



Digital Solutions



ME FIT Digital

Integral Solutions and Proven Performance

ME Elecmetal is a global supplier with over 100 years of experience as a supplier and strategic partner for total wear product solutions in the mineral processing, aggregate, construction, and recycling industries. We are known for always being at the forefront of technology, providing innovative end-to-end solutions to our customers around the world — exceeding their expectations.

Vision

ME Elecmetal will be a globally competitive supplier recognized for excellence and leadership in the sustainable delivery of Integral Solutions that add value to mining processes and other target markets.

Values

- Respect for the dignity of people
- Comprehensive human development
- Focus on internal and external clients
- Responsibility and integrity
- Commitment to sustainability

Mission

To satisfy the needs and exceed the expectations of our customers, employees, suppliers, shareholders and the community through excellence in the sustainable delivery of integral solutions to the market.

Our Global Business

- Customers in more than 40 countries around the world.
- State-of-the-art, strategically, located plants and service centers.

Tempe Foundry AZ, USA 18,750 Metric Tons

- Two IMF No-Bake Molding Lines
- First Article Inspection
- Castings to 15,000 Lbs
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- ME Global Environmental Policy
- ME Global Quality Policy
- MagmaSoft

Duluth Foundry, MN, USA 34,000 Metric Tons

- Vacuum-Process Molding
- First Article Inspection
- Castings to 10,000 lbs
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- ME Global Environmental Policy
- ME Global Quality Policy
- MagmaSoft

Changzhou Foundry, China 30,000 Metric Tons

- New Facility Commissioned in 2014
- Two IMF No-Bake Molding Lines
- Castings to 15,000 lbs
- OSHAS 45001:2018 Certified
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- BSI Certified

Callao Foundry, Peru 5,000 Metric Tons

- New Installation
- Two 340 Ton Self-Setting Molding Lines on Fast Loop Line
- 140 Tons on Floor Line
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- OSHAS 45001:2018 Certified
- Integrated Management System

Colina Foundry, Chile 12,000 Metric Tons

- Joint Venture with ESCO Corp.
- New Facility Commissioned in 2014
- AOD Process
- Ground Engaging Tools - SA Only
- Lean Manufacturing
- TPM Certified
- MagmaSoft

Rancagua Foundry, Chile 32,000 Metric Tons

- New Facility Commissioned in 2025
- Mill Liner Castings to 22,000 lbs
- Castings to 55,000 lbs
- Crusher Wear Parts & Slag Pots
- OHSAS 45001:2018 Certified
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- Lloyd's Register

ME Kalumbila, Zambia 90,000+ Metric Tons

- Industry-Leading Equipment
- Design and Process Control
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- OSHAS 45001:2018 Certified

PRIMA Facility, South Africa 14,000 Metric Tons

- Established 1937
- Upgraded in 2010 and Again 2022
- Three Separate Foundry and Melting Facilities
- Part Sizes From 50Kg to 12'000 Kg in Manganese Steel, CrMo Steel, Low Alloy Steel and High Chrome Iron

ME Longteng, China 500,000+ Metric Tons

- World's Largest Single-Site Grinding Ball Manufacturing Plant by Capacity.
- Industry-Leading Equipment
- Design and Process Control
- ISO 9001:2015 Certified
- ISO 14001:2015 Certified
- OSHAS 45001:2018 Certified
- State-of-the-Art Lab and Testing Capabilities
- World's Tallest Ball-Drop Machine

Strategic Pillars and Sustainability



The ME Elecmetal Signature

Our values guide our decision making and the way we relate to each of our interest groups.

Respect for the dignity of people, a proactive search for excellence, responsibility and integrity are part of our essence, and are translated into a work style with high levels of loyalty and commitment. We promote long-term relationships that create value and give meaning to our work. We strictly adhere to current regulations and maintain transparency through regular performance reporting, instilling confidence in our actions.

Our People

Respect for human dignity is the cornerstone of our values, driving our endeavors and ensuring a harmonious balance between outcomes and methods. It fosters holistic human development, and prioritizes customer focus, responsibility, sustainability, and a proactive search for excellence. We cultivate long-term trustworthy relationships with each of our collaborators, instilling pride in their association with ME Elecmetal. Committed to a safe workplace, we champion diversity and empower the showcasing and advancement of talents.

