SECOPTA

Fast. Precise. Robust.

MineralLIBS HP

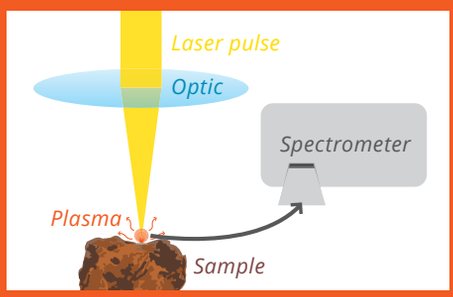
Capture the true chemical composition of highly fluctuating bulk load

Fully automated Industry 4.0 quality control

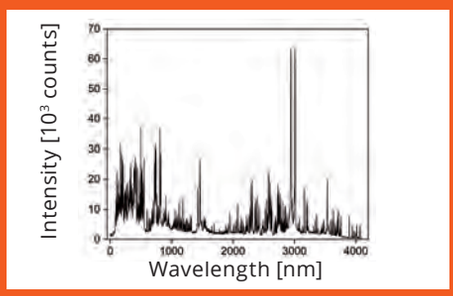
- **For Iron, Steel, Mining, Glass and Cement industry**
- **Almost all industrial minerals and aggregates**
- **Applicable for particle sizes from 100 µm to 80 mm**

What is LIBS?

LIBS (laser-induced breakdown spectroscopy) is a real-time, non-destructive and contactless method to analyze the multi-element composition of materials.



The principle of LIBS



Exemplary sinter spectrum

A laser beam is focused on the surface of a sample. The energy input leads to sublimation and ablation of a small amount of material which is transformed into a plasma. The plasma emits characteristic light depending on the sample composition and is detected by a spectrometer.

For each measured position, the information of multiple elements is available immediately. Based on a calibration with matrix-matching reference samples, the detected emission intensities can be converted to quantitative values.

Based on a calibration with matrix-matched reference samples, the detected emission intensities can be converted into quantitative values. All elements (e.g. Ca. K, Mg, Na, Si, Fe, Cr, V, Al, etc) can be analyzed simultaneously without sample preparation. The procedure can be used for a wide range of applications and materials.

Only an optical access to the sample is needed for the LIBS measurements. The topology of the sample does not impact the LIBS measurements as the sample shape can be considered using a laser distance sensor and an adapted autofocus device.

Reliable detection of incorrectly used input materials, short-time internal variation as well as trend visualization

React on time to stabilize the chemical mass balance

The current standard procedure for monitoring industrial processes are the manual sampling and analysis of samples. This well-established method has three important disadvantages that lead to high inaccuracies.

1) Even with correct sampling, sampling errors occur which can lead to significant deviations between material taken from the process and the actual element concentration of the total.

2) Sometimes significant trends and changes between two samples cannot be detected.

3) The processing of samples from sampling to sample transport to sample preparation and analysis takes a very long time. Depending on the degree of automation, active process control is no longer possible with these long analysis times.

LIBS technology provides practical solutions here. It works contactless and generates such a high number of measurements in a short time, that enough information is supplied for a true inline measurement.

It can analyze nearly all elements, including light elements, without sample preparation. The measurement is performed entirely without X-rays or radioactive radiation.

The MineralLIBS HP in your process

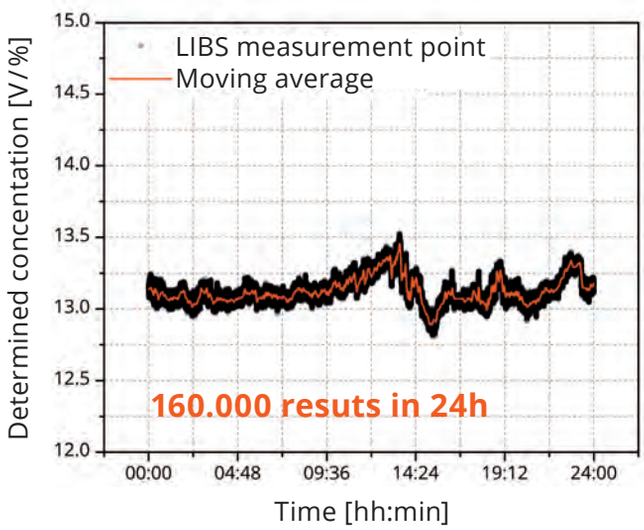
The SECOPTA MineralLIBS HP is an industry proven analysis system adapted to the specific needs of elemental analysis on the conveyor belt.

Equipped with a maintenance-free laser, a robust system and spectrometer setup, a sophisticated calibration and software package, it delivers reliable results ensuring maximum stability.

Due to the modular construction, the long laser lifetime and the practicable maintenance of the MineralLIBS HP is is perfectly suited for 24/7 operation, even in a very harsh industrial environment.

For all customers who want to focus on their core business, SECOPTA offers tailor-made calibrations as a service. Together with direct level 2 communication, the MineralLIBS HP is a powerful tool for active process control.

SECOPTA can update your calibration or even add new calibrations directly on-site or via remote access. In addition, for quality assurance purposes control charts can be automatically constructed with your process data ensuring continuous proof of the stability and if applicable, the process capability of the sensor. Thus, out-of-control situations can be immediately identified and reacted upon.



With thousands of measurements per second, the MineralLIBS HP allows permanent monitoring of trends to ensure quality and fast detection of exceeding the limits

Measurement head (mounted) and industrial control cabinet

Your advantages with the MineralLIBS HP

- Installed directly above the conveyor belt
- Made for 24/7 use with low operating cost
- All elements within a second
- No ionizing radiation
- No sampling and sample preparation error
- No drift in calibration parameters
- Software package with versatile functionality
- Compatible with Manufacturing Execution Systems (MES)
- Direct transfer of results to physical and data-driven process models
- Immediate decision making, fast setpoint adjustment as well as process correction
- A more sustainable process with increased efficiency while lowering CO_2

Technical specifications MineralLIBS HP

Control unit dimension (W x L x H)	627 mm x 844 mm x 1663 mm
Measuring head dimension (W x L x H)	584mm x 584mm x 1370mm
Weight (control unit)	150 kg
Weight (measuring head)	193 kg
Cable length	5 m
Laser class	4 (Laser class 1 possible with additional laser safety housing)
Protection class	IP 56, IP 65 measuring head
Temperature range	+5 °C to +40 °C
Communication interface	Profinet, Ethernet/IP, EtherCat, Modbus TCP, TCP/IP, UDP, OPC UA, SQL (other industrial protocols and field-bus system possible on request)
Detectable elements	All elements from H on

Available soft- and hardware options	
Remote service	The fastest option to bring your system back on track
Remote calibration	Adapt your system to new requirements to a minimum of effort
Spectrometer flexibility	With a broad (240 nm - 940 nm) spectral range, it is possible to incorporate additional spectrometer onsite
Module spare parts	On-site quick-change of modules → Reduce down time to a minimum
Laser safety on measurement position	Development of safety concept Design and delivery of laser safety housing
CE Certification	Easy implementation of the sensor into existing production lines
Measuring device monitoring	Monitoring of sensor and process stability → For audits and certification processes

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Discover more!