


Metso Material Handling Solutions

Improving uptime
and operational
safety

Optimizing the material handling process

The mining industry is continuously exploring new ways to extract and process ore more efficiently, more safely and more sustainably. Despite some fairly radical changes on the horizon, there is still one constant within the mining process: the need to transport material in bulk. In this respect, time and material equals money. The end goal is to move as much material as quickly and economically as possible while still maintaining high safety standards



Workplace
health and safety
concerns

Material
characteristics
changing through
the process

Material
transportation can
account for
50-60% of operating
costs.

Metso Material Handling Solutions

With more mines and processing plants running around the clock, the need for equipment that is reliable and has less maintenance is a must. If there is an issue with material transportation throughout the process, then there will be reduced productivity and profitability.

Metso Material Handling solutions' diverse portfolio is designed to meet your requirements with high capacities, fewer components and lower overall costs. Ranging from apron feeders within a primary crushing circuit, to railcar dumpers unloading materials into a stockpile, to barge handling systems unloading ships coming into a port, Metso Material Handling solutions has your needs handled

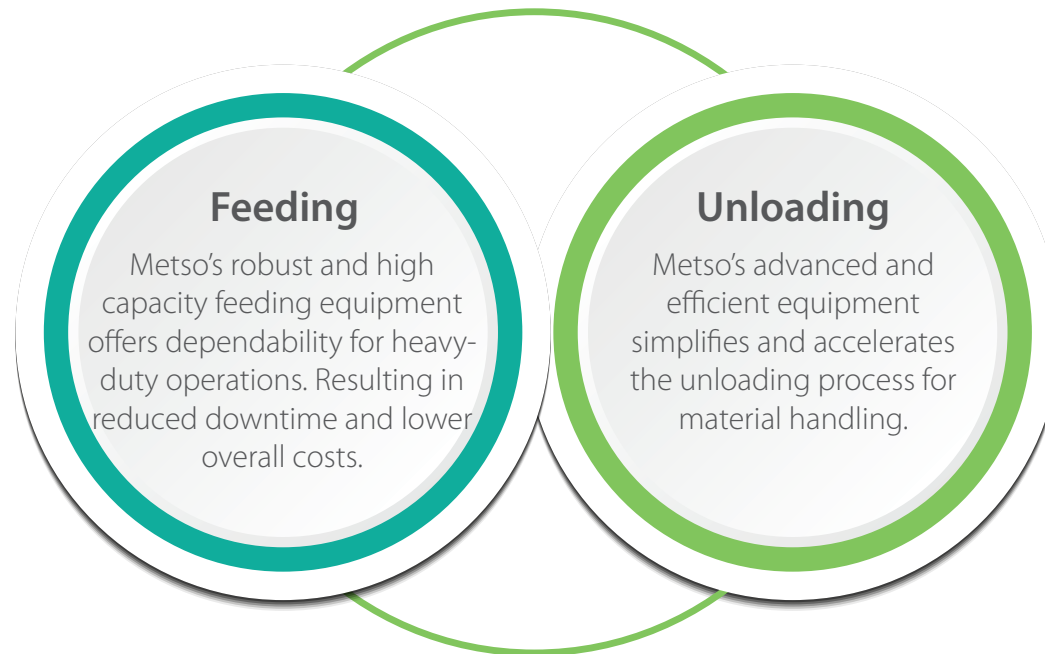
100+ years of
experience in
Material Handling

Improved uptime and operational safety for optimal performance

Metso offers a wide range of material handling solutions that can fit any application. We divide our portfolio into two processes: Feeding and Unloading. These processes are designed to run uninterrupted with minimal disturbances leading to higher uptime, while including high capacities bringing energy efficiency to create top-notch results. But, Metso always has a focus on safety during operation to eliminate unnecessary issues and mistakes. Combining all this creates Metso's Material Handling solutions.

