OreVia

Slurry

MOLYCOP
A tega company

Measurement and Analytics

Milling



Advanced precision with the OreVia suite

Molycop's cutting-edge OreVia suite revolutionises mining operations by stabilising and optimising mineral processing. Using Artificial Intelligence (AI) and advanced machine learning, OreVia delivers real-time insights to:

- increase efficiency
- reduce wear
- improve product consistency
- increase profitability.

OreVia technologies can be placed at the primary crusher discharge, secondary crusher discharge, above the mill feed, above flotation tanks or directly into slurry pipes, and use advanced AI capabilities to learn the context of each location. Using robust, high-resolution cameras, they detect and alert operators to process variations, providing high-resolution imagery and real-time data and analysis with remote monitoring and playback feature options.

OreVia technologies

The OreVia suite of advanced AI-based technologies includes:

Rock: Detects and measures rock particles to ensure a consistent blend into the mill, stabilising throughput and reducing liner wear.

Slurry: Detects and measures fine particle size and fragmentation in pipes for robust, affordable and accurate particle-size insights.

Froth: Monitors froth pulp velocity and bubble size and reports anomalous flotation conditions in real time to maximise mineral extraction efficiency.

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OreVia – Slurry overview

OreVia is an advanced, AI-learning particle fragmentation system that accurately detects fine particle sizes, adapts to variations in ore and installation locations, provides high-resolution fines analysis and delivers fast, real-time particle measurements.

The technology consists of a high-resolution endoscope installed in the crusher discharge pipe to retrieve particle size and shape information via image analysis. Only one endoscope is provided, and the measurement range will be determined in collaboration with the client to best suit their needs. Typical measurement ranges are:.

1. 1–200 µm for fine particles.
2. 10–1100 µm for coarser particles.

The system works by identifying the outline of fine particles in the crusher process discharge stream using AI-powered technology, offers remote monitoring and playback features, and integrates seamlessly with existing control systems.



On-site installation of the OreVia system.

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Features

- Ignores surrounding areas, including belts, feeder walls, crusher surfaces and rollers
- Measures particle sizes in pipes in the ranges 1–200 µm and 10–1100 µm
- AI system learns and improves over time
- Offers high-resolution fines analysis
- Detects and adapts to ore variations
- Integrates with control systems and the Molycop Data Platform
- Permissible process temperature: -10 – 130°C (temperatures up to 450°C achievable with cooling tube accessory)
- 5.1 MP Machine Vision Camera with GigE Interface, 15 fps

Benefits

- **Real-time optimisation:** Real-time data enables operators to make immediate adjustments to the milling circuit to maintain optimal particle size.
- **Increased throughput:** Improved process control with real-time adjustments, especially using an APC system, for optimal mill control delivers improved mill throughput and product specification consistency (system will emit an alarm if material is out of specification).
- **Increased profitability:** With reduced mill operation costs and improved energy consumption, along with improved throughput and product specification consistency, OreVia delivers real-world profitability improvement.



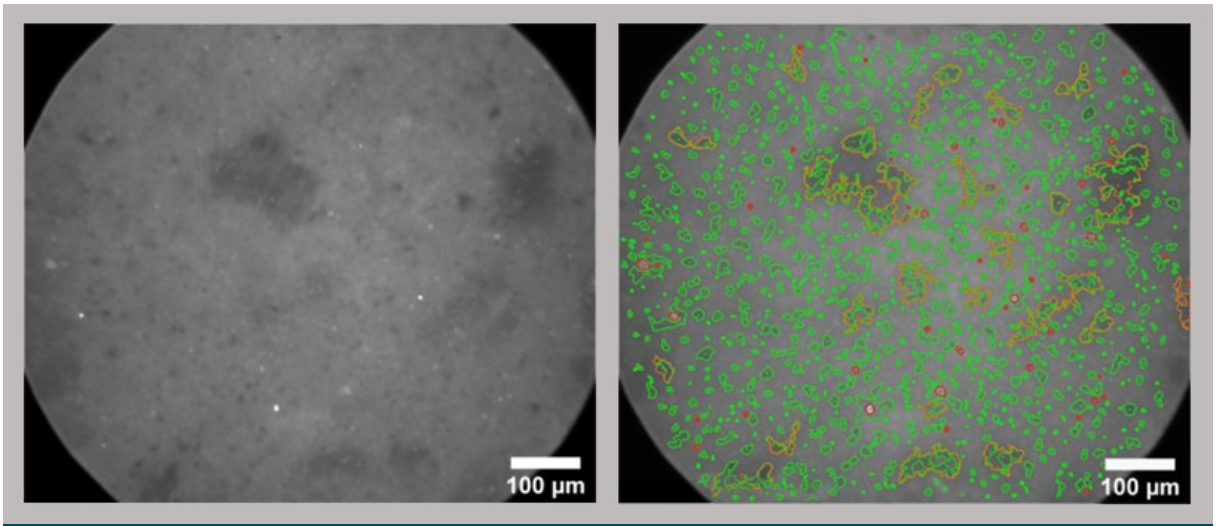
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Real-time fragmentation control

Artificial Intelligence has paved the way for robust, affordable and accurate particle-size insights.

Data is continuously collected in real time and securely stored in a time-series database, ensuring a comprehensive record of process performance. This structured data allows for easy retrieval, trend analysis and in-depth evaluations, enabling operators to monitor changes over time, identify patterns and make informed decisions to optimise efficiency and performance.

