Inline Characterization of particles in Mining Industry using SOPAT

The SOPAT technology is based on photo-optic in-situ microscopy in combination with an automated image analysis package that is able to extract the relevant particle information from the image data.

Different probes are available to cover a measurement range from 1 to 10000 µm. For a certain anticipated particle size range, a specific probe is chosen to perform the measurement.

SOPAT probes are rubber or ceramic lined to be used inline despite heavy abrasion challenges.

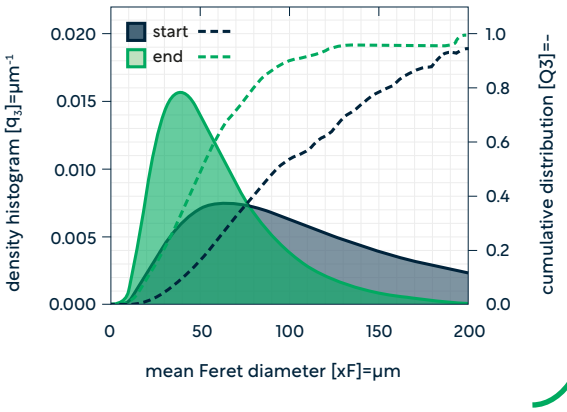
sopat

Make every detail count

SOPAT can measure in:

- Liquid/Liquid
- Gas/Liquid
- Solid/Liquid
- Soild/Gas
- Gas/Liquid/Liquid
- Gas/Liquid/Solid

Particle Size Distribution



Application 1
Particle size in the concentrator

Ball mills are widely used in mining industry in a closed circuit with a hydrocyclone battery.

The aim of the ball mill/hydrocyclone circuit is to produce the optimum Floatation feed particle size while maintaining grind throughout.

The optimal operating point is a tradeoff between throughput, recovery, and grinding cost.

Coarse material in the Floatation feed reduces the economic performance of the concentrator through lower valuable mineral recovery and in extreme cases, through blocking of the flow path in the Floatation cells.

The real time monitoring of the particle size distribution with the SOPAT system allows instantaneous measurements to optimize performance and to minimize down times.

Application 2
Floatation

Froth Floatation is the dominating mineral beneficiation technique and has achieved great commercial success.

However, its high process efficiency is often limited to a narrow particle size range of approximately 10-100 µm.

Considerable efforts have been made to extend this size range to the lower limit of a few microns, even submicrons, and the upper limit of 1-2 mm.

To achieve that, the bubble size distribution (see example image for an inline bubble sizing with the SOPAT) in the Floatation cells needs to be controlled and optimized.

The SOPAT inline systems allows the real time monitoring in the large scale industrial Floatation cell to enhance the performance in this most critical step in the entire ore processing workflow.

Application 3
Mixer settler

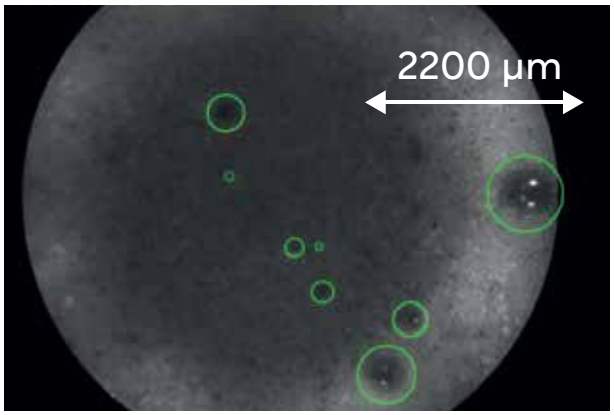
In the mining industry, an extraction process is normally carried out in a series of mixer-settlers which operate in countercurrent mode.

The purification and concentration of metals like copper from solutions produced by leaching of ores and concentrates are the major tasks in these processes.

Up to now solvent extraction technologies continue to be an attractive option for metal producers.

The drop size of the solvent is the key to an optimized process as mass transfer rate and settling time are contrary and need to be optimized against each other.

SOPAT delovers the key information for this: The drop size distribution in real time. Opimum mass transfer rates will be achieved at reasonable settling times.



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