

Grinding retrofits

Significantly improve **reliability, efficiency,** and **safety** with our range of customized retrofit solutions for your horizontal and vertical mills.



As your production goals evolve, so should your equipment. For the latest technology and efficiency, you don't have to look very far. Your existing assets have the potential to take on significant improvements. Our team of experts can support you throughout, from identifying retrofit options to implementation.

The Metso solution

Whether you want to improve maintenance efficiency, safety, or equipment reliability, we have you covered. Discover our range of custom-engineered retrofits for your mills.

- Gear guard upgrade
- Trunnion bearing lubrication system
- Inching drive
- Locked charge detection system
- Vertimill® door actuator

As an OEM, Metso has been designing equipment, parts, and retrofit solutions for over 150 years. With the use of detailed drawings and advanced engineering tools, we ensure accurate and high-quality manufacturing that meet Metso's strict standards and tolerances.

Brands we support

- Metso
- Allis Chalmers
- Allis Mineral Systems
- Boliden Allis
- Denver Equipment
- Dominion
- Hardinge
- Koppers
- Kennedy Van Saun (KVS)
- Marcy
- MPSI
- NEI
- Sala
- Svedala

**Also available for select non-Metso equipment*

Benefits

- Maximize equipment performance with a cost-efficient solution
- Gain new functionality with modern technology
- Ensure equipment reliability and longevity
- Improve ease and timeliness of maintenance activities
- Reduce safety risk to your personnel and prevent major structural damage to your machine

Ask about our full range of retrofit options and custom grinding solutions.

Improve reliability, efficiency, and safety with Metso grinding retrofits

Incorporating modern technology without major investment



Gear guard upgrade

Ensure the health and longevity of your gears with a gear guard upgrade. This includes support columns for safer maintenance, a gear spray system for optimal lubrication, infrared monitoring to track health, and a pressured and sealed system to prevent contamination.



Trunnion bearing lubrication systems

Extend bearing and trunnion life with an automatic lubrication system. Our retrofit ensures that oil temperature, flow, and cleanliness is maintained with a custom-sized reservoir, filtration system and heat exchanger, as well as temperature, flow, and pressure instrumentation.



Inching drive

An inching drive slowly rotates your mill to ensure safety throughout maintenance work and prevent a dropped charge. Our retrofit includes a custom designed drive and power unit, safety interlock system and accessory kits to make the inching drive portable and adaptable to suit all your mills.



Locked charge detection system

A locked charge detection system can be used to prevent a dropped charge and structural damage to your mill. Our retrofit includes a pinion shaft encoder that measures mill velocity and position at start-up, as well as a control panel with a program logic to disengage the clutch when a locked charge is detected.



Vertimill® door actuator

Removing charge from your Vertimill® can be a slow and risky process. Metso's door actuator upgrade helps you open your stirred mill door in a controlled way for safer and more efficient maintenance. The hydraulically operated actuator has a symmetrical design and is simple to install with minimal modification to your mill.

Metso services for grinding mills

Parts and upgrades: Redesigns and parts supply for shells, heads, trunnion liners, feed chutes and more

Inspections: From quick visual and vitals to detailed custom inspections for your mill and it's key components

Gears and pinions: A complete range of gear and pinion sets, design, installation, and alignment services

Mill re-powering: Evaluation of mill loads and drive train capacity to propose mill power increase through retrofit components and installation

Field service support: 1500+ global team of service experts to carry-out installations and perform repairs

Life Cycle Services: Custom, progressive, service packages focusing on parts supply and inventory, maintenance, process optimization and more

➤ Discover our service portfolio: [metso.com/mining-services](https://www.metso.com/mining-services)

Grinding retrofits

Locked charge detection system

Prevent a dropped charge and structural damage to your mill



Your challenge

When left sitting idle, the charge inside a mill can solidify, posing significant risk of a dropped charge at start-up.

The Metso solution

A locked charge detection system retrofit featuring:

- **Pinion shaft encoder**
- **Control panel and custom program logic**

Pinion shaft encoder

To measure velocity and positioning

- As the primary measuring device to detect mill start-up acceleration, the encoder is mounted on the pinion shaft
- Connected to the PLC, the encoder provides feedback on the mill position and velocity
- Proper installation and modification procedures for the pinion guard are provided

Control panel and program logic

To identify a locked charge and disengage the clutch

- As the clutch is engaged during mill start-up, the control logic analyzes mill acceleration parameters and determines if start-up should be aborted or continued. This will be indicated on the operator interface
- If the mill starts successfully, the system will disable itself after 180° mill rotation. However, if a locked charge is detected, the system will trip the mill
- Operators will need to take the proper actions to break up the frozen charge. Metso recommends using an inching drive
- The control logic is configured within a PLC located in the locked charge detection system control panel. Both local and remote system controls are configured so that minimal interaction is required during operation

Why Metso services?

- As the OEM of your mill, Metso has the expert knowledge to maximize its life
- With detailed drawings, design expertise and field service personnel, Metso's services are reliable, accurate and timely



Housing for pinion shaft encoder



Exposed pinion shaft encoder



Locked charge detection system screen

Grinding retrofits

Inching drives

Slowly turning your mill to ensure safe and optimal maintenance work



Your challenge

Positioning and rotating a loaded mill can be difficult. If not performed correctly, your equipment and team can be put at risk.

The Metso solution

An inching drive retrofit featuring:

- Custom designed drive and power unit
- Safety interlock system
- Accessory kits

Custom designed inching drive

To help during maintenance work

- Capable of positioning and rotating a loaded mill at low speeds
- Typically used to balance the charge inside a mill during maintenance activities, such as liner replacements, inspection, and alignment of major components
- Plays a key role in preventing drop charges when starting up the mill after a prolonged downtime
- Customized to fit your existing drive train layout, either by direct coupling to the pinion shaft or to the reducer's high speed shaft
- Design can include different mounting types, such as bracket-mounted with the use of a soleplate or mounted to a torque arm with the use of a reaction bracket

Safety interlock system

To prevent accidental mill start-up

- An additional safety measure for maintenance work, when the inching drive is engaged

Accessory kits

To make the drive adaptable to other mills

- Allows the inching drive to be portable and adaptable for additional mills
- The kit includes: a sole plate, driven gear hub for mounting, coupling guard, and a set of interlocks to connect the inching drive to the drive motor

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Drive unit assembly



Safety interlocks



Manual coupling