

# Bucketwheel stacker reclaimers





# Bucketwheel stacker reclaimers

Metso stacker reclaimers offer the most technologically-advanced list of standard features in the industry. System dependability, efficient operation, and long service life are the goals of every Metso-designed system.

## Custom design

Metso stacker reclaimers are custom-built for each individual application, with the customer's needs in mind.

## Boom structure

Stiff boom structure limits drawdown and boom twist under digging loads.

## Finite element analysis

State-of-the-art finite element analysis software allows our engineers to evaluate high stress areas prior to manufacture for optimum fatigue life.

## Fully equalized, four-point equipment gantry

Mounted on rockers and equipped with cross-rail equalization to provide a statically determinate support.

## Bucket wheel construction

Cell-less or cell-type bucket wheel construction is available dependent on the application and material handled. Bucket wheel drives are shaft-mounted with a fluid coupling and cushioned torque link to absorb bucket digging forces. A brake lock is included to allow bucket maintenance.

## Buckets

Heavy-duty, self-cleaning buckets attach easily to the wheel body and dig cleanly without plowing or carryover.

## Luffing hydraulic system

Controlled acceleration and deceleration eliminates boom bounce and surge.

## Variable speed drives

Provide adjustable speed and torque-controlled operation of slew and travel drives. The drives control acceleration and deceleration, softening impacts that occur during speed changes and increase the life of gearing, brakes, and motors. Maintenance is reduced and system reliability is enhanced.

## Slew bearing

Metso stacker reclaimers make extensive use of heavy-duty "non-moment - no uplift" style slew bearings featuring hardened steel balls and through hardened races. These bearings offer the advantage of longer life, reduced maintenance cost and predictable wear behavior, compared to bearings having "moment resisting" capacity. When commercial slew bearings are used on certain styles of machines, the design provides rigid structural support for improved life.

## Ergonomic operator's cab

Provides outstanding visibility, cushioned adjustable seating, and a sensible control layout in a comfortable air-conditioned cab environment.

## A tradition of excellence

Metso's family of stacker reclaimers includes those of our predecessor companies:

- Svedala Industries
- McNally Wellman
- Strachan & Henshaw Bulk Division
- Stephens Adamson
- Dravo-Engineering Works Division
- McDowell Wellman
- Dravo Wellman
- McNally Pittsburg



*One operator controls all system functions, oversees machine status, and performs troubleshooting, all from this sensibly arranged cab environment.*

## Metso designs control systems for precise machine regulation

Metso stacker reclaimer control systems are designed with the operator in mind, from the novice to the experienced controls technician.

### Human-Machine Interface (HMI)

The HMI system links the operator and the Programmable Logic Control (PLC) control system via a user-friendly, on-screen interface. The HMI system gives the operator the ability to control virtually all machine functions and provides messages regarding machine status, operations, maintenance, and safety.

The HMI system even "walks through" steps of operation for training new or inexperienced operators.

### Alarm/fault diagnostic logic

Also included in all stacker reclaimer control systems. This advanced design minimizes troubleshooting by pinpointing the source of system problems. Advance warning messages alert the operator when a machine shutdown is imminent.

## Designed for operators of all levels of experience Programmable logic controllers

PLCs allow complete automatic control or combination automatic/manual control through the HMI. PLCs promote ease of limit adjustment and rate selection, reduce maintenance, and improve system diagnostics through quick identification of problem areas. In addition, a modern interface allows remote troubleshooting of PLCs from Metso's office.

### Advanced automation

Metso stacker reclaimers are designed for fully automatic operation. Metso machines are equipped with a manual and automatic control system.

Features of this system include: automated bucketwheel feedback logic to prevent over digging, slew speed algorithm logic to achieve constant digging rates, selectable pile geometry limits for multiple stacking and reclaiming configurations, and automatic machine advance to ensure the same depth of cut on each slewing pass.

Slewing limits can also be controlled manually by an operator through the HMI display. The automated control system has been designed with minimal operator interaction required.

