Bucketwheel Stacker Reclaimers

Parts and refurbishments to engineered standards

For smoother operations and extended machine life
With Metso’s extensive equipment knowledge and range of quality services, you get the best possible retrofit or rebuild option to improve or extend the life cycle of your machine.
Metso assists you in reaching your goals and overcoming challenges

**Reaching your goals**
You aim to increase availability, production efficiency, and the reliability of your stackers and reclaimers while ensuring safety is never compromised. Metso’s stacker reclaimer parts, retrofits, and rebuilds can help you achieve your goals with valuable support.  

Metso assists you at every step with:
- Grounded expertise in machine knowledge, generated from decades of experience in retrofits, rebuilds and upgrades, as well as operational best practices
- Quality assurance and support
- Cost transparency for ease of business planning, and fast returns
- A team of experts in the field, coupled with the right tools, parts and spares to meet your requirements

**Conquering your challenges**
For most coal-fired power plants, stockyards or shipping terminals, aging machinery can become a financial or safety concern. Parts wear out over time and need replacement to ensure continued safety and production levels, but the financial pressure to have the right parts and spares on hand, as well as keeping an eye on inventory costs has never been so high. Unexpected and excessive repairs can cause unplanned downtime, which takes a toll financially. Furthermore, tracking down obsolete parts from different sources is time consuming and expensive, and can make future repairs difficult. Larger scale refurbishments are also problematic and require expertise, so Metso is here to help.

**Inspect and monitor**
Metso can help you understand which parts on your stackers or reclaimers are worn down, are approaching failing point, or are in need of immediate replacement. We can also make recommendations on mechanical or electrical upgrades and refurbishment options to get your machines back up and running as they were designed.

Durable machinery, refurbished and retrofitted to exceed your expectations
With Metso as your OEM expert, you’re guaranteed first-rate services, support, equipment, parts, and tools. Metso has over a century of combined experience servicing Metso equipment and our many heritage brands, guaranteeing you best practices in all services.

**Benefits for your production:**
- Increased safety
- Minimized downtime
- Reliability and production efficiency
- Minimized maintenance needs
- Cost reduction
- Minimized risks
Refurbishments that go a step further

Detailed drawings and accurate information on original specifications for your stacker or reclaimers make the big difference in guaranteeing proper design and fit of spare parts, and understanding the impact of a planned refurbishment. With additional upgrade options and capabilities for 3rd party equipment, Metso brings technical and machine know-how together with high-quality components and service to safeguard your machines and maximize the life of your equipment.

Exceptional spare and wear parts at your service
As an OEM, all replacement parts provided by Metso are custom-designed for your specifications. Our wear and spare parts are guaranteed to fit and are backed by warranty. Metso also identifies potential future equipment problems and recommends the best solutions to avoid unnecessary downtime, saving you substantial costs in terms of lost production. With us, your stacker reclaimers will need less maintenance and be more reliable. Metso guarantees you:

• Maximized safety
• Longer service life
• Lowered costs
• More predictable maintenance
• More availability

Learn more at: metso.com/services/stacker-reclaimer-parts-and-refurbishments

100 years of accumulated expertise and a large installed base of stacker reclaimers in use worldwide make Metso the most reliable option.
Stacker reclaimer major components

Metso is your OEM supplier for a wide range of machines, with access to the original design specifications for multiple brands.
Upgrades and refurbishments

Metso offers the best available parts and components for upgrades or refurbishments to your machine to restore or even exceed its original production capabilities. You benefit from quick payback, less maintenance, longer life cycles for your machines, as well as maximized performance.
Slew bearings
Upgrades and replacements for maximum results

Slew bearing replacement and upgrade
Wear and tear from years of service on the slew bearing, the centerpiece of slewing machines, can cause a myriad of problems. As the bearing races wear both vertically and laterally, issues such as structural interferences, machine instability, range of motion restrictions, and slew drive damage can affect the availability of your machine. Waiting too long to change the slew bearing can result in lengthy, unplanned downtime for your operation.