Deliver reliable results with Metso Material Handling solutions

Maximize uptime and safety while maintaining lower operational costs for maintained profitability



Read more:

metso.com/industries/mining/material-handling

Feeding

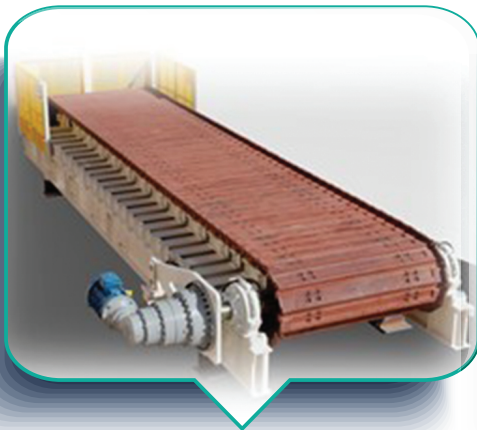
Winning combination of ruggedness and heavy-duty designs that fit any application

For a feeder to be as optimal as possible there are criteria that needs to be evaluated beforehand. Does your operation need to be able to handle wet or sticky material? How about the ability to handle large, abrasive, wet or sticky material? Metso Feeding equipment gives confidence that allows maximum uptime and more efficient operations.

Metso provides 3 different feeding options, but has a wide range of installations that can apply to any operation with improved safety.

Feeding equipment can help throughout an entire operation. So a feeder has to be rugged and diverse to keep the process running efficiently and smooth

Industry leading solutions



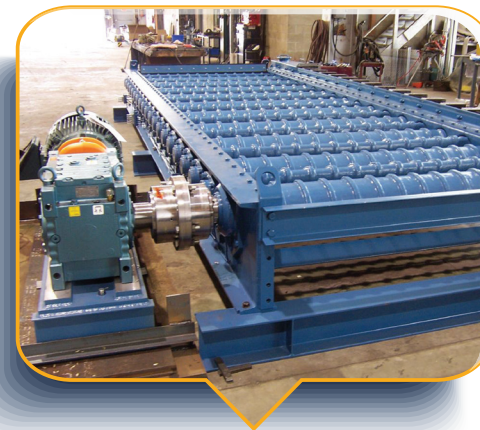
Apron feeders

Robust design,
high uptime



Belt feeders

Ease of maintenance,
easy installation



Wobbler feeders

Combined feeding and scalping,
improved safety

Uptime focused Feeding solutions

Feeding is a key to having an efficient process. If feeders do not have a robust design, then the uptime will drop significantly along with the profitability. Metso Feeding solutions provide numerous benefits in a wide variety of applications, but also bring overall positives to the entire operation.

Metso's Feeding range offers a unique benefit to all applications by using specific chain styles that have proven results.



Wide **capacity range** up to **12,000 tonnes** per hour

Metso Feeders



Feeding up to **1 meter lump size** and **scalping** up to **165mm** with one machine

Wobbler feeders



Belt width up to **2,600 mm** wide and **feed** up to **5,600 tonnes** per hour

Belt feeders



Increase **material production** by up to **100%**

Apron feeders



Unloading

Efficient and economical unloading solutions

Unloading of materials for different applications requires multiple pieces of equipment for the job. Equipment needs to run with minimal disturbances or downtime because, as with any operation, if there is one slow piece the entire process slows down. Slowing down of the process leads to less productivity and profitability in the long run.

Metso Unloading solutions is based on the focus of operational safety and overall efficiency. Without those two principles, your operation's material handling process will be more of a waste than anything.

Unloading focuses on operational safety and uptime with a wide range of equipment that helps fit all your operation's needs.

Metso Unloading Solutions



Rail

High capacity,
low downtime



Barge

High throughput,
high safety



Yard

Robust designs,
high automation

Operational safety focused solutions

Operational safety is one of the factors that can really effect any operation. Obviously safety is a huge concern when we are dealing with unloading equipment and the capacity that is being dealt with.

Whether the unloading is being done by rail, barge or even in the stockyard, an operation must be safe. Metso Unloading solutions ensure to provide all that is needed for the job with expected results as a plus.



