Metso

Services

Grinding retrofits

Application

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

Significantly improve reliability, efficiency and safety with our range of customized retrofit solutions for your horizontal grinding 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
- Mill feed chute

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

Brands we support

- Metso Outotec
- Metso
- Outotec
- Allis Chalmers
- Allis Mineral Systems
- Boliden Allis
- Denver Equipment
- Dominion
- Hardinge
- Koppers
- Kennedy Van Saun (KVS)
- Marcy
- Morgardshammer
- MPSI
- NEI
- Nordberg
- Outokumpu
- Sala
- Scanmec
- Svedala
- Thune

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 equipment

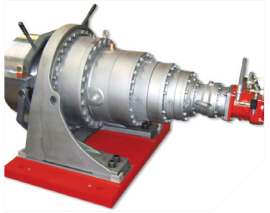
Improve reliability, efficiency and safety

Metso grinding retrofits

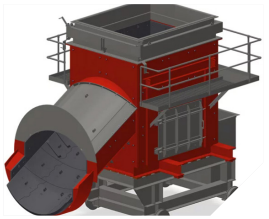
Incorporating modern technology without major investment

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 system
Extend bearing and trunnion life with an automatic lubrication system. Our retrofit ensures that oil temperature, flow and cleanliness are 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 dropped charge. Our retrofit includes a customer-designed drive and power unit, safety interlock system and accessory kits to make the inching drive portable and adaptable to suit all your mills.



Mill feed chute
A feed chute design that adds safety while improving serviceability and functionality at the same time. Our design features are proven to address the typical issues with feed chutes that often disrupt your business.

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 its 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.

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Partner for positive change

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Grinding retrofits

Gear guard upgrade

Application

Ensuring the health and longevity of your gears

Your challenge:

Contamination, extreme heat and insufficient lubrication all pose risks to your gears and pinions. If not prevented, these will cause accelerated wear and decreased operating life.

The Metso solution:

A gear guard featuring:

- Self-support system
- Gear spray system
- Infrared temperature monitoring
- Pressurized and sealing systems

Why Metso services?

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

Grinding retrofits

Gear guard upgrade

Ensuring the health and longevity of your gears

Self-support system for safer and more efficient maintenance

- Support columns hold the gear guard in place and allow for the removal of gear guard sections for easy gear and pinion inspection
- System improves safety, simplifies and accelerates maintenance, and reduces downtime

Gear spray system for even and optimal lubrication

- Systems are custom-engineered for your individual gear set and lubricant
- PLC system is fail-safe and interlocked with your mill
- Minimizes waste and cost by ensuring that the exact lubrication quantity needed is metered, dispensed and continuously monitored.

Pinion temperature monitoring system (PTMS) to track gear and pinion health

- The PTSM uses differential temperature checks across the pinion face to ensure proper alignment
- Automatic sensing and continuous condition monitoring is accomplished through thermographic imaging and infrared sensor technology

Pressurized and sealing systems to prevent contamination

- Minimize fine particle contamination using pressurized filtered air and a sealed guard
- A non-contact mud guard ring is used to protect against coarse particle contamination

Metered lubrication is precisely applied to the teeth.

A thermographic and infrared temperature system tracks the readings continuously.

Protecting the gear with a pressurized guard.

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Trunnion bearing lubrication system

Application

Automated system to extend bearing and trunnion life.

Your challenge:

Maintaining oil temprature, flow and cleanliness is vital for the health of your mill. If not controlled, fluctuations can shorten the life of key components.

The Metso solution:

A trunnion bearing lubrication system retrofit featuring:

- Custom-sized reservoir
- Filtration system and heat exchanger
- Temperature, flow and pressure instrumentation

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Grinding retrofits

Trunnion bearing lubrication system

Automated system to extend bearing and trunnion life

Reservoir to separate contaminants from lubricant

- Sized for proper retention time, allowing dirt and air to separate from the oil
- To reach desired viscosity, oil is preheated in the reservoir before being pumped to the next phase

Filtration and heat exchanger to eliminate dirt and cool the oil

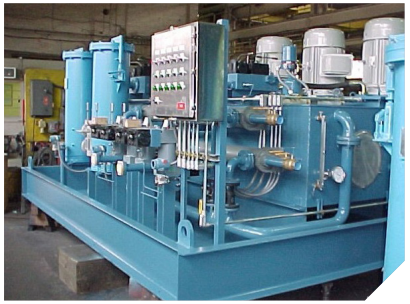
- Oil is pumped through a filtration and cooling system to ensure that oil being distributed to the bearing is clean and at optimal temperature

