Metso

Courier® 8X SL

Accurate monitoring, reliable results

The Metso Courier 8X SL maximizes plant efficiency by enabling measurement of light elements with enhanced technology, while improving recovery and reducing impurity content in flotation circuits.

It is designed for accurate, reliable on-line measurement of the elemental concentrations of plant feed, tailing, and concentrate slurries. Laser Induced Breakdown Spectroscopy (LIBS) technology is used to measure both light and heavy elements for monitoring and control in mineral processing plants, enabling optimization of concentrate impurity content while maintaining the best possible recovery.

Maximize efficiency and quality

Applications

Iron ore concentrators
Online measurement of Si, Al, S, C, Mg, Ca, and other light element concentrations in feed and concentrate streams. Supports optimal product quality without compromising recovery.

Iron pellet plants
On-line measurement of Si, Ca, C, Al, and Mg before and after additive mixing.

Ni flotation from serpentinized ores
On-line measurement of Mg and other light element concentrations in feed and concentrate streams. Optimal product quality without sacrificing recovery.

Laterite Ni concentrators
On-line measurement of Si, Al, Fe, and other light element gangue minerals in feed and concentrate streams. Optimal product quality without sacrificing recovery.

Zn and Pb concentrators
On-line measurement of Si, Mg, Al, and concentrations of other light element gangue minerals in feed and concentrate streams.

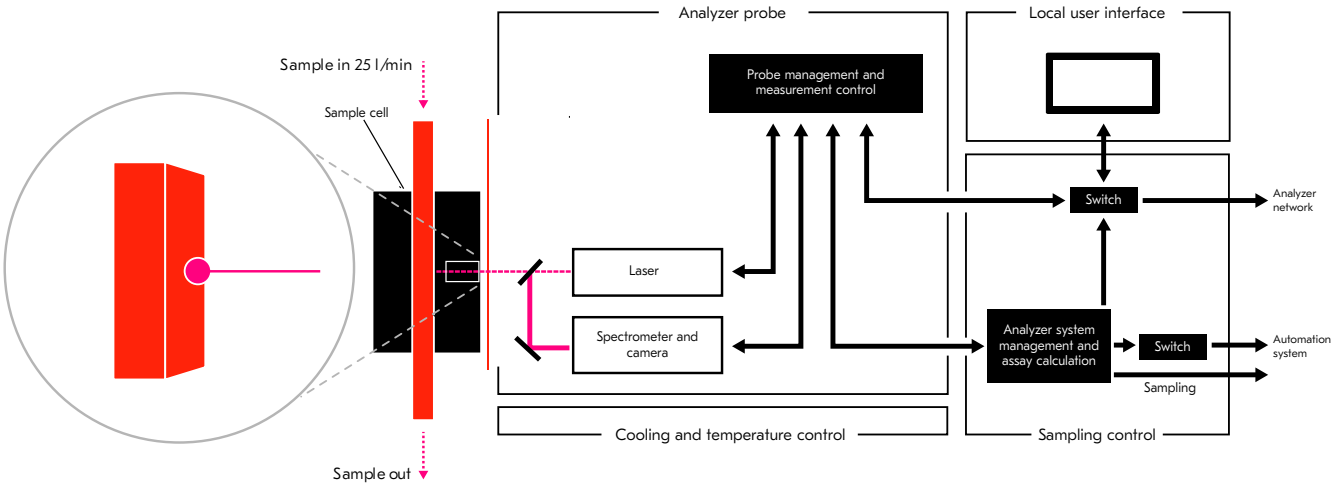
Sulfide gold concentrators
Measurement of S, As, and Fe in concentrate to optimize autoclave operation. Measurement of sulfides in flotation tailings to monitor recovery. Measurement of C to optimize carbonaceous matter removal.

Phosphate concentrators
Final concentrate quality control: measurement of P content and Ca/P ratio. Flotation recovery optimization and reagent control: measurement of P in feed, concentrate, and tailings. Measurement of penalty elements (Mg and Si).

Spodumene concentrators
Final LiO_2 grade control and recovery optimization by Li measurement. Measurement of Fe in the final product. Measurement of other light elements e.g. Ca, K, Mg and Na.

Metso Courier 8X SL offers a wide range of benefits:

- Accurately monitor changes in ore type
- Control concentrate quality and minimize undesirable variations
- Reduce the cost of assaying and metallurgical sampling with automatic, consistent sampling and analysis around the clock
- Improve recovery levels with early detection and rapid resolution of process disruptions
- Benefit from real-time process monitoring and control enabled by frequent assays
- Speed up process development with results from process tests and changes available more quickly
- Easily upgrade and expand the system to meet changing plant requirements with the analyzer system's modular design



A small portion of the sample is heated into hot plasma in the analyzer's sample cell by a short laser pulse. The light spectrum emitted by the atoms and ions in the cooling incandescent plasma is measured after a short delay. The concentrations of the elements in the sample are calculated from averaged spectra using calibration equations based on laboratory assays of calibration samples.