The Environment

Caring for the environment is a global challenge that we will address in each of the solutions we deliver to our clients. Through innovation and the development of alternative processes and solutions, we are committed to being an active agent to promote carbon neutrality and the circular economy in the industry. We strive to lead the way towards a more sustainable future for our customers and the planet.

Value Creation Connections

We embrace collaborative work to foster innovation and deliver excellent, sustainable solutions. Engaging employees, clients, suppliers, and stakeholders, we co-create valuable, sustainable outcomes. At ME Elecmetal, we aspire to drive change, forging new partnerships to advance the sustainable development of the industry.

Committed to Creating Value in Mining Processes

ME Elecmetal Products and Services.

Crushing

Crusher Wear Parts

Wear Components for Primary, Secondary and Tertiary Crushers.

- Gyratory Crushers
- Jaw Crushers
- Cone Crushers
- Spare Parts

Grinding

Grinding Wear Parts

Innovative Mill Lining Solutions for AG, SAG, Ball, Tower and Rod Mills.

- Iron
- Steel
- Rubber
- Composite
- Bolts and Fasteners
- Repair Services (Chile and Peru)

Grinding Media

Premium Quality Forged Steel Grinding Media for SAG, Ball and Rod Mills.

Grinding Media Products Size Ranges:

- SAG Mills: 4.0" to 6.5"
- Ball Mills and Re grind Mills: 7/8" to 4.0"
- Rod Mills: 3.0" to 4.0" Diameter

Services

ME FIT® Services

- Throughput Increase
- Circuit Analysis
- Consulting Services
- VAES Reports
- Schedule Optimization
- Grind Efficiency
- Control Process Engineering
- Mine-to-Mill Services

Field Support

- Failure Analysis
- Mill Inspections
- Fastener Bolting Audits
- Inventory Services

Other Services

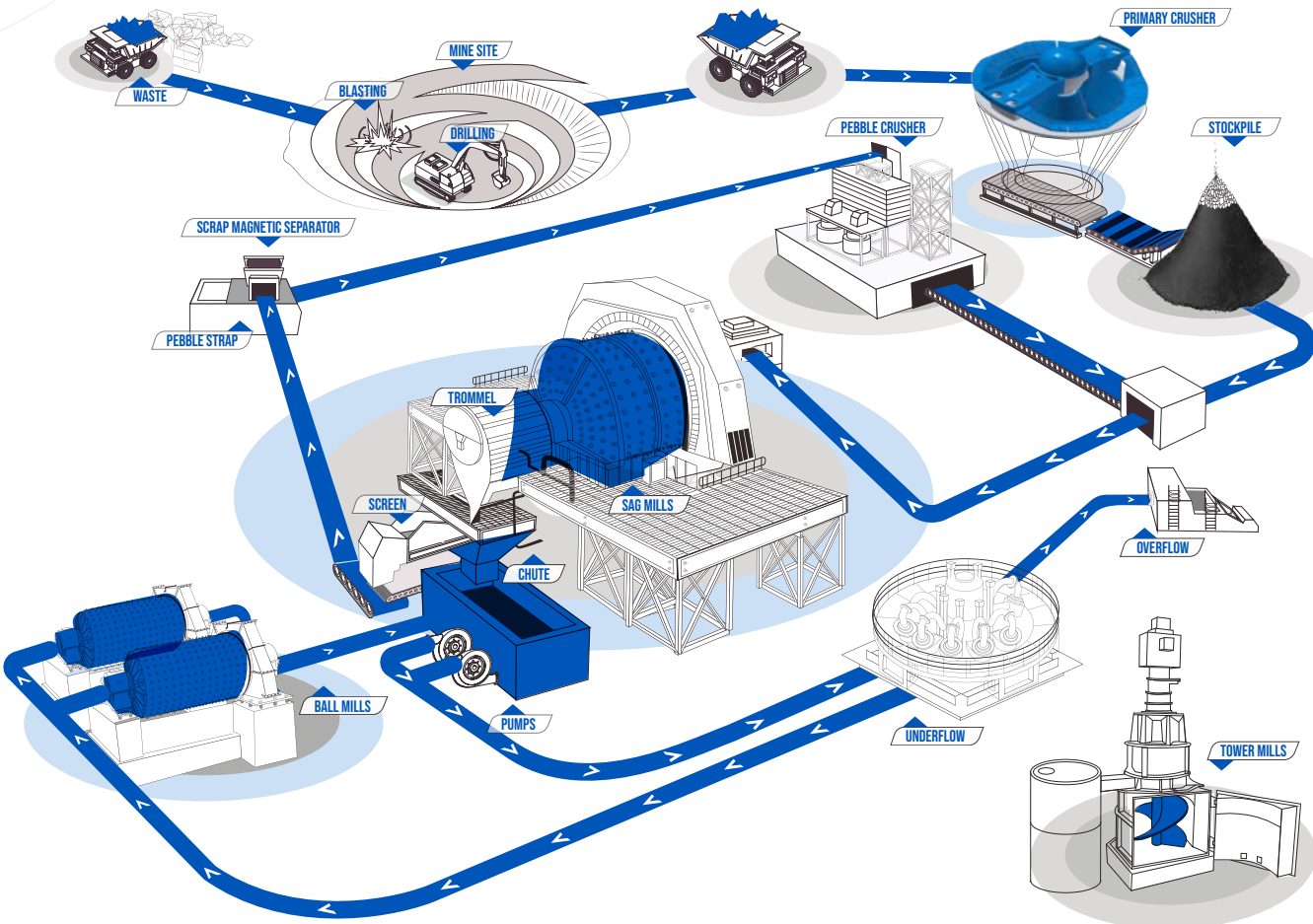
- Reline Service / Installation (In progress)

