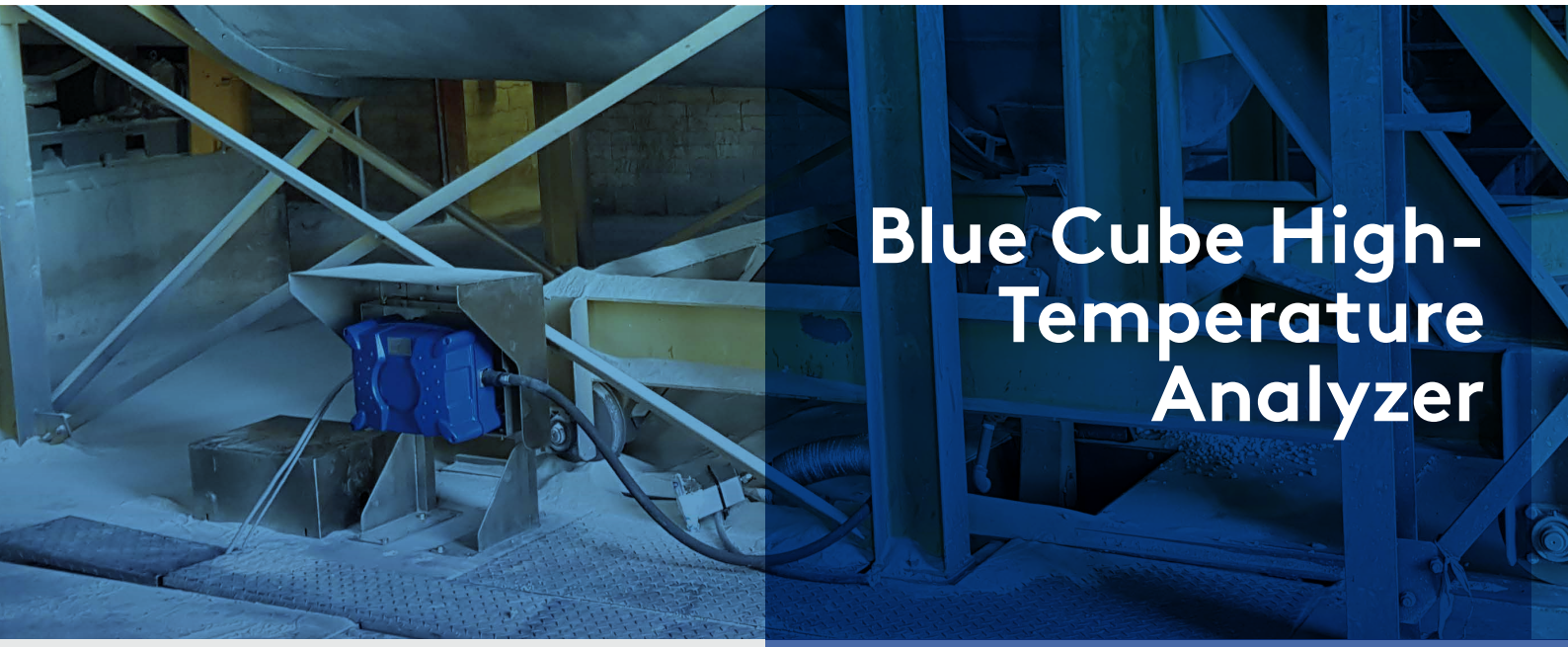
Draslovka



Blue Cube High-Temperature Analyzer

WHAT IT IS

Many operations face challenges in determining the quality of their output minerals in the calcination process. From sampling, analysis and reporting, to providing inputs to process control systems, countless problems may emerge – not least of which is the amount of time taken across the entire process.

Operators have a challenging task to interpret the results – balancing the need to take action when necessary and disregarding spurious outlier results. Underlying trends only become apparent after several sampling-and-analysis cycles.

Custom-built for high-temperature processes, the Blue Cube High-Temperature Analyzer assists operators by empowering them with real-time insights for improved decision-making. By providing real-time quality data, process control cycles can be significantly improved.

BENEFITS

- Low maintenance system
- Real-time quality
- Modular design for simple installation
- Minimal investment in infrastructure
- Suitable for many high-temperature processes including explosive or corrosive atmospheres

draslovka.com/bluecube linkedin.com/company/draslovka/ marketing@draslovka.com

WHAT IT DOES

Pt

PGM, Cr_2O_3, SiO_2, % Solids, Particle Size

Cr

Cr_2O_3, SiO_2, FeO

Au

S, Cu, Fe, As, Au, $CaCO_3$, Pb, Zn, Ni, Sulphide, % Solids

Cu

Total Cu, Acid Soluble Cu, Co, Mg, Ca, Fe, Si, Cu, S, SiO_2, MgO, Zn, Pb, % Solids, Insolubles

P

P_2O_5, BPL, SiO_2, Al_2O_3, MgO, CaO, Particle Size

Mn

Mn, Cr_2O_3, SiO_2, FeO

Ni

Ni, Fe, MgO, As, S, SiO_2, Co, Cu, Al_2O_3, % Solids, Particle Size, Cubanite, Pentlandite, Pyrrhotite, Chalcopyrite, Troilite, Talc, Serpentine

