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METALS & MINING AX01203

AI solution that optimises mill throughput

The technology marketplace for heavy industry

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AI SOLUTION THAT OPTIMISES MILL THROUGHPUT

How it works

Most concentration plant operators are aware that their mines could be made more efficient and productive. Perhaps they have a flotation system with low recovery rates, variable concentration consistency, or cavitation issues that cause lengthy and costly downtimes. Maybe they are failing to regulate each variant of their milling operation, from material weight and moisture content to water and ore loading. This means that unplanned variations quickly arise and the mill becomes overfed or underutilised, leading to overheating of motors, increased energy consumption, equipment outage, and financial loss. Failure to detect and quickly correct issues across the mine results in a drop in efficiency, a loss of revenue, energy wastage, and a rise in operational costs.

These issues become even more pronounced when flotation is processing multiple mineral ores at once or when ores are highly variable in contents such as sulphides. When this is the case, it becomes difficult to monitor all the different reagents, wet circuits, and tanks that are required for each individual ore, and challenges can quickly escalate into serious operational issues. Undetected, cavitation, for example, leads to overflowing sumps, performance degradation, increased energy consumption, defective pumps, and periods of operational downtime.

By increasing visibility across processes, this solution addresses critical industrial challenges. It improves the transparency and efficiency of flotation processes, no matter the scale, and increases throughput and recovery for the smelting plant and the concentrator plant in grinding, flotation, and blending. It boosts production, cuts downtime, optimises resources, improves quality control, and enhances visibility across the entire mine. To operate manufacturing equipment through automation, it is also compatible with I&C systems, while its self-learning feature continually adapts to changing conditions.

This plug-and-play, scaleable AI optimisation solution deploys machine learning to pull in data from multiple external sources, including video cameras, machine-vision systems, and virtual sensors. It displays this data on a single unified dashboard, providing actionable insights on all areas of the production process or particular areas the mine operator wants to address, be that energy savings or increased production. These insights are used to optimise each stage of the flotation process - they can, for example, optimise the amount of water and reagents used, reducing the amount of waste products and pollutants as a result. They can also predict and prevent cavitation in cyclone feed pumps and detect other anomalies in real-time, so they can be resolved before they become critical.

