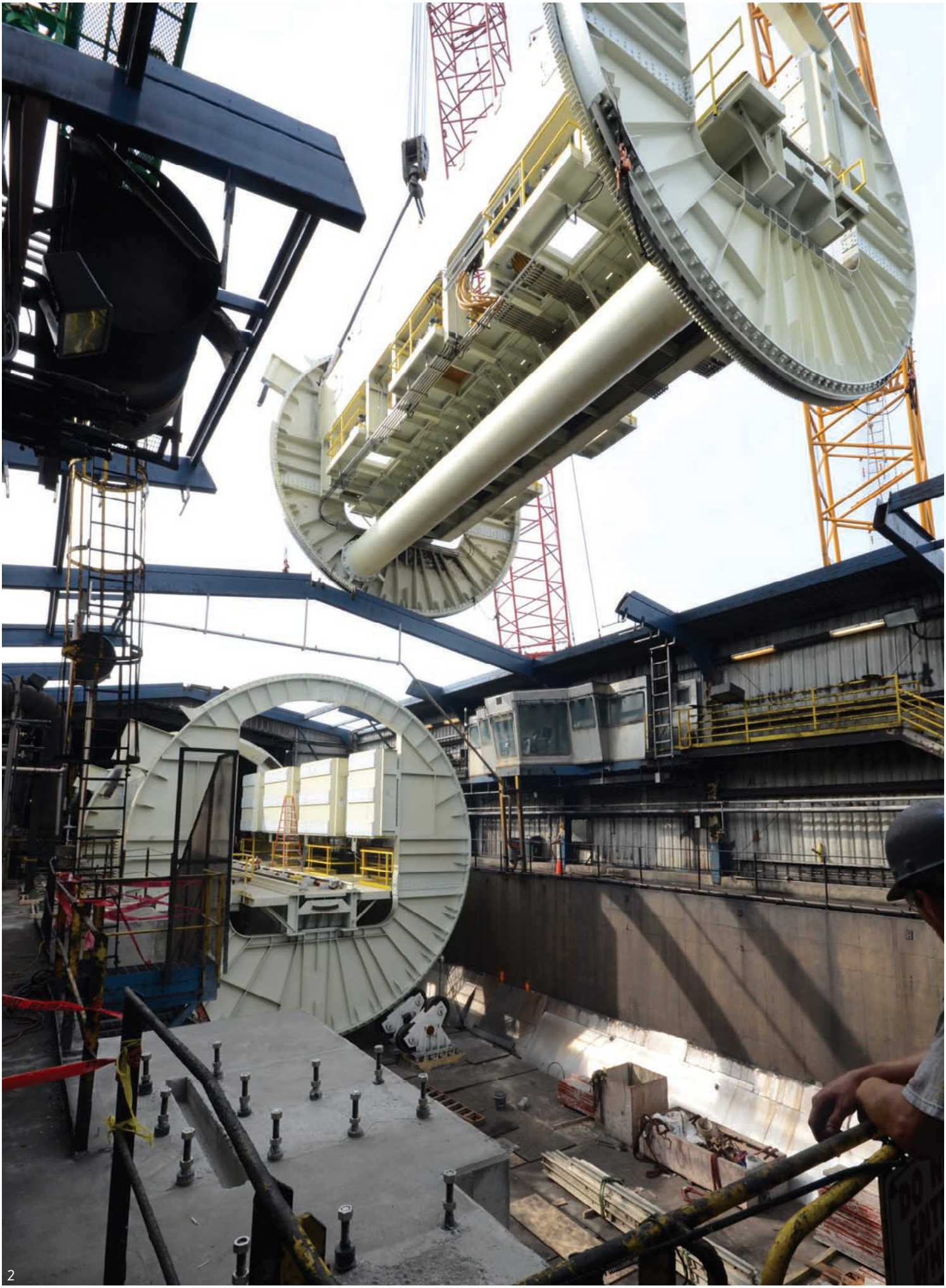
Metso

Rotary railcar dumpers and train positioners



Rotary railcar dumpers and train positioners

Metso's rotary railcar dumper and positioner systems have set the worldwide industry standard with the most technologically advanced list of standard features for system dependability, efficient operation, and long service life.

With a wide choice of configurations and features, Metso can service random car and unit trains of any length, style, and varying car size. Single, tandem or triple car dumpers provide capacities from 453 to 9,072 mtph.

Complete systems
Metso's capabilities in design, supply, installation, and commissioning provide complete turnkey railcar unloading systems including: the dumper, train positioner, train holding devices, hoppers, feeders, and controls.

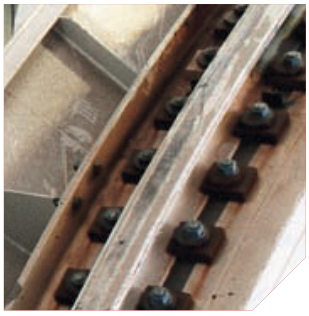
Custom built
For each individual application, the railcar unloading system is custom configured and built with the site specifics and customer needs in mind.

Expert design
Designing dumper barrels with state-of-the-art finite element analysis software allows Metso engineers to evaluate high-stress areas prior to manufacture for optimum fatigue life.

Diverse material handling capacity
Rotary dumper systems handle a wide variety of materials, including: coal, coke, metallic ores, limestone, bauxite, phosphate, sulfur, wood chips, waste, and a variety of other bulk materials.