The most common type of replacement slew bearing is the “cannonball” style bearing, which is one of our proprietary in-house designs. Metso also has the capability to replace other OEM bearings, as well as other slewing arrangements, such as truck on ring rail, or wheel on ring rail. In many of these cases we can also convert these types of machines over to our proprietary cannonball design for an extended service life of the slewing components.

Expertise counts
Replacing the slew bearing or slewing components is one of the most difficult and hazardous jobs on a stacker/reclaimer, but Metso is here to help. Our OEM knowledge in properly stabilizing and jacking the machine is key to a safe and successful project. Installation of a slew bearing as part of a turnkey project is also available through Metso.

Metso provides the following improvements with your slew bearing upgrade:
• Altered material chemistry on the races for longer life cycle
• A segmented design that allows the bearing to be installed easily
• Plastic spacers are added between the balls to eliminate “ball-on-ball” wear

Furthermore, as part of a yearly structural/mechanical inspection plan, we can help you track bearing wear over time to determine when to replace these critical components.

Discover more about our offers at:
metso.com/services/stacker-reclaimer-parts-and-refurbishments
The operator’s cab is one of the most vital parts of the machine, as it is the place the operator spends all of his/her time. For this reason, the cab needs to be an efficient, work-friendly environment with a sensible layout. Older operator’s cabs can slow down production with outdated controls and less than ideal visibility. Metso can upgrade your operator’s cab to our modern version, which includes new ergonomic, adjustable operator’s chairs with integral controls, Human Machine Interfaces (HMIs) on the swing arms for instantaneous feedback, altered geometry for better vision, climate control, and additional room. As an option, we can also provide a closed-circuit camera for better surveillance of both the work area and the piles to be stacked and reclaimed. In cases where remote operation is necessary, we can remove the operator’s cab and rebalance the boom to compensate.

**OEM knowledge makes the difference**

Making a significant change to the weight of the cab without properly rebalancing the machine can lead to a host of problems, such as premature slew bearing wear and reclaiming restrictions. In such a project, OEM knowledge and expertise is critical. Metso, as your OEM with access to the original design specifications, excels in providing you with the engineering services that ensure the job is done right the first time and that everything is properly rebalanced.

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**Better visibility, optimum working conditions**
Older obsolete control equipment can create a bumpy ride as your machine travels, causing accelerated wear of key components. As a solution, Metso offers a new state-of-the-art variable frequency drive system for the travel function on your machine. One VFD can be used to control individual travel motors, based on customer preference. As a part of the upgrade, your machine will experience smooth, controlled acceleration and deceleration when moving along the yard rails, extending the life of your parts.

Outdated control equipment can create a jarring slew motion, accelerating wear on the slew bearing and related components. Obsolete electronics, slew motors and brakes can be difficult and costly to maintain. Metso provides a new state-of-the-art variable frequency drive system with smoother, controlled acceleration and deceleration for the slewing function. New inverter duty AC motors and brakes are provided as part of the upgrade, or SCR drives can be provided to work with existing DC slew motors to reduce capital costs. As an option, the number of slew drives on the machine can be increased to reduce the point loading on the slew gear and extend its service life.

Older random wrap or level wind style cable reels can cause accelerated wear on cabling and require excessive maintenance. To remedy this, two types of services are available for your cable reels. Power cable reels can be replaced with a modern mono spiral version, featuring a preset magnetic coupling and slip ring assembly in a dust- and wear-tight heated enclosure. Control cable reels can be removed completely and replaced with a secure wireless radio control system. Fewer components lowers maintenance and increases reliability in your machinery.

**Cable reel upgrades**

Increased reliability, less maintenance

**Travel drive upgrades**

Extended parts life with smoother acceleration

**Slew drive upgrades**

Less wear and tear, reduced maintenance
Obsolete PLC hardware is often one of the biggest challenges in stacker/reclaimer maintenance. Metso can update antiquated PLC hardware and revise/simplify logic to change the functionality of your machine. New I/O hardware eliminates obsolete interfaces between field devices and PLC inputs. Multiple common communication protocols are currently in service to communicate between I/O racks. Common communication protocol options allow for other equipment to interface into the PLC easily.