Instrumentation to montior oil condition

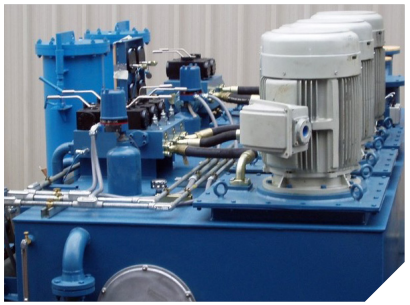
- Oil condition is monitored via pressure, temperature and flow instrumentation
- Modern instrumentation is compatible with existing DCS or PLC and is mounted on the reservoir/base

Multiple retrofit options available

- Replace entire system or only selected components
- Available as a water or air-cooled system
- With the addition of a valve or flow divider, oil can be evenly distributed to the pinion bearings
- Hydrodynamic or hydrostatic system based on your mill's existing trunnion bearing configuration



Hydrostatic lubrication system



Hydrostatic lubrication system with high pressure pumps

Hydrodynamic lubrication system

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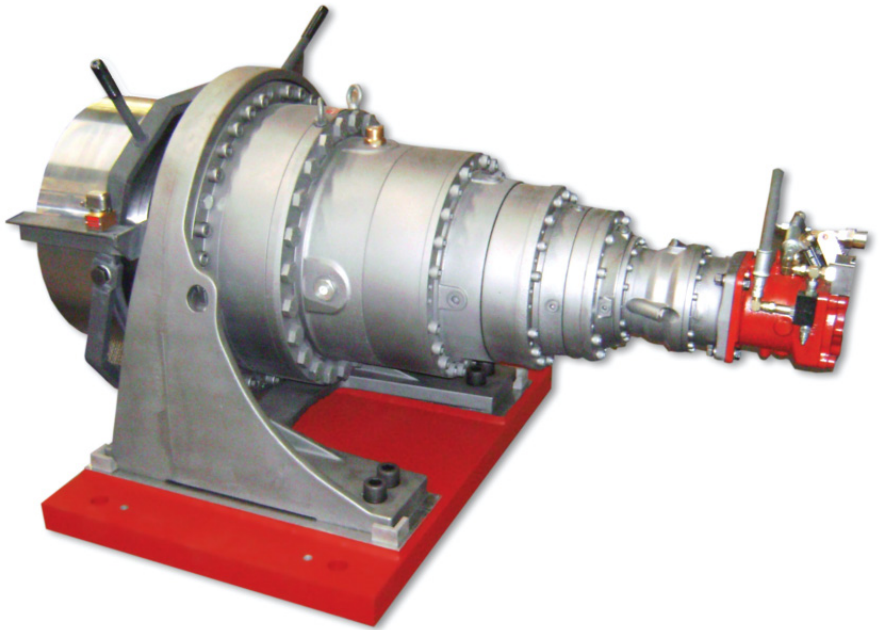
Inching drives



Application

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 featuring:

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

Why Metso services?

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

Grinding retrofits

Inching drives

Slowly turning your mill to ensure safe and optimal maintenance work

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 or 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 sole plate or mounted to a torque arm with the use of a reaction bracket

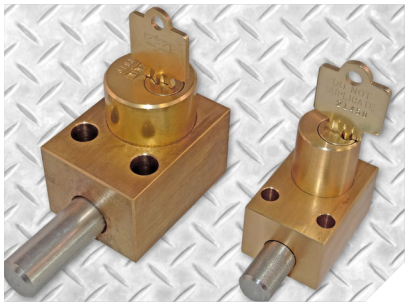
Safety interlock system to prevent accidental mill start up

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

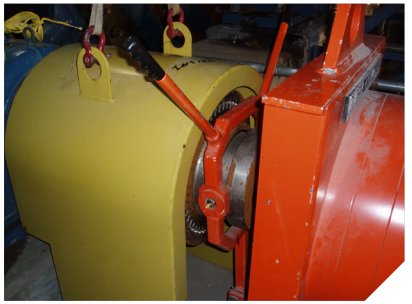
Accessory kits to make the drive adaptable to other mills

- Allows the inching drive to be portable and adaptable for additional mils
- 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

Drive unit assembly



Safety interlocks



Manual coupling

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Feed chute

Application

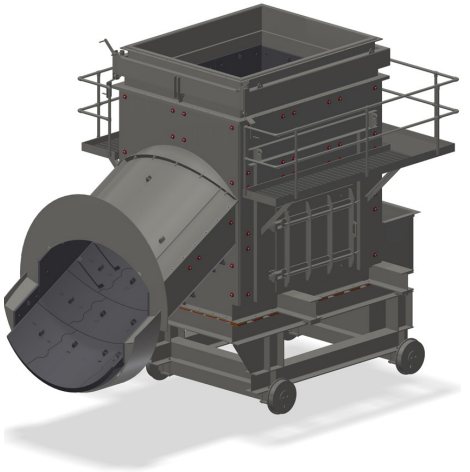
The improved design of the feed chute uses dependable, heavy-duty components that are engineered for long-lasting operation and better worker safety.