Courier 8X SL on-line slurry analyzer system

Metso Courier 8X SL on-line slurry analyzer system can measure samples from up to 12 streams.

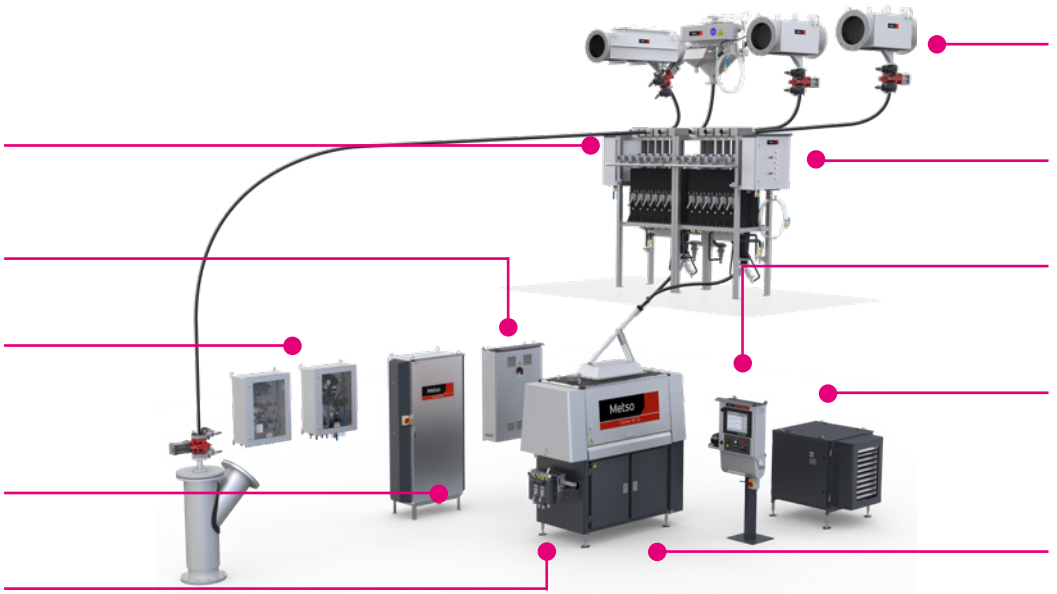
Secondary sampler selects one sample stream at a time, re-samples, de-aerates, and screens it before sending it to the analyzer probe

Transformer for phase conversion

Satellite units provide filtered and pressurized air and water

Electronics cabinet controls sampling and measurement, and handles communication and power distribution

Calibration sampler for laboratory samples



Primary samplers extract 100–200 l/min of primary sample stream from the process

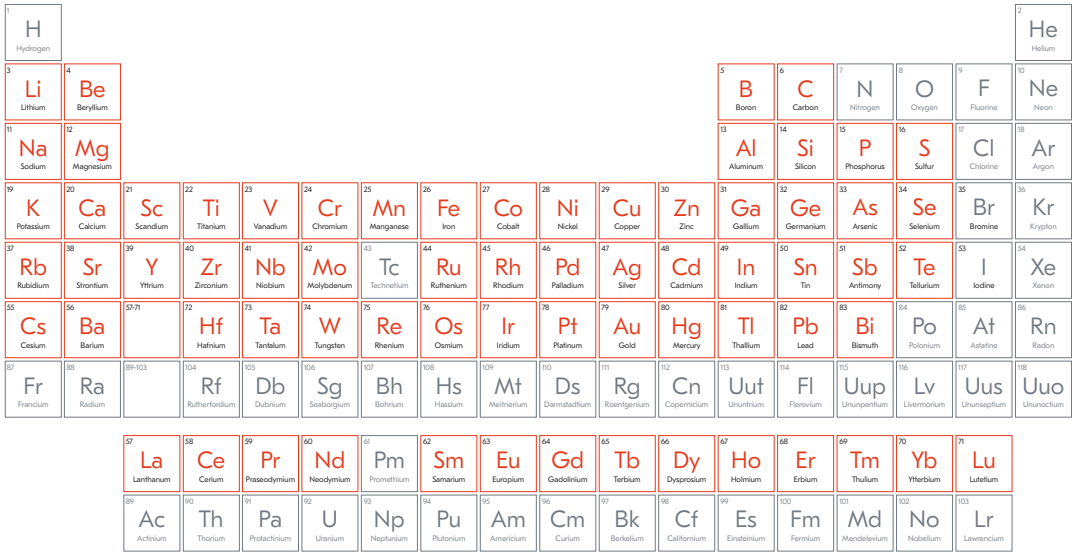
Composite samplers collect laboratory samples