HMI upgrades from Metso eliminate the need for multiple digital display modules and antiquated annunciators. Our upgrades provide multiple options for displaying the component status of your machine, and are completely customizable for each application. Downtime is minimized through the ability to have modifications and additions implemented while the machine is operational. More information is available to operators and maintenance personnel to reduce future unplanned downtime.

Physical stacking probes can be a challenge in that they are in a difficult location to service, there are moving parts to maintain, and they often provide inconsistent pile peaks. With Metso’s laser pile height detector, we replace the existing stacking probes and probe hoist with a high penetration laser for more accurate measurement. The new laser will provide the actual distance readout to the pile, resulting in more consistent pile peaks - even in harsh conditions with poor visibility, such as rain, dust and fog.
## Electrical services
### Additional upgrades and refurbishments

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**Boom inclinometer upgrade**

- Bolts directly to boom structure, requires no adjustment.

**Slew resolver upgrade**

- Weather resistant, gives absolute feedback.

**Laser positioning system for machine travel installation**

- No re-calibration, accurate feedback.

In older machinery, obsolete rotary cam limit switches for boom angle feedback are difficult to troubleshoot, and parts are hard to find. A Metso boom inclinometer upgrade provides accurate feedback on the angle of the boom, removes the guesswork of adjustments and eliminates the need to be at a physical location during setup. Set points for the various functions can be entered in the control logic, and the functions are easily verified on the HMI or workstation. The solid state boom inclinometer has no moving parts, bolts directly to the boom structure, and is digitally calibrated and adjusted.

Much like the boom inclinometer upgrade, Metso’s slew resolver upgrade eliminates the obsolete rotary cam limit switches and their shortcomings. The new slew resolver is better suited for this harsh application, and the feedback is always absolute. Set points for the various functions can be entered in the control logic, and the functions are easily verified on the HMI or workstation.

On many older machines, the location along the yard rails is determined from field devices tied to the travel bogie wheels. With Metso’s laser positioning system upgrade, the moving parts associated with the old system are eliminated and errors in the machine location due to wheel slippage in inclement weather are a thing of the past. The new laser will provide accurate feedback for precise positioning - even in harsh conditions with poor visibility, such as rain, dust and fog.
Bucketwheel assembly

Gearbox rebuild

In bucketwheel drive gearboxes that have exceeded their service life, an unexpected failure can mean significant downtime and lost production. The custom gearing used has a lengthy lead time, so maintenance and upkeep of this critical component is of extreme importance. Our “Dravo-style” gearboxes, a proprietary in-house design, can be rebuilt to original engineered specifications. With proper planning, this rebuild can take place during a regular planned outage, to minimize impact on your operation. In rebuilding the gearbox, the existing case is reused and remachined, and all bearing seats are line bored. All of the internal gearing, bearings and seals are replaced with new components, and everything is assembled and tested in our shop prior to returning the unit to the field. The rebuilt unit is backed by the same standard warranty that is offered with any new gearbox.

Rebuilt to OEM specs, minimized downtime
Bucketwheel assembly

Additional upgrades and refurbishments

Bucketwheel drive upgrades

Straight hub with shrink disc upgrade

In older designs with tapered fit shafts and hubs, special hydraulic pumps are required for change-outs, which makes service more challenging. With this upgrade, Metso replaces the tapered shaft and hub with a new straight shaft and hub that utilizes a shrink disc connection. Additionally, we thread the end of the shaft and provide a safety nut for added security of the bucketwheel. This arrangement is significantly easier to install in the field, requires no special tools, and eliminates the need for matched hubs and shafts - reducing the costs associated with changing your bucketwheel.

In lieu of rebuilding original “Dravo-style” gearboxes, for a higher capital cost, the bucketwheel drive can be upgraded with a modern, commercially available planetary reducer - offering a higher service factor and extended life. As an alternative, based on customer preference, a self-contained hydraulic drive with motor and power unit can be supplied. Both options normally require a new drive shaft, and often integrate several other upgrades to the bucketwheel drive arrangement. These arrangements are significantly easier to service, as there is no need to open up the old style gearbox to remove the bucketwheel shaft, or to change bearings.

