



StoneThree

The Future of Work. Now.

Intelligent Froth Sensor System

Through automated imaging and analysis of individual flotation cell performance metrics, the *Intelligent Froth Sensor System* delivers improved recovery and more consistent operation within the flotation circuit.

Benefits

- Provides monitoring for control and adjustment of individual cells
- Offers operators an efficient means to easily assess and correct suboptimal flotation performance
- Presents immediate automatic identification of abnormal conditions such as empty cells or no froth to avoid sub-optimal results
- Helps the automated process control (APC) system (if installed) to control the plant in a more stable manner
- Improves recovery and increases uptime
- Provides more reliable and accurate results than time-of-flight, ultrasonic and guided radar sensors
- Overcomes limitations of water-shedding-based bubble segmentation
- Impervious to changes in lighting conditions, such as glare from the sun during the day
- Utilises cutting-edge deep-learning techniques for identification of individual bubbles
- Works for bubbles of all sizes and appearances
- Delivers automated notifications via OLE for process control (OPC) and email, as well as weekly reports on sensor health and flotation performance.

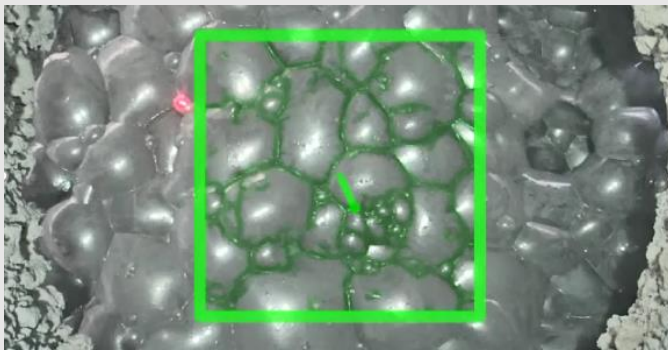


Automated flotation diagnostics for improved recovery and uptime

Accurate, automatic analysis

Control of the mass pull from a flotation circuit is critical, as it plays a key role in separation efficiency. Because standard plant instrumentation cannot fully determine the performance of individual flotation cells, they historically are combined and controlled as units. This approach, however, leaves underperforming cells unidentified and uncorrected. The image analysis solution is based on optical cameras installed above each flotation cell. The plant's network infrastructure connects the cameras to a central processing server.

With flotation imaging sensors, operators now can monitor and measure flotation performance metrics such as overflow velocity and froth height on an individual cell basis.



This ensures the operator can take corrective action for the appropriate cell. It also allows the automated process control (APC) system (if installed) to control the plant in a more stable manner, and reduces variances around the overall mass pull target.

Unique calculation and diagnostic abilities

The industrially proven software calculates a robust froth velocity measurement by analysing multiple regions in the image. The software is able to calculate such parameters as froth height, bubble size and bubble stability. It allows reliable measurement across a large variety of bubble sizes, as well as bubble bursting and coalescence.

The data and actual images are viewable by the operator in the control room. The system makes the calculated data available to the plant's system control and data acquisition (SCADA), historian and APC controller via an OPC server.

System health is monitored in order to detect problems, such as network disconnections, insufficient lighting, dirty camera lenses, etc. The design of the robust sensor housing provides protection for the optical camera during all weather conditions, including shielding the imaging area from direct sunlight at all times.