With expertise in control solutions, this solution can be seamlessly integrated with Molycop's advanced optimisation suite, including MillSlicer and MillStar APC, ensuring precise mill performance and process control.



OreVia uses Inline Particle Analysis Technology.

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Technical specifications

Fine (I-200) endoscope

Parameter	Specification
Particle Size Range	1 – 200 µm
Field of View (diag.)	710 µm
Dimensions & Weights	
Housing	Length: 240 mm Diameter: 72 mm
Protection Tube	Wetted length: 320 mm* Wetted tube diameter: 12 mm
Weight	4.5 kg
Materials	
Housing	1.4404 (316L)
Protection Tube	1.4404 (316L)**
Probe tip window	Sapphire
Solder	Au/Sn 80/20
Cable	Adaptaflex cable protection; type SPLHC; flexible; liquid resistant; IP67; black
Technical Data	
Permissible Process Temperature	-10 – 130°C (temperatures up to 450°C achievable with cooling tube accessory)
Permissible Ambient Temperature	0 – 40°C
Permissible Process Pressure	0 – 10 bar (higher pressure ratings up to 320 bar on request)
Camera	5.1 MP Machine Vision Camera with GigE Interface, 15 fps
Cable	Standard length: 2.5 m (different lengths available) Diameter: 27 mm Bending Radius: 20 cm
Power Supply	141 VA (50-60 Hz)
Cable	Standard length: 2.5 m Diameter: 27 mm Bending Radius: 20 cm
Approvals	
Protection	IP 65
Compliance	RoHS conform according to 2011/65/EU

* Longer probes available on request.

** The following materials are also available on request: 1.4571 (316Ti), 2.4602 (C22 Hastelloy), 3.7165 (Titanium).

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Technical specifications

Coarse (10–1100) endoscope

Parameter	Specification
Particle Size Range	10 – 1100 µm
Field of View (diag.)	2600 µm
Dimensions & Weights	
Housing	Length: 240 mm Diameter: 72 mm
Protection Tube	Wetted length: 320 mm* Wetted tube diameter: 12 mm
Weight	4.5 kg
Materials	
Housing	1.4404 (316L)
Protection Tube	1.4404 (316L)**
Probe tip window	Sapphire
Cable	Adaptaflex cable protection; type SPLHC; flexible; liquid resistant; IP67; bending radius 110 mm; OD 26.4 mm
Solder	Au/Sn 80/20
Cable	Adaptaflex cable protection; type SPLHC; flexible; liquid resistant; IP67; black
Technical Data	
Permissible Process Temperature	-10 – 130°C (temperatures up to 450°C achievable with cooling tube accessory)
Permissible Ambient Temperature	0 – 40°C
Permissible Process Pressure	0 – 10 bar (higher pressure ratings up to 320 bar on request)
Camera	5.1 MP Machine Vision Camera with GigE Interface, 15 fps
Power Supply	141 VA (50-60 Hz)
Cable	Standard length: 2.5 m Diameter: 27 mm Bending Radius: 20 cm
Approvals	
Protection	IP 65
Compliance	RoHS conform according to 2011/65/EU

* Longer probes available on request.

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Workstation

The SOPAT system is an image-based measurement system that requires a powerful processing unit. SOPAT workstations are equippped with a Graphical Processing Unit (GPU) and the SOPAT Analysis Software Suite.

The SOPAT workstation is designed and tested to operate 24/7 in production environments. It fits easily into 19" cabinets. With the SOPAT Software Suite, the SOPAT probe is connected via Ethernet Cat5e to conduct image analysis on the CPU or GPU. Cat5e connection lengths can be up to 90m. For longer distances, optical fibre converter solutions up to 10km are available. For high-dust-load environments, a special workstation version with additional coolers is available.



Complete your system:

- Connect via Ethernet (min. Cat5e) to your PCS.
- Also runs as Windows Service.
- A version with additional coolers is available for extreme ambient environments.

Parameter	Specification
Motherboard, CPU, RAM	
Motherboard	STR4 H12SSL-C, 4x RAID controller, TPM 2.0, 3xPCIe 16x, 3xPCIe 8x, 2x Gigabit Ethernet
CPU	AMD EPYC 7252, 8-core/16 threads, 3.1/3.2 GHz
RAM	4x16 GB, DDR-4, 2666 MHz, ECC
Dimensions & Weights	
Housing	19" 4U Server metal housing, 120 mm front side fan, 80 mm back side fan
Dimensions (HxWxD)	176 mm x 430 mm x 465 mm
Weight	16.7 kg
Interfaces	
Graphics Card	NVIDIA RTX 4000 SFF Ada Generation, 20 GB GDDR6, PCIe 4.0 x16, 4x DisplayPort -GPU/NN
Network adapter	i350-T2, 2x Gigabit Ethernet
Hard Disks	
SDD	2x 250 GB S-ATA-Solid State Disk, RAID 1, HP S700; 550/530 MB/s (r/w)
HDD	2x 4 TB S-ATA Seagate Sky Hawk; 7.200 rpm, 256 MB Cache, 180 MB/s (r/w)
Temperatures	
Minimum Operating Temperature	10°C
Maximum Operating Temperature	50°C
Power	
Power Supply Unit	750 W ATX
Power Consumption	~ 310 W

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Typical uses

OreVia is primarily used by mining operations to improve crusher and mill operation and productivity. The system provides real-time data on fine particle size, which is then used to optimise stages of the mineral processing circuit, from crushing through to flotation.



Contact Molycop to find out more about how Molycop OreVia optimises mineral processing operations.

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