Local user interface displays results and enables management of analyzer system

Cooling set contains an industrial air conditioner

Analyzer probe measures assays

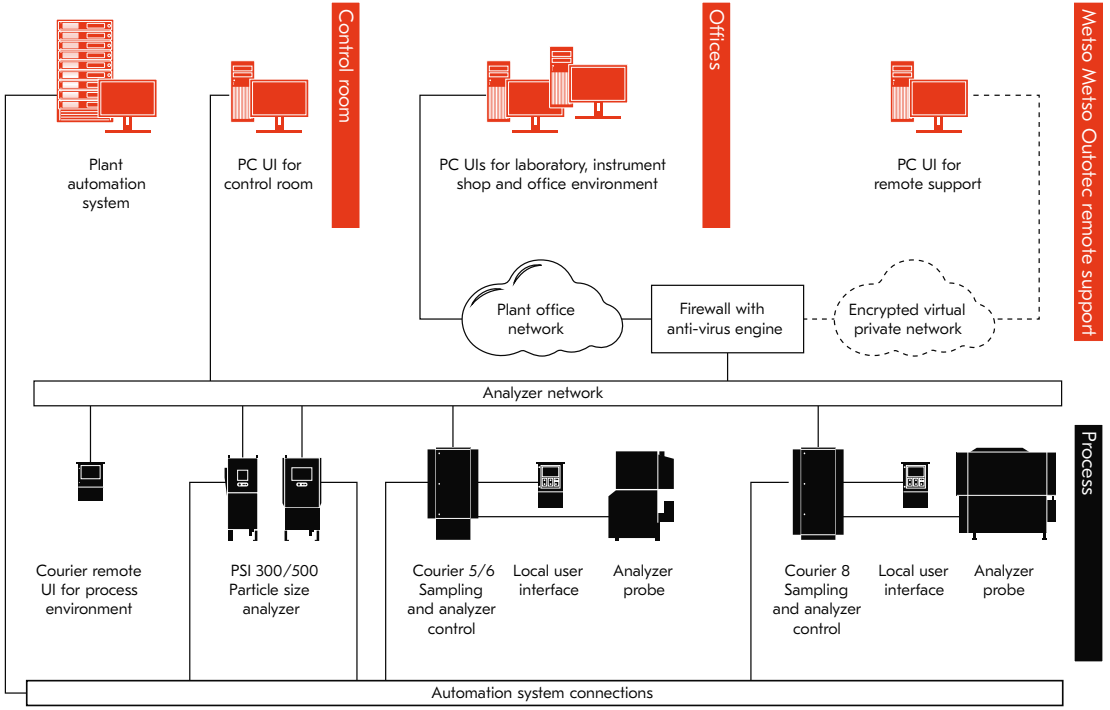
Almost all naturally occurring elements can be measured using laser-induced breakdown spectroscopy (LIBS) technology. Analyzer performance will depend on the elements being measured, the solids content of the slurry, and the particle size.



What's new compared to the Courier 8 SL

- Best available technology with diode pumped laser
- Improved temperature control, robustness, and serviceability
- Doubled measurement speed and 30% shorter cycle time
- Next generation Courier X software platform
- Connectivity features enabling
  - Remote support and calibration services
  - Metso Metrics with KPI reporting to enable improved equipment availability
- Higher precision due to more stable slurry flow

Technical data



Courier analyzer network. The possibility to combine XRF and LIBS analyzers in the same network ensures that you get the best performance from both technologies for monitoring and control.

Specifications	
Measurement method	LIBS
Laser	DPSS Nd:YAG, class 4 internally, class 1 externally
Elemental range	Lithium and heavier
Measurement time	60–300 s/sample line
Number of sample lines	1–12
Primary sample flowrate	100–200 l/min, max range 70–300 l/min
Number of simultaneous assays	Max 12
Plant DCS connections	Modbus TCP (standard) Modbus RTU, OPC DA 2.0, Profibus DP, PROFINET and Ethernet/IP (optional adapters)
Remote service connection	Internet through VPN firewall
Power supply	Three-phase AC, 400V at 20A 50Hz or 460V at 17A 60Hz
Water	30 l/min, 2–3.5 bar
Oil-free instrument air	70 Nl/min, 4–6 bar
Standards	
European Union, CE marked	2006/42/EC Machinery directive 2014/35/EU Low voltage directive 2004/108/EC EMC directive EN 60825-1:2007 Safety of laser products

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