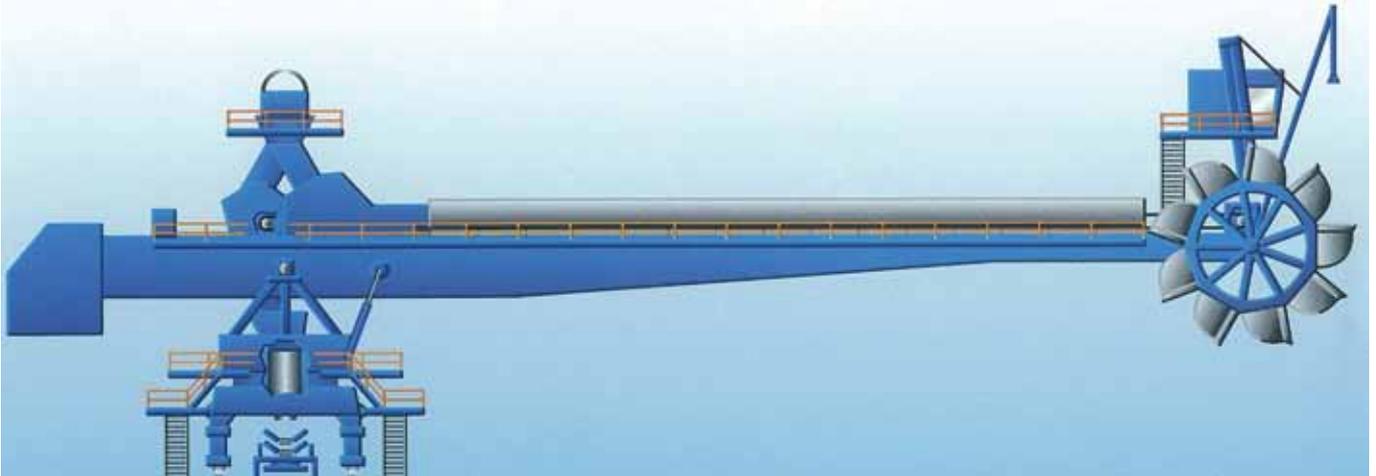
### Operator cab

The operator cab is provided with an ergonomically designed chair and operations console for maximum comfort and ease of operation. Air conditioning and heating systems provide a comfortable work environment in all seasons. Wraparound windows provide a panoramic view and high-intensity floodlights illuminate a broad work area for evening or pre-dawn operation. A self-leveling cab feature with operator control adjustment allows the operator to maintain maximum visibility of all operations throughout the entire boom angle range.

### Remote operation

With the use of high density TV cameras, all functions including machine start-up, digging parameters and pile dressing can be done remotely, if desired. There is virtually no need for an operator to go out onto the machine.

**Straight-Through Boom Configuration** provides rapid, efficient stacking and reclaiming of materials in an environment where boom length need not exceed 125 feet (38 meters). Ports, terminals, and power plants generally utilize this design when less expansive storage is required.



### Built for every storage need

Two basic styles of stacker reclaimers utilizing three different configurations of trailing tripper structures typically meet most storage requirements for bulk ports, terminals, electric power stations, and other facilities where efficient stockpile management of raw materials is essential.

#### Trench type stacker reclaimers

This configuration is ideal for installations with low volume, high-active storage pile capacities between 30,000 and 60,000 tons, where reclaiming operations are accomplished by a longitudinal pass through the pile. Reclaim rates usually vary from 2,000 to 4,500 tons per hour.

#### Slewing type stacker reclaimers

This type is typically used where large quantities of material must be readily available, where blending of grades of material is required, or where available yard length is limited. These machines feature boom lengths up to 220 feet (67 meters) and stacking and reclaiming rates up to 6,000 tons per hour for coal and 8,000 to 10,000 tons per hour for iron ore. While offering maximum flexibility, slewing type machines also help lower the unit costs involved in the handling of bulk materials.

Both types of machines are vertically articulated (luffed) to reach both the top and bottom of the storage pile. Although both machines are horizontally pivoted (slewed) about the vertical axis, only the slewing stacker reclaimer utilizes this motion for operating in the pile during stacking and reclaiming. The slewing motion of the trench type machine is only required for switching between opposite sides of the storage yard.



**Trench type** stacker reclaimers are ideal for installations with low-volume, high active storage pile capacities.



**Straight-Through Boom** slewing type machines typically are suitable for most storage facilities.



**Masted Boom** slewing type stacker reclaimers are used in facilities requiring higher live storage quantities.

**Masted Boom Configuration** is designed for use in applications where extended boom length over 125 feet (38 meters) is necessary. The added support reduces excessive boom flex inherent in long-reaching stacker reclaimers or where high digging forces cause unacceptable boom tip deflection.



## Tripper Configurations

**Straight-Through Tripper** is utilized when material enters the storage yard from one end of the yard and leaves toward the other end. If facility operation is such that some or all of the material may bypass the storage yard, a splitter gate can be mounted at the tripper head chute.



**Articulating Tripper** is used when material enters and leaves the storage area from the same end of the yard. By articulating the tripper structure, this section can be lowered (retracted) for reclaiming operation.



**Scissors-Type Tripper** is also used when material enters and leaves the storage area from the same end of the yard. This tripper utilizes a separate elevating conveyor to direct the material to the centerline of rotation for stacking.





### Expect results

It is our promise  
to our customers and  
the essence of our strategy.

It is the attitude  
we share globally;  
our business is to deliver  
results to our customers,  
to help them reach  
their goals.

