

Metso

Enabling optimization through sense

RockSense 2D™





Enabling optimization through sense with RockSense 2D™

Metso RockSense 2D™ provides a continuous online measurement of the particle size distribution on a running conveyor belt, based on image analysis. RockSense 2D™ smart monitoring technology can be used on SAG/AG mill feed as a feedforward measurement or on a crusher discharge to improve your grinding/crushing circuit efficiency and plant availability.

Smart monitoring

- Proven online measurement of Particle Size Distribution on a running conveyor belt
- Identifies ore size changes
- Versatile usage for crushers or mills
- Based on image analysis technology

Improving performance

- Detect production deviation
- Enables optimization of crushing and grinding circuits



Intelligent mining solutions

At Metso, we offer frontrunning automation and digital solutions that help to redefine and digitalize the mining industry. Deployed all around the world in major mining sites, RockSense 2D™ - formerly known as VisioRock™ - plays an essential role in our intelligent mining solutions.

Comminution efficiency is very dependent of the ore hardness, which varies in time based on the part of the deposit currently process. Changes in ore hardness can be detected based on the ore size during and after the crushing stage. Controlling the crushing performance enables a smoother and more performant downstream process. Keeping an eye on the grinding feed allows a proactive mill control, anticipating and smoothing the disturbances, that maintains the desired grind size essential for the separation process while maximizing the throughput.

Monitoring the particle size on a conveyor belt is traditionally performed with a manual and punctual sampling followed by a laboratory analysis. Although the accuracy is very high, it is time consuming and needs a production stop. This method is not appropriate for control purpose, which requires continuous monitoring of the material on the running belt for an early detection of the size deviation. For these reasons, online particle size analysis has become a corner stone innovation in comminution control.

Monitoring the particle size distribution from the top layer

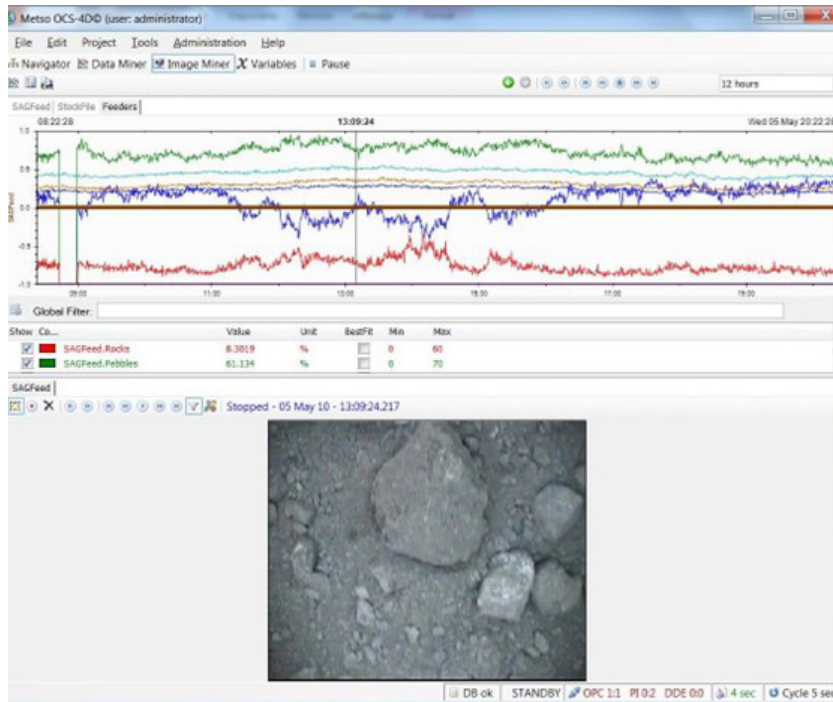
RockSense 2D™ enables smart monitoring through segmentation of particles visible on the top layer and modeling of the volume of particles in the underlayer.

RockSense 2D™ identifies the shape of the coarse particles, as well as the batch of fines visible from the top layer. Then, the algorithms reconstruct the entire size distribution using corrective factors to consider the particles in the underlayers. It provides - as output - the cumulative and individual distribution with customizable sieves, as well as the deciles, including the P80 (80% passing) and P50 (50% passing), which may be considered as control set points.