The Metso feed chute has been upgraded to improve safety while enhancing serviceability and functionality. It includes features that have been proven in the field to minimize wear and speed up maintenance, and that prevent disruption to your operations.

Reduced downtime
To keep downtime to a minimum, the components are designed to minimize wear and make maintenance faster. For example, the heavy-duty rock-box has a deep design that provides a rock-bed of material, which eliminates wear on the bottom liners. In addition, the curved three-piece chute liner design gives them a longer service life and makes them quicker to replace.

Improved safety
The removable chute cover offers much easier and safer access to installation and replacement of wear liners. It also includes integrated lifting lugs for safe lifting. Wear components like the chute liners also include Liftx fittings for safe and convenient lifting, making lifting safer and easier.

Simplified access
The access platform makes it safe and easy to access the upper feed chute and inspect the rock-box. It gives operators a solid, stable area to perform any necessary maintenance, such as on the flange and seal. In addition, the removable chute cover offers much easier and safer access for installation and replacement of wear liners.



Benefits

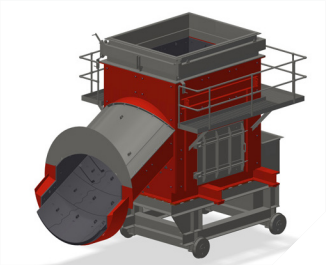
- Reduce downtime
- Improved safety
- Simplified access

Read more at metso.com/portfolio/chutes/feed-chute

Dependable performance

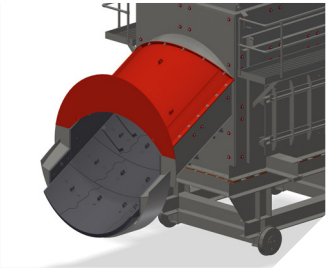
And easy maintenance

The tough construction and well-designed components ensure that the Metso feed chute is easy to use, maintain and operate.



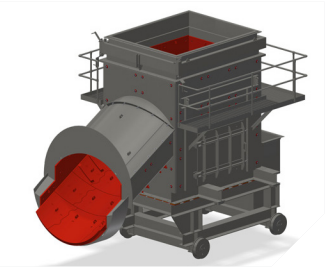
Rock-box design

- The deep design provides a rock-bed of material, which eliminates bottom liner wear
- The physical dimensions are engineered to accept feed material
- Built from durable heavy steel plates and beams



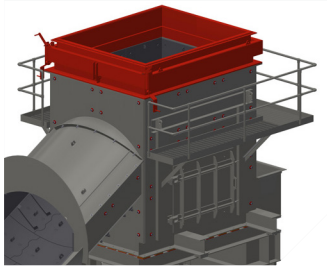
Removable chute cover

- Easier and safer access for installation and replacement of wear liners
- Faster liner changes reduce downtime
- Bolted cover design
- Integrated lifting lugs
- Drop channel catches and directs spillage back into the chute



Upgraded liner design

- Longer liner life
- Easy replacement without removing edge liners
- Optimized flow
- Curved three-piece design
- Liftx: Easy to use liner lifting tool

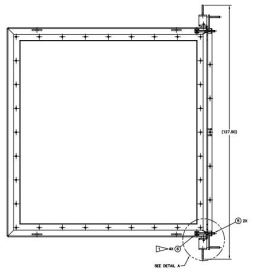


Sealing

- A choice of labyrinth or inflatable seal design for different mill configurations
- Robust sealing improves mill cleanliness

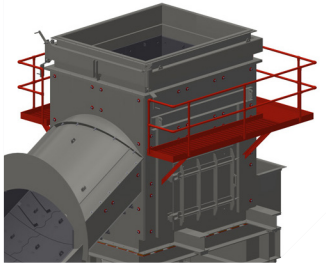
Labyrinth seals

- Adjustable alignment of feed chute upper section for robust sealing
- Hinged front panel for easy retraction of feed chute without unbolting upper section



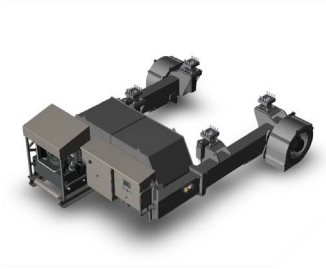
Inflatable seals

- Allows clearance for installation and maintenance
- Quick inflation seals the gap when feed chute is in place
- Enables faster connection than a bolted flange
- Compensates for slight deviation of flange surfaces



Access platform

- For safe and easy access to hard to reach places
- For convenient inspection and maintenance
- Access the rock-box, upper feed chute, flange and seal
- Customizable based on the customer's needs



Options

- Labyrinth or inflatable seals
- Access hatch for rock-box maintenance
- Hydraulic jacks/stands
- Different transport and drive systems
  - Rail-mounted non-powered, winched
  - Rail-mounted powered, integral hydraulic drive
  - Mill equipment transporter

Read more at metso.com/portfolio/chutes/feed-chute

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