Move up to
100 cars per hour

Rotary railcar
dumper



Capacities up to
6,000 tonnes per hour

Continuous
Barge Unloader



Stacking and reclaiming rate
up to **4,500 tonnes** per hour

Stacker
reclaimer



Up to **27,215 kg-force**
push force

SCAMP®
railcar indexer



Railcar Unloading

High capacity and low downtime solutions that meets the highest safety and environmental requirements

Rail Unloading solutions cover all aspects that deal with unloading material by rail. Railcar dumpers allow high capacity dumping with the ability to unload up to 100 cars per hour, and work with single, tandem or triple car dumper configurations. Integrated dust seal and dust containment system not only addresses environmental concerns, but improves employee's safety in the workplace.

Railcar dumpers are only one piece of the solution that produces the high capacity and productivity for an operation. Our complete solution also includes positioning and holding devices that ensure a smooth and efficient operation. Metso rack and pinion drives allow railcars ability for high capacity of unloading up to 100 or more cars per hour. Meanwhile, Metso reverse hydraulic indexer systems have a 25 ton

pull power to help position heavy loads quickly and efficiently. Metso holding devices such as chocks, clamps and arms helps railcars stay in place and are steady during unloading of the materials.

Metso Railcar Unloading solutions provides a unified approach to make sure that all needs are met to provide maximum results.

Metso Railcar Unloading Solutions



Dumping

Railcar dumpers



Positioning

Rack and pinions, positioners, ejectors, indexers, traversers



Holding

Chocks, clamps, arms



Up to **25 ton pull**

Reverse hydraulic indexer



Up to **100 car** capacity

Rack and pinions drive



Rate of unloading up to **60 cars per hour**

Crescent railcar dumper

Barge Unloading

Flexible sizes and capacities for efficient barge turnaround

Metso considers all challenges when unloading barges and ships. For high capacity unloading with barges and ships, continuous unloading is a preferred option. Metso provides continuous barge and ship unloaders that can be manual, semi-automatic or even fully automatic (Self unloading systems). Our continuous barge unloaders have high capacities of up to 6,000 tonnes per hour and a discharge rate to shore up to 1,200 m³ per hour. Metso bucket wheel type continuous barge unloaders

provide various numbers of buckets to suite the vessel size. A loop belt system combined with a vertical conveyor system creates lower downtime and longer service life. Environmental and safety concerns are handled because of operator friendly conditions and less pollution during operation (noise and dust).

Metso Barge Unloading solutions knows the importance of positioning and holding equipment as well. Barge haul systems have a

puller rate up to 23,000 pounds with 3 types of positioning: Two units opposed, double drum closed loop and single drum closed loop. This gives flexibility and quick turnaround options. Breasting winches and arms help in controlling the barges and ships as they come into port.

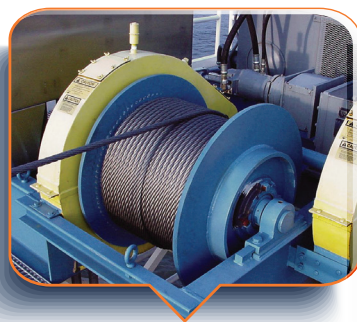
Metso Barge Unloading solutions provide quick turnaround options to ensure maximum productivity.

Metso Barge Unloading Solutions



Digging

Continuous ship unloaders



Positioning

Barge haul systems



Holding

Breasting winches, arms



Up to **6,000 tonnes per hour** capacities

Continuous barge unloaders



Discharge rate to shore up to **1,200 m³ per hour**

Continuous Ship Unloader



Puller rated up to **23,000 pounds**

Barge haul systems

Yard Unloading

High capacity and cost efficient stacking and reclaiming for where trucks cannot go

Mineral processing circuits can accumulate a large amount of material, and managing higher capacities is imperative for higher production. Metso stacker and reclaimers provide the heavy duty needed for large storages with high capacities that are feeding other plants where haulage is not possible.

