Case Study - Smart Condition Monitoring

ArcelorMittal

SAM4 detects 100% of failures up to 4 months in advance
The goal
ArcelorMittal has had a digital focus for a number of years, benefiting customers in particular. ArcelorMittal is making major investments, not only in terms of resources but also in time and in management attention, to remain at the forefront of digitalisation in the steel industry. Investments in Smart Condition Monitoring solutions are aimed at improving Overall Equipment Effectiveness, prioritising maintenance tasks and improving the sustainability of production processes.

The challenge
ArcelorMittal’s rotating assets often operate under harsh conditions. A conveyor at the Ghent’s Hot Strip Mill facility moves plates of sizzling hot steel along the production process. Under these circumstances, traditional, vibration-based sensor technologies fail due to high temperatures.

Andy Roegis - ArcelorMittal
“Our goal is to improve reliability in a cost-effective manner. In the steel industry, assets frequently operate in conditions that are not hospitable to sensitive sensor technologies. We were looking for a solution that could complement vibration-based condition monitoring systems to monitor assets that can otherwise not reachable. SAM4 installs inside the Motor Control Cabinet, enabling us to monitor assets operating under harsh conditions”.

Solution
SAM4 is a plug & play condition monitoring solution that installs inside the Motor Control Cabinet - and not on the asset in the field. It consists of sensors, analytics, and an online dashboard or API. SAM4 monitors data 24/7 and turns data into information about the health-status of equipment. The online dashboard offers actionable information about the health, performance and energy consumption of connected assets - allowing ArcelorMittal to schedule maintenance at the optimal time.
The Process
SAM4 was installed on motors at ArcelorMittal’s Hot Strip Mill. After a learning period of 4 weeks, SAM4 started to monitor for mechanical and electrical failures. SAM4 sends an alarm as soon as issues are detected, so that ArcelorMittal’s maintenance teams can perform inspections, repairs or replacements before downtime happens.

Results
SAM4 detected 7 failures in 12 months, sometimes up to 4 months in advance. With virtually no false positives and no missed failures, the Proof of Concept was successful. ArcelorMittal expands its installed base based on these results.

Andy Roegis - ArcelorMittal
“The conveyor on our Hot Strip Mill is a critical part of the production process. Because it operates in harsh conditions, it is virtually impossible to apply manual monitoring techniques - or vibration-based systems. SAM4 detects upcoming failures by analysing electrical waveforms from inside the Motor Control Cabinet. The information about health, performance and energy consumption allows us to make data-driven decisions about resource allocation. Above all, it provides insights needed to prevent unplanned downtime”.

Installs Inside the MCC
24 / 7 Condition Monitoring
Automated Analysis& Alerts
About SAM4
SAM4 is the Smart Condition Monitoring solution for AC induction motors and rotating equipment. SAM4 monitors equipment 24 / 7 and detects upcoming failures up to months in advance.
SAM4 consists of sensors, analytics and an online dashboard that offers real-time insights into the health, performance and energy consumption of connected assets.
SAM4 is provided as a Condition Monitoring service, based on a monthly subscription fee.

About Semiotic Labs
Passionate about solving the problem of unplanned downtime, Semiotic Labs uses advanced AI and machine learning technology to create smart condition monitoring products that save clients time, money, and a loss of productivity.

SAM4 is available for:
- Low Voltage AC induction motors
- Pumps
- Compressors
- Conveyors
- Blowers & Fans
- Mixers
- Gearboxes