Digital Solutions

- Bolt Tension Sensors
- Laser Scanning
- Wear Tracking Analysis
- Downtime Reduction (ME Uptime+)
- ImpactFinder®
- SAG Digital Twin
- ME Tracking (Product Traceability)
- Grinding Apps

Engineering Support

- Reverse Engineering Services
- DEM Simulations (Discrete Element Modelling)
- FEA Simulations (Finite Element Analysis)
- Design Development
- Alloy Development



Digital Solutions for Grinding Operations

Bolt Tensioning Solutions

Ensures the condition of bolts throughout the liner campaign.

Liner Tracking

Real-time location of critical grinding wear parts.

Downtime Reduction (ME Uptime+)

Process optimization of grinding wear part change outs.

3D Laser Scanning

3D scanning solutions for field operations.

QuickScan Grinding

3D scanning system without entering the mill or removing chute — increasing occupational safety.

ImpactFinder®

Impact counter and operational feedback to maintain stable and optimized operational conditions.

Digital Solutions for Crushing Operations

3D Laser Scanning

In-field scanning of gyratory, jaw, cone, and other crushers.

Liner Tracking

Real-time location of critical crusher wear parts.

Downtime Reduction (ME Uptime+)

Process optimization of crusher wear part change outs.

QuickScan Crushing

3D scanning solutions with adaptor for remote scanning of primary crushers.

Online Setting

IoT device for real-time setting measurements.

C-GAP

Digital closed side setting measurement device.

Digital Solutions

ME Elecmetal enhances the visibility, availability, and reliability of your assets, minimizing operational uncertainty. We offer straightforward, agile, and flexible technology solutions to monitor assets and processes, provide on-site support, and elevate mining operations. Through effective data capture and analysis, our solutions deliver actionable insights and timely recommendations, empowering informed decisions that drive operational efficiency.

Scope

Services	
Asset Monitoring	<ul style="list-style-type: none">• Wear monitoring of crushing and grinding equipment within the mine.• Monitoring of mechanical and structural integrity of equipment and infrastructure.• Life cycle monitoring of components and consumables.
Process Monitoring	<ul style="list-style-type: none">• Monitoring of crushing and grinding process variables within the mine.• Process performance analysis and predictions.• Support for best practices implementation.
Field Support and Assistance	<ul style="list-style-type: none">• Ongoing guidance throughout the installation and maintenance of ME Elecmetal's solutions.• A dedicated work team is ready to provide tailored recommendations to meet the customer's specific needs.• ME Elecmetal conducts an initial assessment of each case, offering specialized advice based on detailed technical reports..



Integral Solutions Grinding and Crushing

Online Bolt Tension Monitoring



Description

Installation advice and bolt tension measurement for ball mills, SAG mills, and other industrial equipment through smart bolts.

Goals

Prevent loosening and/or fractures in mill bolts and other mechanical systems by leveraging sensorized bolts to measure and monitor bolt tension during operation.

Improve re-torquing and maintenance practices using real-time tension data and projections from sensorized bolts.

Uses

- Ball mill and SAG mill bolt tension measurement.
- Thickener tension measurement
- Other industrial applications where bolt tension is critical.