Metso has the OEM engineering knowledge required to revalidate the balance of your machine after the changes at the boom tip required with this upgrade. This guarantees the machine will perform to original specifications, and ensures that no other area of the machine is adversely affected.

Lower maintenance, increased service factor

Easier maintenance and bucketwheel changes

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Bucketwheel assembly

Additional upgrades and refurbishments

Cell-less bucketwheel upgrade

Better discharge, increased capacity

Increased reclaim capacity in machines with original cell-type bucketwheels is hard to achieve. Metso’s cell-less bucketwheel upgrade replaces the original components and provides better discharge and increased capacity for the same weight. The cell-less style wheel only requires that buckets are replaced during a major rebuild, in lieu of a cell-type design that requires the entire wheel to be changed. To facilitate this upgrade, modifications to the bucketwheel drive assembly are required.

Split bearing on the bucketwheel shaft upgrade

Easier maintenance

Failure of a bucketwheel shaft bearing can cause lost production due to extensive unplanned downtime for repairs. To replace the original-style bearings, the bucketwheel must be detached and the shaft assembly removed - which on older machines requires the gear case to be opened. With Metso’s split bearing upgrade, the process is simplified and costly maintenance to change a bearing is eliminated. The bearings, seals and housings are all divided into two pieces, so it is no longer necessary to remove the entire drive shaft to change a bearing. The upgrade usually necessitates a new shaft, as well as some minor alterations to the existing bearing supports on the boom.

Torque link with shock absorber upgrade

Reduces shock loading and wear

Shock loading can cause considerable stress on the bucketwheel drive gearbox. With our shock absorber torque link upgrade, we replace the original rigid connection with one that dampens and dissipates this energy. Doing so reduces premature aging of the gears, bearings and shafts, as well as stress on the boom main structure.
Travel bogies and equalizers
Additional upgrades and refurbishments

Travel bogie change-out program

Overly worn wheels, equalizer pins and wallowed-out pin bores can significantly affect the performance, balance and structural integrity of your stacker/reclaimer. Proper maintenance of this often overlooked area is key in extending the service life of the machine. Through our field service inspections, Metso can help customers identify when it is time to replace these critical components.

With our exchange program, Metso can supply a new bogie assembly for your machine, which is swapped out with one already in service. The removed bogie is torn down, inspected, rebuilt to OEM standards in our service center, and shipped back to you. The process is then repeated until all bogies on the machine are rebuilt. Metso offers the ability to perform this service on a turnkey basis if so desired.

Older style travel bogies feature a “captive” equalizer pin, which takes a significant amount of time to press or burn out when the bogie needs to be changed. To avoid this time consuming and costly maintenance, Metso can upgrade the travel bogies to include a rocker pin design - which allows the bogie to be changed out much faster. On drive bogies, we can upgrade to modern shaft-mounted reducers, and motor and brake upgrades can be provided, and are often done in conjunction with the travel VFD upgrade. Additionally, we can eliminate the multiple location specific travel/idler bogies and create a universal design that will work anywhere on the machine.

Reduced inventory, less maintenance

Bogie upgrades

Metso offers additional upgrades and refurbishments to extend the service life of the machine, resulting in reduced inventory and maintenance costs. This includes modernization of the drive system and a universal bogie design that can be used anywhere on the machine.
Without the proper rail clamps to act as a storm brake, during a power failure high winds can push a stacker/reclaimer down the yard rail uninhibited. An uncontrolled moving machine this size is a severe safety risk, and must be avoided at all costs. Metso can replace the original style custom rail clamps with a more modern, commercially available, self-contained unit that mounts either directly to the machine’s structure, or off one of the bogie assemblies. With Metso’s upgrade, the fail-safe functionality of the rail clamps can be restored, and you can rest assured that safety is guaranteed.

Outdated luffing hydraulic power units can be a liability, with obsolete components that are difficult to source and tough to troubleshoot. Metso offers a form, fit and function replacement hydraulic power unit with modern equivalents for these obsolete components. In addition, we can simplify the hydraulic circuit and streamline the operation, aiding in maintenance personnel’s understanding of the overall system.