Our stacking and reclaiming solutions cover both configurations- trenching and slewing. Trenching stackers are used in more low-volume, high-activity storages between 30,000 and 60,000 tonnes. The stacking and reclaiming are done by a longitudinal pass and can reach

up to 4,500 tonnes per hour. Slewing type are used where larger quantities of material must be readily available where blending is required and where the yard length is limited. Stacking and reclaim rates are up to 10,000 tonnes per hour, but the rate will depend on the material. Scraper reclaimers are designed to handle certain materials and service parallel storage piles from booms mounted on either or both sides of the machine. With the advantage of back stacking (the ability to reverse boom flight direction up the storage pile) our scraper reclaimer can handle capacities up to 4,000

tonnes per hour and have single, twin or double boom options.

Barrel reclaimers are the optimal machine for reclaiming from a blending pile. With a rotating barrel with large buckets throughout, material is collected into the buckets then discharged by an internal conveyor to a downstore conveyor. Metso barrel reclaimers are very robust and can go at variable speeds with an automatic option for easier operation.

Metso Yard Unloading solutions shows diversity by accommodating a range of applications with high capacity and cost efficiency

Metso Yard Unloading solutions



Stacking

Radial stackers, linear stackers, telescoping stackers



Reclaiming

Portal reclaimers, bucket wheel reclaimers, barrel reclaimers



Stack and reclaim up to **10,000 tonnes per hour**

Stacker reclaimer



Capacities up to **4,000 tonnes per hour**

Scraper reclaimer



Masted boom configuration length up to **38 meters**

Stacker reclaimers

Promising Results

Kinross improves apron feeders using Metso technology

Challenge

Increase the apron feeders production and increase the service life of the return rollers which were leading to constant shutdowns.

Solution

Replace old pan feeder parts with updated Metso parts

Results

Kinross was able to achieve a 20% increase in feed capacity, which brings a rated capacity of 7,800 tons/hour. But also this increase in capacity allows for stockpile improvements that enables continuous grinding.

Read more:

► www.metso.com/showroom/mining/kinross-improves-apron-feeders-using-metso-technology



Increase
feed capacity by
20%

Services built for performance

Maximize efficiency, availability and longevity

Spare and wear parts

Crafted to the same strict specifications and standards as our equipment, our genuine parts ensure complete compatibility for seamless operation. Our global distribution logistics network ensure that Metso OEM spare and wear parts are available when you need them.

Equipment upgrades and retrofits

Improve your equipment's productivity without the large capital investment. Our upgrades are offered as easy-to-implement packages or custom-engineered for your specific requirements, with the aim of enhancing safety, operating and maintenance features.

Maintenance and repairs

Proper maintenance is key to running your equipment effectively. Metso offers end-to-end service ranging from inspection and diagnostics, equipment and part repairs, shutdown solutions and planning, as well as emergency services.

Process optimization and controls

Metso process experts help in solving complex operational issues using analytical techniques, laboratory testing, and advanced control systems. Whether you need to optimize a piece of equipment, a circuit, or your entire plant, we have the tools and technology to help you make it happen.

Life Cycle Services

Metso's pre-packaged solutions are designed to assist you in meeting your business goals, from start-up to shutdown to end-of-life. We can support you on a specific activity or over a larger scope, combining elements from our large portfolio of services with unique commercial models.

Read more from the following links:

 metso.com/mining/services

Get the most out of your equipment

Metso offers a robust portfolio of services to ensure that every part of your operations is maximized and working to its true potential.

With over 100 years of experience designing and supplying hard-working equipment, our services reflect what we've learnt in the shop and in the field.



Over **1500 field service technicians**



40 service & repair **centers**



150 strategically-located **distribution centers**



More than **350 active Life Cycle Service** agreements

Full range of parts
and services for all
your mining process
stages

The Metso Way -

Making the big difference to our customers

Everything we do is based on deep industry knowledge and expertise that makes the big difference to our customers. Decades of close customer collaboration and adaption to our customers' ever-changing needs have transformed us into a knowledge company.

Through our knowledge and experience, we work with our customers to create solutions that enable them to attain their objectives. We call this **The Metso Way**, which focuses on creating value to our customers. The Metso Way is built upon knowledge, people and solutions.

Knowledge -



We have deep knowledge about our customers' business environment, processes and challenges

People -



Our committed and highly competent people make the difference to our customers

Solutions -



We create the technology and services required to meet our customer needs