Key facts

over

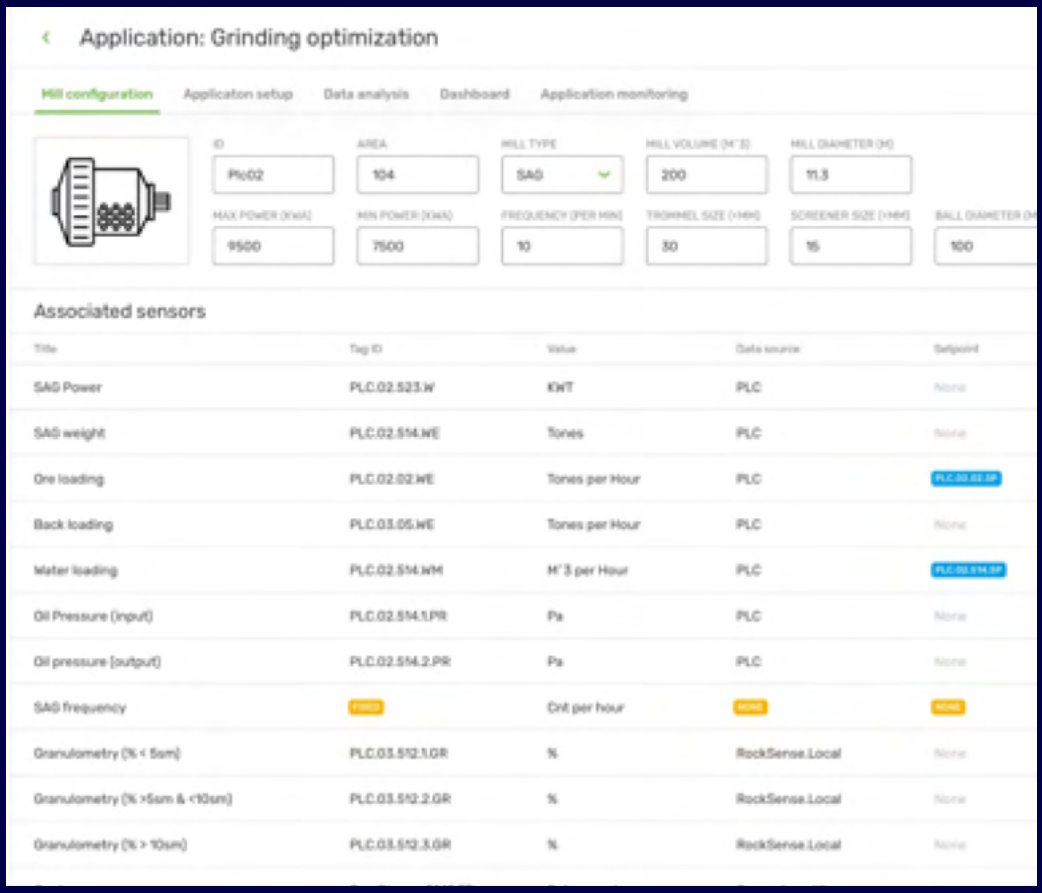
1%

increased extraction rate

typically

4%

reduced energy consumption



LIVE VIEW OF DASHBOARD

LIVE VIEW OF DASHBOARD

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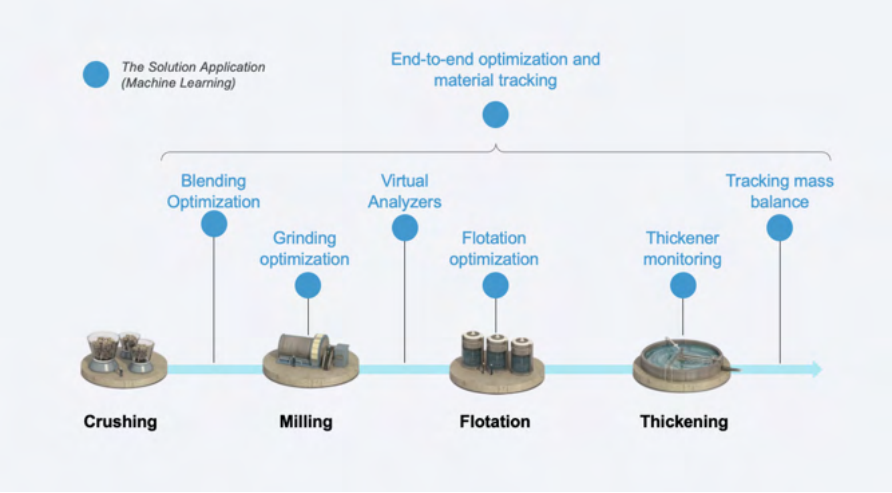
TOP BUSINESS BENEFITS

There are five main business benefits to this AI mining processing optimisation solution:

- Optimises flotation - Increases recovery rate by at least 1%
- Increases concentrate quality
- Increases throughput by up to 2%
- Reduces energy consumption by 4-10%
- Decreases equipment downtime by 50%

This AI mine processing optimisation solution quickly and easily integrates with existing IT infrastructure via the cloud. Its data analysis and machine learning technology continually adapts to changing conditions and pulls out actionable insights, often from previously overlooked data. It offers complete transparency of the feed ore's journey through the supply chain with materials tracking, it can detect anomalies, prevent cavitation events before they occur, and help to mitigate against future ones. It makes recommendations for optimising each stage of the flotation cycle, or milling process, and its predictive maintenance facility lengthens equipment life. It can also be tailored to address specific needs.



End-to-end optimisation and material tracking diagram

Top benefits

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CUSTOMER SUCCESS STORIES

This software helped one industrial operator see a 2.5% yield increase, the equivalent of $10 million in revenue. For another, it decreased equipment downtime by 10% and increased annual revenue by $6 million. Here are some outlines of specific achievements in the metal and mining sectors:

Gold mining operator

Customer Challenge
This gold mine operator knew that it was failing to maximise its grinding throughput.

Solution
Once this AI mine optimisation solution was deployed, it boosted its output by 3%.

Global mining company

Customer Challenge
This global mining company wanted to improve its flotation efficiency.

Solution
Once this AI mine optimisation solution was deployed, it saw its flotation recovery rise by 1% and its magnetite consumption fall by 20%.

Global steel company

Customer Challenge
This global steel company was keen to cut its energy usage and improve efficiencies across its operations.

Solution
Once this AI optimisation solution was deployed, it saw a 4% drop in its electrical furnace use, a reduction of Si content variety in pig iron from 0-1% to 0.3-0.4%, and it detected 93% of flatness defects of steel in rolling.

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FAQ

Can pilots be deployed before running a full-scale operation?

Yes, pilot projects are routinely run.

Is ongoing support provided with this solution?

Yes, there is a dedicated team on-hand to offer support based on customers' requirements.

Does this system integrate with SCADA?

Yes, it integrates with most existing systems, including SCADA.

Has it been well-tested in the field?

Yes, it has been successfully tested by steel operators and mining companies worldwide.

About Axora

Axora is the global technology **marketplace** for heavy industry. We source the best innovative solutions, to solve the biggest industrial problems.

Our service helps industrial companies to discover, evaluate, procure and deploy technology from all over the world.

Entrusted globally by 100s of industrial leaders and innovative solution providers, we help companies take action to hit their safety and sustainability goals.

About the solution provider

This AI technology provider is run by a team of 50+ experts in AI, software engineering, and the mining & metals industry. It is focused on helping industrial companies migrate to Industry 4.0 status. To achieve this, it uses AI and machine learning to uncover high-value data that can be leveraged to boost production, reduce downtime, and cut energy consumption. Its industrial automated solutions are used for predictive maintenance, quality control, and end-to-end optimisation.

Your next steps

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