The structural integrity of a machine past its service life often becomes compromised over time. Unexpected accidents can damage major structural components, causing machine imbalance and failures. Metso provides major structural replacement components for your stacker/reclaimers, such as booms, gantries, portal legs, and elevating/tripper conveyor frames. As an additional service, we can provide the engineering required to develop a safe replacement procedure for the difficult to install items. Turnkey installations are also available.
Further upgrades

Expert parts and quality upgrades

Increased machine life cycles, better availability

- Hinge pin upgrade
- Luffing cylinder upgrade
- Chute upgrades
- Boom balance studies
- Capacity increase studies
- Luffing hoist upgrades
- Auto lubrication systems
- Anemometer upgrades
- Bucketwheel drive coupling upgrades
- Bucketwheel shaft savers
- Boom conveyor drive upgrades
- Gantry equalization system
- Cable loop and cable carrier upgrades
- Machine lighting upgrades

Pride in over a century of customer service

Metso also offers further services to help you extend your machine life cycles.

Life Cycle Services (LCS)

Metso’s Life Cycle Services (LCS) take the entire range of Metso services and conveniently bundles them into tailored, and easy-to-manage packages. These can range from basic services to more complete solutions, depending on the scale of your needs. Packages are equipped to cover single-event shutdowns or span multiple years, measured against strict KPIs.

metso.com/solutions/life-cycle-services

Field services

Metso offers a comprehensive set of field services to help meet your maintenance, repair, installation and refurbishment needs. Each service is fully customizable to your exact requirements. Our highly specialized services cover all Metso and 3rd party bulk material handling, crushing, screening, conveying, grinding, mineral separation and pyro processing equipment.

metso.com/services/field-services

Spare and wear parts, and refurbishment services

Metso is your dependable OEM provider, with all replacement parts custom-designed for your specifications. Each wear and spare part is backed by our warranty, and all parts are guaranteed to fit. Metso also identifies potential future equipment problems, and recommends the best solutions for your situation, helping you avoid unnecessary downtime, and saving substantial costs. Metso offers you services that can refurbish, repair, and retrofit your equipment as needed. With us, your spare and wear parts need less maintenance, are more reliable, and help improve the availability of your machines - a Metso guarantee.

metso.com/services/spare-wear-parts-for-bulk-handling-equipment
The Metso Way – Making the big difference in your industry

With our combined knowledge, experience and professional personnel, Metso collaborates with our mining and aggregates customers to create the best solutions for reaching their goals.
The Metso Way is built upon:

**Knowledge**
A customer with a competitor’s dual boom stacker wanted to modernize the electrical and control equipment on their machine. Even though we were not the OEM, Metso was able to utilize our best equipment knowledge to provide all of the engineering, programming, drawings and material necessary to complete the project. The machine was stripped of all electrical equipment, and Metso provided a new electrical house, control room, MCC, VFDs, PLC, motors and a full array of field devices.

**Results**
When complete, the machine was fully automated and upgraded with the latest state-of-the-art controls, for years of additional reliable service.

**People**
A customer with a 50-year-old machine had an incident that resulted in major structural failure of the boom. Metso was able to provide immediate assistance with a plan to stabilize the upper half to prevent catastrophic total collapse of the machine.

**Results**
Metso worked with the customer throughout the process of removing the boom and splicing in new sections of the boom fabrication by a Metso field service team. With additional support from experienced Metso expert engineers in the office, the machine was soon back in operation.

**Solutions**
A customer with a 40-year-old trench-type machine was experiencing out-dated electrical controls, leading to excessive downtime. Obsolete components were especially difficult to troubleshoot.

**Results**
Metso provided the engineering and equipment to upgrade to a monospiral power cable reel, travel drive VFD system (including monitors), slew brakes, boom inclinometer, travel laser, and other field devices. Metso created the drawings and PLC programming, and also had engineers on-site to assist with the installation and commissioning. The end result was a much more reliable machine, and updated, modern controls.