ME UpTime+



Description

ME UpTime+ is a comprehensive service aimed at identifying, monitoring, and optimizing the timing of equipment maintenance processes and operations in the mining field.

Goals

Reduce execution times of key maintenance and operational tasks by leveraging thorough on-site audits using a team of expert engineers, using planning documents as reference points to ensure alignment with timelines.

Record activities, quantify deviations from the planned schedule, and contrast performance against expected outcomes to identify inefficiencies and suggest corrective actions based on real-time data.

Utilize advanced software to measure task performance and deliver detailed condition reports before, during, and after the service.

Uses

- Any mining asset that requires maintenance on a cyclical basis.

ME Tracking®



Description

ME Tracking® is an advanced asset traceability system that monitors the precise location and inventory of spare parts, consumables, and major components across plants, workshops, and warehouses.

Goals

Eliminate unbalanced stocks in consignments.

Quantify critical stock levels for scheduled maintenance.

Enable informed decision-making and supply management through real-time data.

Uses

- Liner geolocation.
- Repairable parts tracking.
- Liners or strategic spare parts monitoring.

3D Laser Scanning



Description

3D Laser Scanning is a precise wear profile mapping service designed for SAG, AG, ball, rod, and vertical mill liners, crushers liners, ladles, slag pots, and other mining equipment. This technology enables the creation of detailed reverse engineering plans and as-built models, ensuring accurate measurements for optimized maintenance and operations.

Goals

Deliver rapid reports on grate clogging status, fill levels, liner wear, and remaining useful life for mills and crushers.

Optimize operational efficiency by providing accurate data on equipment conditions.

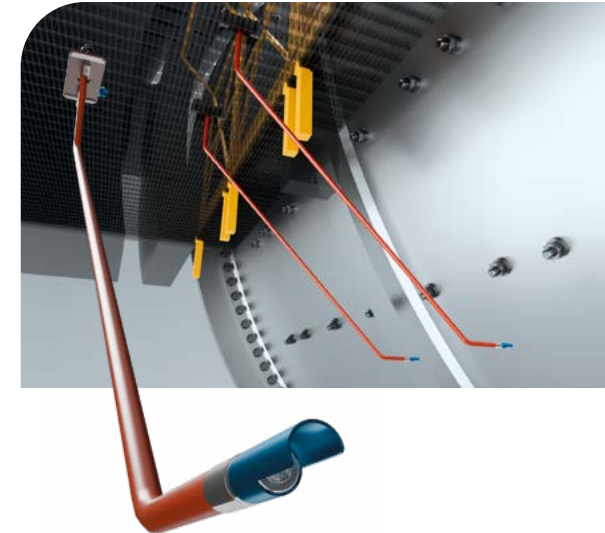
Crushing Applications

- Comprehensive installation records of parts.
- Executive Summary and remaining thickness map of profiles and concaves.
- Extended concave cut.
- Geometric analysis of concaves with projected useful life (starting from the second measurement).
- Lower mantle thickness profile profile and detailed measurements.
- Flow analysis and corresponding measurements.
- Pole height vs. target setting graph, with a schedule for pole increases (beginning in the second month of wear).
- Simulation of new mantle installation for performance forecasting.

Grinding Applications

- Interior view and visual inspection of the mill.
- Detailed installation records of parts.
- Summary of thicknesses and wear rates for components.
- Comprehensive profiles and thickness maps
- Remaining thickness data for the five most worn parts of each component.
- Angle of attack and bucket height analysis for SAG mills.
- Useful life projection based on wear trends (starting from the second measurement).

ImpactFinder®



Description

ImpactFinder® is an advanced analytics solution designed to enhance SAG mill operations through the use of impactometers. Equipped with four strategically placed microphones (two on each side of the mill) connected to the Distributed Control System (DCS), it provides real-time estimates of four critical variables, enabling precise control over mill conditions. This results in improved performance, increased efficiency, and reduced operational costs.

A key feature of ImpactFinder® is its innovative probe system, which allows microphones to be replaced while the mill remains in operation. This enhances safety by minimizing worker exposure to hazardous areas.

Goals

Achieve a balanced operation that optimizes throughput, fill level, RPMs, and impact intensity.

Integrate seamlessly with plant control systems for real-time optimization.

Reduce unexpected repair and replacement costs by minimizing unplanned events.

