Maximize your grinding efficiency

Grinding media solutions
Steel grinding rods and balls
Grinding
Challenges in your core process converted into opportunities

Your aims
- **Availability** - You want to reduce downtime of your equipment so that production time can be maximized.
- **Production efficiency** - You wish to optimize your process, equipment and parts to get the most out of your plant. You look for ways to lower energy consumption and reduce total mine OPEX.
- **Lowest sustainable cost** - You aim to have the lowest total cost for your operation.
- **Safety** - You need to make sure your people are working in a safe environment.

Your challenges
- To ensure that your equipment plus wear and spare parts are of high quality and are designed to keep your mill rolling.
- To see to it that installations are being carried out correctly and quickly, while making sure that safety is never compromised.
- To find a partner who can help you improve your total grinding efficiency, not just supply parts.

The mining industry is facing a number of challenges when considering how to manage growth and profitability over the next decades.

Grinding media is often an important avenue to explore when attempting to overcome your grinding challenges.
Grinding media has a profound impact on grinding cost and performance, so the potential for savings is significant.

Grinding media represents about 8% of total mine OPEX.

Grinding media is often thought of as a commodity within mineral processing plants, but consider these well documented facts:

- Inferior grinding balls are known to spall and flake in service, and the resultant ball chips can dramatically and unnecessarily shorten the operational life of pumps, hydrocyclones, and recirculating load piping.

- Ball chips in a mill load contribute mass and therefore also contribute to mill power draw, but the individual chips lack the necessary mass for efficient grinding. This represents a needless waste of valuable energy.

- In SAG milling environments, sub-standard or improperly selected grinding media is known to explode, posing a threat of potentially life-changing injury to mill personnel.
A holistic view is the key to efficient grinding

By combining the right choice of grinding media with optimized mill linings and services, we help you improve grinding efficiency and profitability.

Wide range of media

With Metso, you have access to a complete range of high quality grinding media. We carefully select the optimal media to keep your mill rolling.

- Forged steel grinding balls
- Steel grinding rods
- Packaging of your choice (high strength bags, drums or bulk) according to your preference

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Suited for all mills

Our grinding media is available for all types of mills that use steel grinding media.

- SAG mills
- Ball mills
- Rod mills
- Vertimills

One stop shop

Achieve lowest sustainable cost and increase grinding efficiency through a holistic grinding approach.

- Mill linings of all types and materials
- Grinding media
- Spare parts packages
- Installation, wear monitoring and design optimization
- Grinding performance improvement
Plant safety prioritized
Safety is an essential part in everything we do. Reduce safety and environmental risks at your site with Metso’s products and services.
• Unique and safe media loading system engineered to maximize safety
• Optimized media for extended life, reducing frequency of recharging

Your process optimized
Our process expertise helps you improve grinding efficiency.
• Simulating different process variables like mill speed, material and media load
• Selecting the best media and liner profile
• Improving grinding wear rates
• Debottlenecking your grinding circuit
• Real time measurements using SmartSAG and SmartEar to ensure efficient milling

Sustainable performance
Maximize your grinding availability on a sustainable basis through long-term service commitments.
• Cost per ton agreements - your goals are our goals
• Fixed monthly fee - transferring CAPEX to OPEX to allow predictable costs
• Optimized maintenance procedures
Cost efficient ore processing with high quality grinding media
Unmatched grinding media expertise, products and services

Maximize grinding media life, improve production efficiency and lower energy consumption through expert, customized product selection and grinding media designed to last.

Metso offers a unique combination of quality grinding media manufacturing, unmatched expertise in grinding processes and optimization services that help you achieve the lowest sustainable cost for your operation.

Why choose Metso grinding media?

One supplier for your whole process
• Metso is the only company capable of supplying a full comminution offering including equipment, grinding media and mill linings of all types and materials

Meet your process goals
• Improved production and energy efficiency - our tools allow us to identify the correct media and mill liner pairing
• The correct media choice combined with our exacting standards maximizes media life

The ideal media for you
• Our knowledge of grinding media and its manufacture is built on over 40 years of experience so you can be confident that you will get a product that meets your needs at a competitive price
• We help you choose the optimal grinding media for your application based on the characteristics of your ore and mill

Continuous improvement
• Our sophisticated monitoring tools and wear performance simulations combined with unmatched experience mean that we can continuously optimize your changing production needs

Support when you need it
• Reliable supply - global scale, world-class manufacturing and logistics means the grinding media you need when you need it
• The most extensive services hub network in the industry - you are never far from local support

Less downtime, more production
In our complete range of grinding media you will find the ideal solutions for your milling requirements.
Forged balls

Special attention is given during production of our forged balls to ensure unmatched performance.

The top quality of our forged steel balls is assured beginning with the selection and metallurgical inspection of raw materials, and our state of the art forging techniques plus rigorous control of all aspects of our heat treatment processes deliver optimum through-hardening characteristics. The forged balls range from 25 to 140 mm.

Application areas
- SAG mills
- Ball mills
- Vertimills*
- Mainly used in copper, gold, iron ore and polymetallic operations

Main benefits
- Wide range of media sizes
- Ability to supply 'balanced' initial charges and recharges
- Consistent, high quality for all media deliveries
- Longer grinding media life

Grinding rods

Uniform hardness along the entire length of each and every rod ensures effective grinding and long life.

Metso grinding rods are specifically alloyed for rod milling use. Diameters and lengths are provided according to customer specifications, and the alloy microstructure is tailored to balance hardness, resistance to bending, and resistance to breakage.

Application areas
- Rod mills
- Often found in smaller metallic mining plants and industrial mineral applications

Main benefits
- High impact resistance
- Low breaking rate
- Low wear
Grinding media is not a commodity

By working with a partner who understands the variables affecting grinding performance, you have a great opportunity to improve efficiency, achieve lowest sustainable cost and maximize mill availability.
Grinding media represents a large portion of your total grinding cost and has a significant impact on your OPEX.

By taking a holistic view and combining high quality grinding media with world-leading mill linings and services, Metso helps you improve mill availability and grinding efficiency.

Metso offers the market’s most complete range of products combined with unmatched know-how of equipment, grinding media and mill linings.

Contact us to find out more about how we can help you increase your profitability. www.metso.com