics (down to the detector) with our specialized service support, ensures long term optimum analyzer performance.

The multiplexer (used for up to eight streams), has been designed to give low maintenance operation.

Fixed slot sampler diverters 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.

Service and Support

Our service and support network offers a complete array of services designed to help you maintain the availability and accuracy of your analysis system. Affording around the clock support with guaranteed response times, customised training and a commitment to new performance and technology.

The GS Omni: The Best of the Best

The GS Omni analyzer has the following benefits:

- Draws upon 30 years of online PGNAA experience
- Latest generation PGNAA slurry analyzer
- Uses proven CB Omni platform with over 1000 units sold
- As distinct from the common XRF technique, most light elements can be directly measured
- The PGNAA technique is not affected by variations in particle size (up to 5 mm), due to the high penetration of neutron and gamma rays
- Scintillation Detectors do not require cooling
- Factory calibrated and only requiring infrequent site checks/maintenance with supplied reference standards
- When used with a representative primary sampler (SamStat-30C) the multiplexer can be used for near metallurgical quality. This presents an opportunity for cost saving on duplication of sampling systems
- Unique sample presentation system that ensures a significant and constant volume to the detection system

Applications include:

Application	Elements of Interest
Iron Ore slurries	Fe, S, Si, Mg, Al
Phosphate flotation	P, Ca, Fe
Gold	S
Calcium Carbonate	Fe, Si, Al, Ca, Mg
Ni	Ni, S, Mg
Cu	Cu, S, Si

GS Omni Analyzer

Slurry Labyrinth

Density Gauge



Multiplexer

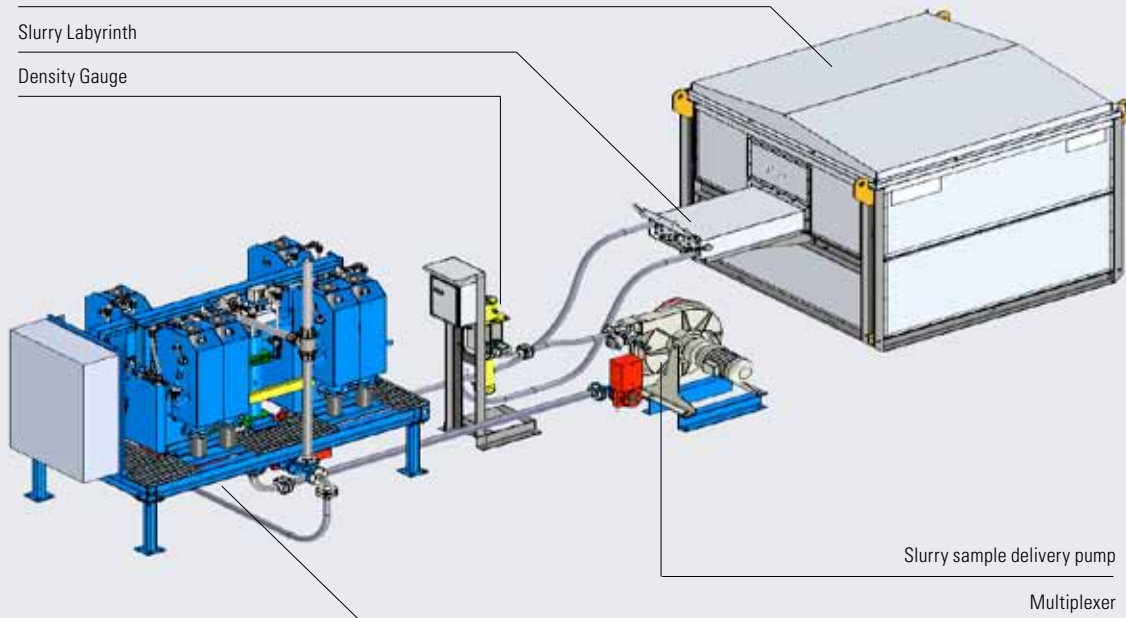
Slurry sample delivery pump



GS Omni Analyzer

Slurry Labyrinth

Density Gauge



GS Omni Analyzer Detection Guidelines

Actual limits may be somewhat different depending upon analyzer configuration and application.