Zn

Zn, Pb, Cu, Fe, Cd, H_2SO_4, Mn, $CaCO_3$

Fe

Fe, SiO_2, Al_2O_3, S, P, Mn, K_2O, Ba

Other

B_20_3, Al_2O_3, SiO_2, SO_4, CaO, Si, C, Fe, MgO, U_3O_8, % Solids, Particle Size

Heavy Minerals

ZrO_2, TiO_2, Cr_2O_3, SiO_2, Fe_2O_3, FeO, Al_2O_3, MgO, Ilmenite, Quartz, Rutile, Zircon, Corundum, Spinel, EHM, Leucoxene, Monazite, Kyanite, Staurolite, Garnet

Calcination

Burnt Limestone & Dolomite

High-temperature measurements are achieved by placing a robust optical probe in a strategic position to view the calcined product as it falls out of the kiln. It projects an incident flashing light beam and collects the reflected spectral data in the ultra-violet, visible and infrared ranges several times per second.

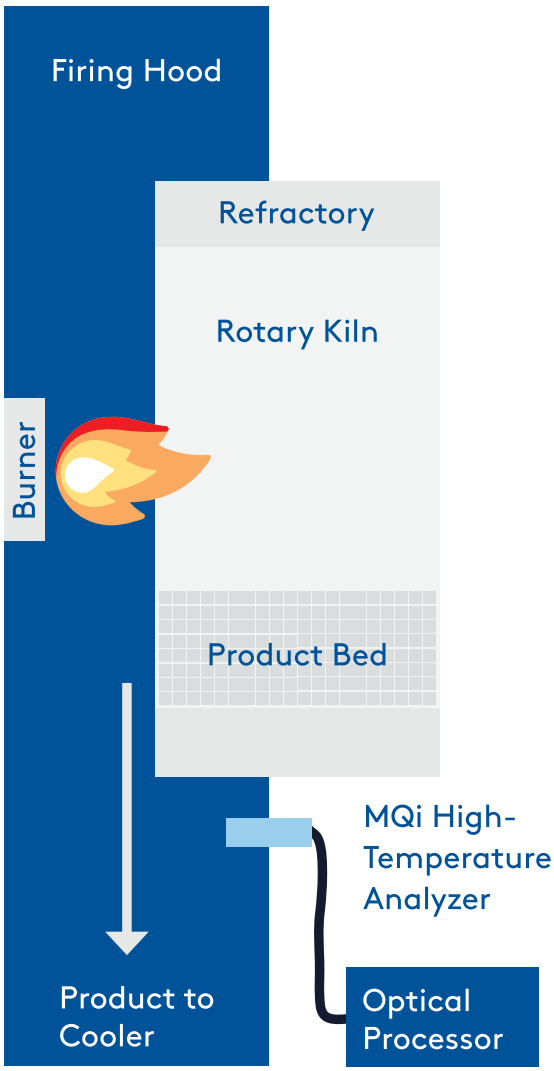
The spectra obtained are compared to the calibrated signature spectrum of the desired product quality. The deviations are then used to generate statistics of readings above and below the target quality typically expressed as a percentage of the total measurements above or below the target.

A selected percentage value may be used as control inputs to the process (for example the firing rate) to achieve the desired product quality consistently in an automated control loop.

Note: The MQi data represents surface mineral compositions (what the probe sees). It is therefore not a rigorous analyzer of the whole mineral sample. However, since the heat treatment of mineral particles all pass through the surface, the signature spectrum of the desired mineral quality can be reliably and repeatably reported by the Blue Cube High-Temperature Analyzer.

HOW IT WORKS

AXIAL SECTION OF FIRING HOOD



1. The key to the successful operation of the analyzer lies in ensuring the optical processor is able to view the product particles as they fall over the refractory lip, out of the inclined rotating kiln. One possibility is illustrated on the left, showing the axial section sketch of the firing hood of a kiln.

2. The components shown are the firing hood covering the kiln outlet and burner or firing system. The product bed 'rolls' along the bottom of the kiln and is carried up on one side until the particles fall under gravity, rolling over the bed back to the bottom of the kiln. The rotation speed is selected to avoid the product 'sliding or slipping' down the sides. The rolling or turning effect is important in achieving the heat transfer to the particles to affect the desired calcination.

3. The Blue Cube High Temperature Analyzer probe is mounted below the kiln, viewing particles falling to the discharge chute or product cooler. It is important that the instrument can get a clear view of the particles without the obscuring influence of excessive dust. The optimum installation configuration is designed to mitigate these challenges and ensure that the analyzer can measure a representative portion of the product.

4. The probe is connected to the optical processor by a fibre optic cable, housed in a flexible protective housing. The processor collects the data and processes it into the required outputs:
   - percentage overburn,
   - measurement counts,
   - particle sizes and
   - temperatures.

5. This output data is transmitted to the kiln SCADA or other reporting system via ethernet or any required protocol.

AVAILABILITY

The Blue Cube High-Temperature Analyzer is available worldwide.

Contact your Draslovka sales representative. Email info@bluecubesystems.com, or visit www.draslovka.com for more information.