Due to its high analysis rate, RockSense 2D™ can detect the deviation in the particle size in real time, and allows you to take action to adjust the crusher gap setting or to anticipate a mill overload for instance. RockSense 2D™ can also be installed on an apron feeder to detect the changes in the stockpile segregation.

RockSense 2D™ monitors the material visible on top of the conveyor with an industrial camera enlightened with 2 infrared spots, ensuring a homogeneous light on the monitored surface. Both the camera and LED spots are powered over Ethernet (POE), making the hardware installation very easy.





Valuable input for optimization

The online measurements of the P80 or various size fractions defined based on the process characteristics provides valuable inputs for optimization of the crushing and grinding circuits. RockSense 2D™ brings the maximum benefit when it is combined with an Advanced Process Control system deployed by Metso process control experts.

RockSense 2D™ measurements and process data can be displayed in parallel with camera images in the ImageMiner module for further analysis.

Versatile system

RockSense 2D™ can be deployed with a connection cabinet, a preset embedded computer supporting up to 3 cameras.

For a bigger system, or in the cases when an embedded computer is not suitable, RockSense2D™ can be deployed with a connection cabinet supporting up to eight measurement assemblies, along with fiber-optic and copper media connections to a centralized computer installed in a server room. The system supports any network topology, including star and ring configurations.





Choose the RockSense 2D™

RockSense 2D™ is a cost-effective solution for online particle size analysis on conveyors. It detects the size deviation and opens opportunities for crushing and grinding optimization that can increase plant availability, uptime and production.

Simple start-up and easy maintenance

RockSense 2D™ can be installed above any type of conveyor. The small form factor of the Camera and Light Assembly (CLA) makes the design of mounting bracket cheap and easy. The camera would require a cover if installed outside to be protected against the sunlight. A standard Cat5e or Cat6 cabling is used between the CLA and the connection field.

The preset and licensed analysis software included in the cabinet with the embedded computer version makes installation even easier.

After a belt cut and a lab analysis of the sample, the calibration itself is performed by a RockSense 2D™ specialist, on-site or remotely.

Key technical specifications

| Camera | |
|--|---|
| IP rating | IP67 |
| Operating temperature | 0 - 50°C |
| Minimum visible size | Down to 4 - 5mm in best conditions |
| Connection cabinet | |
| IP rating | IP66 / NEMA4X |
| Power | 110 / 230 VAC, 50 / 60 Hz |
| Maximum number of measurement assemblies per cabinet | 3 with embedded computer 7 - 8 without embedded computer |

RockSense 2D™ joins the Planet Positive Portfolio

RockSense 2D™ is a part of our Planet Positive portfolio. The Planet Positive portfolio focuses on the most environmentally efficient technologies in our current portfolio.

Sustainability is at the core of Metso's offering and operations. We are the net positive partner for change, with our handprint significantly bigger than our footprint. We are committed to limiting global warming to 1.5°C with Science Based Targets.

Find out more at metso.com/sustainability



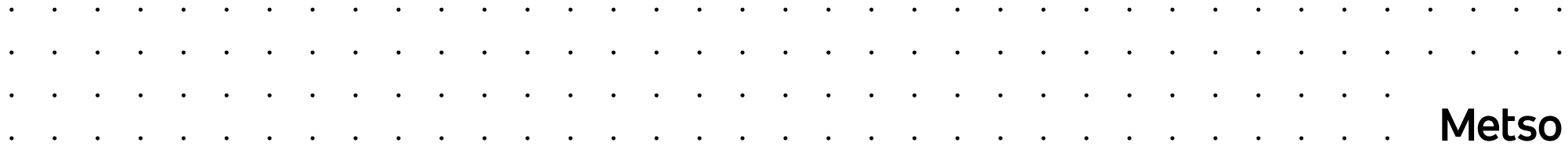
A lifetime of service

Metso provides services for the entire lifecycle of your asset, from single pieces of equipment to entire plants, via a global network of service centers. Metso services cover everything from spare parts and maintenance to plant evaluations and upgrades, as well as project management and training.

Contact Metso experts to find out how RockSense 2D™ can benefit your operation at metso.com/portfolio/rocksense

Metso is a frontrunner in providing sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. By helping our customers increase their productivity, improve their energy and water efficiency and environmental performance with our process and product expertise, we are the **partner for positive change**.

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