1 H HYDROGEN																	2 He HELIUM						
3 Li LITHIUM	4 Be BERYLLIUM																	5 B BORON	6 C CARBON	7 N NITROGEN	8 O OXYGEN	9 F FLUORINE	10 Ne NEON
11 Na SODIUM	12 Mg MAGNESIUM																	13 Al ALUMINUM	14 Si SILICON	15 P PHOSPHORUS	16 S SULFUR	17 Cl CHLORINE	18 Ar ARGON
19 K POTASSIUM	20 Ca CALCIUM	21 Sc SCANDIUM	22 Ti TITANIUM	23 V VANADIUM	24 Cr CHROMIUM	25 Mn MANGANESE	26 Fe IRON	27 Co COBALT	28 Ni NICKEL	29 Cu COPPER	30 Zn ZINC	31 Ga GALLIUM	32 Ge GERMANIUM	33 As ARSENIC	34 Se SELENIUM	35 Br BROMINE	36 Kr KRYPTON						
37 Rb RUBIDIUM	38 Sr STRONTIUM	39 Y YTTRIUM	40 Zr ZIRCONIUM	41 Nb NIOBIUM	42 Mo MOLYBDENUM	43 Tc TECHNETIUM	44 Ru RUTHENIUM	45 Rh RHODIUM	46 Pd PALLADIUM	47 Ag SILVER	48 Cd CADMIUM	49 In INDIUM	50 Sn TIN	51 Sb ANTIMONY	52 Te TELLURIUM	53 I IODINE	54 Xe XENON						
55 Cs CESIUM	56 Ba BARIUM	57 La LANTHANUM	72 Hf HAFNIUM	73 Ta TANTALUM	74 W WOLFRAM	75 Re RHENIUM	76 Os OSMIUM	77 Ir IRIDIUM	78 Pt PLATINUM	79 Au GOLD	80 Hg MERCURY	81 Tl THALLIUM	82 Pb LEAD	83 Bi BISMUTH	84 Po POLONIUM	85 At ASTATINE	86 Rn RADON						
87 Fr FRANCIUM	88 Ra RADIUM	89 Ac ACTINIUM	104 Rf RUTHERFORDIUM	105 Db DUBNIUM	106 Sg SEABORGIUM	107 Bh BOHRIUM	108 Hs HASSIUM	109 Mt MEITNERIUM	110 Ds DARMSTADTIUM	111 Rg ROENTGENIUM	112 Cn COPERNICIUM	113 Uut UNUNTRIUM	114 Uuq UNUNQUADIUM	115 Uup UNUNPENTIUM	116 Uuh UNUNHEXIUM	117 Uus UNUNSEPTIUM	118 Uuo UNUNOCTIUM						
		58 Ce CERIUM	59 Pr PRASEODYMIUM	60 Nd NEODYMIUM	61 Pm PROMETHIUM	62 Sm SAMARIUM	63 Eu EUROPIUM	64 Gd GADOLINIUM	65 Tb TERBIUM	66 Dy DYSPROSIUM	67 Ho HOLMIUM	68 Er ERBIUM	69 Tm THULIUM	70 Yb YTTERBIUM	71 Lu LUTETIUM								
		90 Th THORIUM	91 Pa PROTACTINIUM	92 U URANIUM	93 Np NEPTUNIUM	94 Pu PLUTONIUM	95 Am AMERICIUM	96 Cm CURIUM	97 Bk BERKELIUM	98 Cf CALIFORNIUM	99 Es EINSTEINIUM	100 Fm FERMIUM	101 Md MENDELEVIUM	102 No NOBELIUM	103 Lr LAWRENCIUM								

Legend:

- Excellent (Light Blue)
- Good (Yellow)
- Nominal (Grey)
- Consult factory (White)

Thermo Scientific GS Omni

Specifications		
Number of Streams		1 to 8
Flow Rate m ³ /h		5 to 15
Power	Power kW	26
	Voltage (3 Phase)	380 to 600
	Voltage (Single Phase)	110 to 230
	Frequency Hz	48 to 62
Flushing Water Clean plant water - Intermittent requirement	Connection	25mm
	Max flow L/m	84 to 168
	Max Pressure kPa	300 to 800
Air	Connection	6mm
	Min Pressure	550 kPa
	Max Pressure	1000 kPa
	Approx. Consumption L/h	50
Accuracy	is application specific and available upon request	
Cooling	No cooling is required for the Analyzer, its detection system or the Slurry Handling system	
Detectors	Sodium Iodide Scintillation Detectors – 2 or 4 (application specific)	
Weight and Dimensions	Analyzer	5500kg - 1.95m H x 2.2m W x 4.5m L
	Slurry Handling System	2500kg - 2.2m H x 1.75m W x 2.5m L
See installation drawings for dimensions, weights and flange connections		

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