Protect assets by preventing impacts that could accelerate wear or damage liners.

Uses

- ImpactFinder® is suitable for SAG mills of all sizes.

QuickScan™ Grinding



Description

QuickScan™ Grinding is a 3D scanning system for SAG mills that eliminates the need for personnel entry into the mill. Utilizing an extendable arm installed in the feed chute, it allows full scans to be completed in just 15 minutes, ensuring high-quality images without compromising safety or interrupting mill operations.

Goals

Enable 3D scanning of SAG mills without requiring personnel entry, using an extendable arm mounted in the feed chute.

Uses

- Compatible with SAG mills that have a 300x250 mm space available on the feed chute flange for gate installation.

QuickScan™ Crushing



Description

The QuickScan™ Crushing device is a cutting-edge tool engineered for installation on rock breaker hammer tools, revolutionizing the scanning process of primary crushers. It prioritizes safety, delivers superior image quality, and ensures operational efficiency compared to traditional methods.

Goals

Conduct scans without exposing personnel to potential hazards inside or near the crusher chamber.

Achieve better scan results with higher image precision compared to conventional techniques.

Perform scans quickly without the need to clean primary crushers, minimizing downtime.

Uses

- Measuring the remaining thickness of liners in all primary crushers equipped with a pick hammer.

Digital Twin



Description

Digital Twin is an advanced tool developed by ME Elecmetal for the real-time diagnosis, analysis, and optimization of SAG mills. By harnessing cutting-edge computing technologies and artificial intelligence, it creates a dynamic digital replica of the mill, delivering actionable insights and recommendations to enhance production efficiency. This innovative solution addresses the inherent complexities of SAG grinding processes, offering operators a detailed view and improved control for superior operational performance.

Goals

Provide a sophisticated and accurate solutions to address challenges in SAG grinding, such as limited visibility into internal mill functions.

Enhance operational stability and maximize production efficiency by analyzing interactions between key variables influencing SAG mill performance.

Uses

- Real-time monitoring and analysis of SAG mill operations for better decision making.
- Generate alerts and actionable recommendations to enhance performance.
- Test and refine performance by simulating various operational scenarios, enabling informed adjustments.

Integral Solutions Plant

Non-Destructive Field Testing



Description

Non-Destructive Field Testing (NDT) employs a combination of traditional and advanced techniques to evaluate the condition and integrity of critical parts, components, and equipment in plant operations. This service ensures reliable, damage-free assessment of essential machinery, helping maintain operational safety and efficiency.

Goals

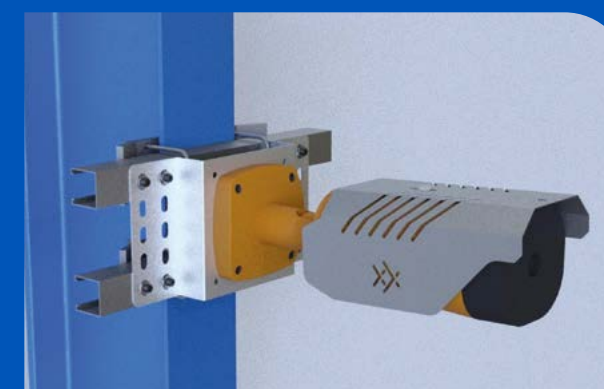
Condition Assessment: Accurately determine the state of critical machinery using proven non-destructive testing methods.

Preventative Maintenance: Evaluate operational status to prevent unexpected failures and maintain uninterrupted efficiency.

Uses

- On-site testing and analysis to assess equipment, performance and integrity.

Automatic Pulp Leak Detection



Description

The Automatic Pulp Leak Detection System is an advanced solution designed to identify pulp leaks in their earliest stages. By leveraging thermal cameras and sophisticated algorithms, this system ensures 24/7 monitoring for optimal operational efficiency while minimizing maintenance requirements. Its user-friendly interface generates real-time alerts, enabling maintenance teams to take immediate corrective action.

Goals

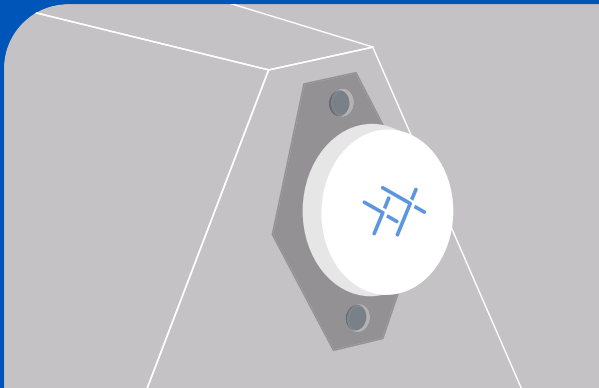
Automatically identify pulp leaks in mills around the clock using thermal imaging and advanced algorithms.

Proactive Maintenance: Facilitate early intervention through real-time alerts, reducing downtime and unplanned repairs.

Uses

- Applicable to Ball, SAG, AG, and vertical mills, as well as their auxiliary equipment.

Gear Monitor



Description

The Gear Monitor is an advanced online monitoring system engineered to detect signs of misalignment or coupling issues in a mill's ring gear segments. Using temperature and vibration sensors strategically placed on the gear teeth, it ensures continuous, precise monitoring of operational conditions to prevent failures and optimize performance.

Goals

Measure accelerations on all axes and calculate resultant forces to identify potential issues.

Detect early failure symptoms in large transmission systems without the need for manual cleaning or inspection.

Collect and analyze data to identify vibration magnitudes, deformation, or displacement in mill shafts.

Uses

- Designed for ball mill and SAG mill ring gear segments.

Wireless Ultrasound



Description

Wireless Ultrasound is a specialized service that leverages advanced ultrasound thickness measurement technology to monitor, optimize, and maintain equipment and operational processes. By delivering accurate, real-time data through IoT-enabled devices, this service enhances safety, improves maintenance efficiency, and supports proactive decision-making.

Goals

Provide consistent, traceable, and autonomous thickness measurements in challenging or difficult-to-access locations using IoT devices.

Eliminate risks of human exposure in hazardous zones and reduce dangers tied to manual inspection.

Leverage real-time data for informed decisions, effective maintenance management, and timely corrective actions.

Uses

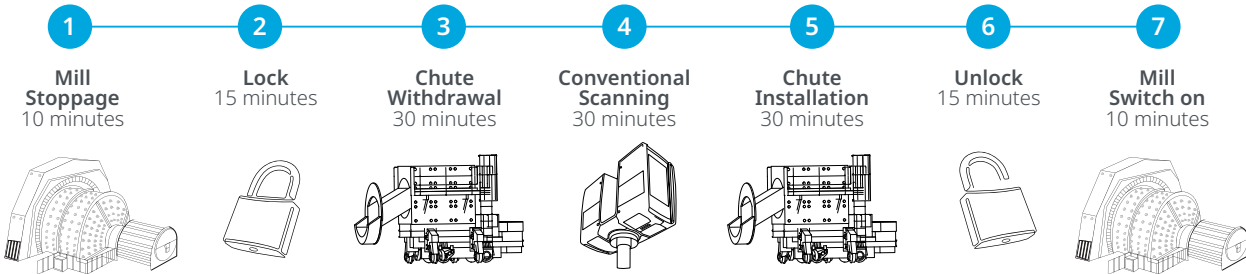
- Measuring thickness of pond walls
- Monitoring truck hopper fuselage
- Inspecting chutes lining and transfer boxes
- Assessing pump casings
- Evaluating concentrate and tailings pipelines
- Checking critical points in hydrocyclones.

Quickscan™ Grinding Case study

The QuickScan™ Grinding system revolutionizes the optimization of grinding processes, providing measurable advantages over conventional scanning methods. This case study demonstrates the success of QuickScan™ Grinding, showcasing its superior efficiency, safety, and data quality.

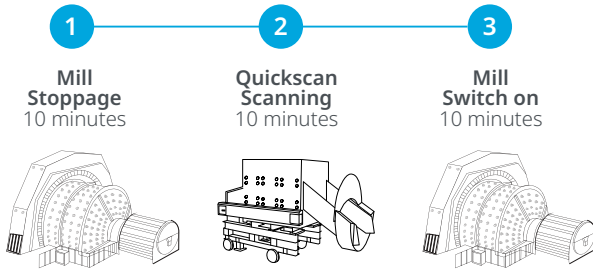
Conventional Method

140 minutes



QuickScan™ Grinding

30 minutes



Conventional Method vs QuickScan™ Grinding Comparison

	Savings by Availability	People Exposure	Scan Quality	Wear Report	Installation Requirements	
Conventional Method	US\$ 0/year	2 People 30 minutes 2 times/year	Quality affected by possible crossover with other tasks.	3 to 5 days	N/A	140 minutes
QuickScan Grinding	US \$200.000,00 /year	No exposure	Excellent	3 hours from scan to fill level.	Minor modification in feed chute.	30 minutes

Digital Solutions Benefits



Increased Availability and Reliability of Assets

ME Elecmetal's digital solutions deliver real-time real-time symptomatic analysis of assets, allowing us to anticipate potential wear and tear, assess mechanical and structural integrity, and evaluate the life cycle of components and consumables.



Supply Chain Visibility

We empower our customers with critical insights into their spare parts supply chain, providing real-time inventory status to ensure the reliability and continuity of their operations. We help optimize procurement processes, reduce delays, and ensure that necessary parts are always available when needed.



Process Stability

We monitor critical process variables in mining, crushing, and grinding operations, providing in-depth analysis and performance predictions. By tracking key metrics in real-time, we ensure consistent asset performance and process reliability, enabling our clients to implement best practices across their operations.



Cost-Effective Process Optimization

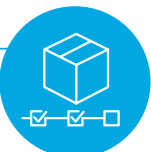
Our approach centers on optimizing operational costs by refining processes to drive higher profitability while maintaining efficiency and effectiveness across mining operations.

ME Elecmetal Integral Solutions

ME Elecmetal's ME FIT® programs are designed to foster continuous improvement and drive medium- to long-term research and development in close collaboration with our clients and a multidisciplinary team at ME Elecmetal. These initiatives focus on strategically aligning with our clients' goals, and delivering tangible results through a systematic, integrated, and structured approach. This ensures sustained performance improvements and enhanced operational efficiency, helping clients achieve long-term success and optimized outcomes in their operations.

ME FIT®:

- Examines customer needs and delivers customized solutions that address specific challenges and add demonstrable value to our clients' operations.
- Takes advantage of the ME Elecmetal highest standards of quality, manufacturing and service.
- Offers a lower total cost of ownership (TCO) to our customers through cost reductions, performance improvements and increased profits.



Longer Product Life

Our products last longer! Our state-of-the-art facilities use the highest quality raw materials and high-end heat treatment technology based on decades of metallurgical experience, ensuring a lower wear rate.



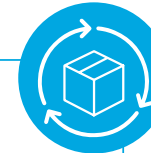
Reduction of Equipment Consumption

ME Elecmetal optimizes processes by collecting and analyzing operational data to reduce grinding media and liner consumption while enhancing performance.



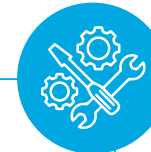
Advanced Technical Support

We offer technical support and training that go beyond the standard services offered by other providers. These services include Discrete Element Modeling (DEM) and Finite Element Analysis (FEA) services, 3D laser scanning for wear analysis, reline simulation, continuous improvement programs and grinding circuit optimization.



Recycling Services

By utilizing high-quality alloys, we can buy back your scrap material and recycle it. This not only reduces your costs but also minimizes your carbon footprint. Additionally, we provide a higher scrap value compared to other suppliers!



Reduction in Customer Maintenance Times

Our products are manufactured following the highest quality standards in the industry, ensuring improved uptime and a reduction in unplanned maintenance, leading to lower maintenance expenses.



Economic Impact

- Lower energy consumption
- Lower cost per processed ton
- Longer mill liner life
- Long-term contracts
- Increase equipment availability



Greater Security

Enhancing occupational safety by developing solutions that minimize personnel exposure to equipment.



Long-Term Contracts and a Committed Production

We provide access to long-term contracts and committed production, which reduces the dollar value of the inventory to recognize and manage.



Logistics

- Effective and simple inventory management
- More efficient supply chain
- Less waste to manage
- A single contact point for communication



Operational Efficiency

- Greater efficiency
- Increased mineral production and recovery
- Reduced downtime
- Single supplier of mill liners and grinding balls
- Access to advised technical support



Environmental

- Carbon footprint reduction
- Less waste
- Waste recycling



Service Benefits

- Improved communication
- Access to more services
- Stronger customer/supplier relationships



Contact Us

ME Elecmetal's steadfast dedication to delivering a low total cost of ownership underscores our profound understanding of our customers' business operations and objectives. We are motivated to consistently explore avenues for reducing costs, enhancing performance, and maximizing profits for the customers we proudly serve!



me-elecmetal.com