A tradition of excellence
With hundreds of dumper and positioner systems worldwide, Metso has built a reputation of upgrading older units with the latest features. Originally sold under the McDowell Wellman, Dravo Wellman, and Strachan & Henshaw brands, we have more dumpers in service than any company worldwide. We design, supply, and install retrofits to dumpers of our own supply, and our competitors.

We handle turnkey dumper barrel replacements, plus a listing of (28) twenty-eight design modifications for existing rotary railcar dumpers and positioners that improve reliability, maintainability, and safety.



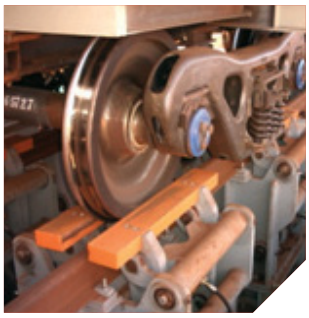
Rolled "T" end rings
Reduces structural stress and extends service life by utilizing a standard "T" shape to construct the flange and portion of the web. Promotes extended barrel life. A special five-year warranty is offered by Metso on rolled "T" end rings.

Breakaway car clamps with spring relief feature
A vertical pivot allows the clamp head to rotate if struck on the side by a locomotive or railcar. Prevents damage to locomotive, railcar, and dumper barrel. Spring relief feature prevents overloading of clamps, barrel frame, and structural girders, maximizing dumper life.

Control room
Highest system visibility is maintained at all times in an elevated, ergonomic environment. One operator maintains total system control and conducts trouble shooting through user-friendly man-machine interfaces and programmable logic controllers.

Integral platen weigh scale
Integral load cells allow railcars to be weighed before and after dumping without the need of separate track scale. Excellent accuracy of 0.1% meets strict railroad requirements. Platen does not interfere with dumping operation.

Shiftable platen
A shiftable platen is available to accommodate a wide range of car widths.

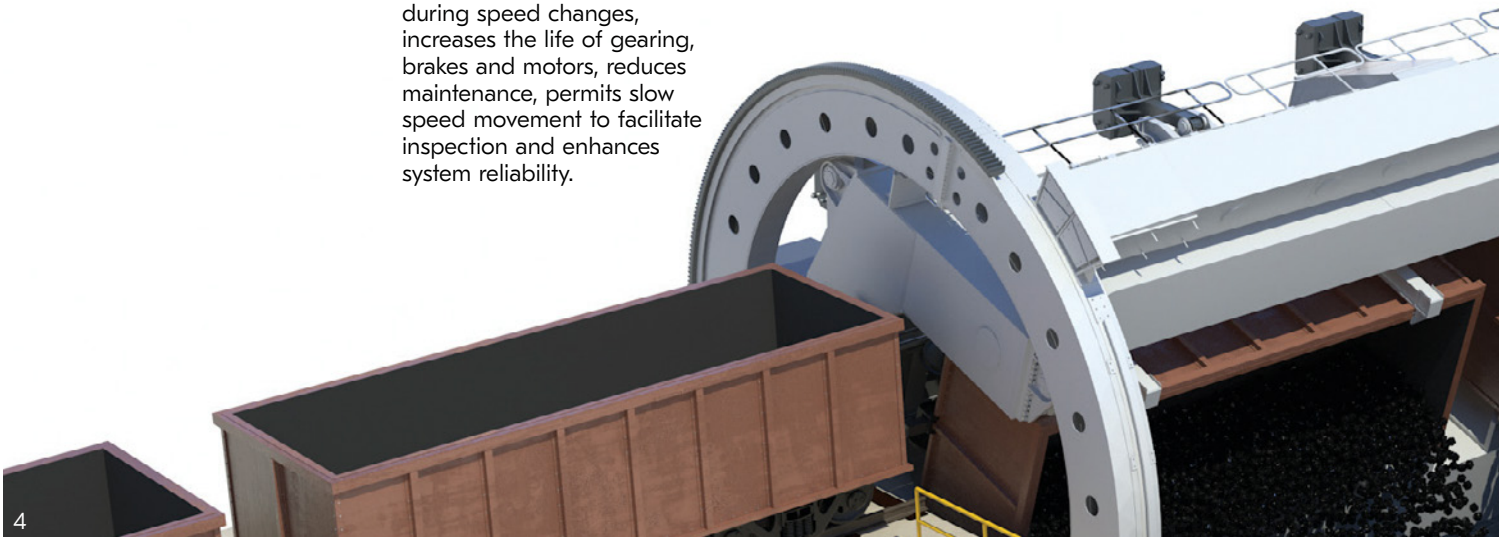


Wheel clamps
Secures railcar in place during dumper rotation. Hydraulic clamping mechanism pinches wheels, securing car for safe dumping. Also holds train in position while positioner is returning to index the next railcar.

Variable speed drives
Metso offers a choice of AC variable frequency (flux vector controlled), DC adjustable voltage or hydraulic adjustable flow variable speed drives for the dumper and train positioner to meet customer requirements. Variable speed with controlled acceleration and deceleration softens the impacts that occur during speed changes, increases the life of gearing, brakes and motors, reduces maintenance, permits slow speed movement to facilitate inspection and enhances system reliability.

Rack and pinion style railcar positioner
Designed for quick and efficient handling of large number of railcars. A precision over the coupler arm and rack and pinion style drive with synchronized AC, DC or hydraulic motors allows for fully-automatic indexing, return, and precise locating of cars for dumper operation.

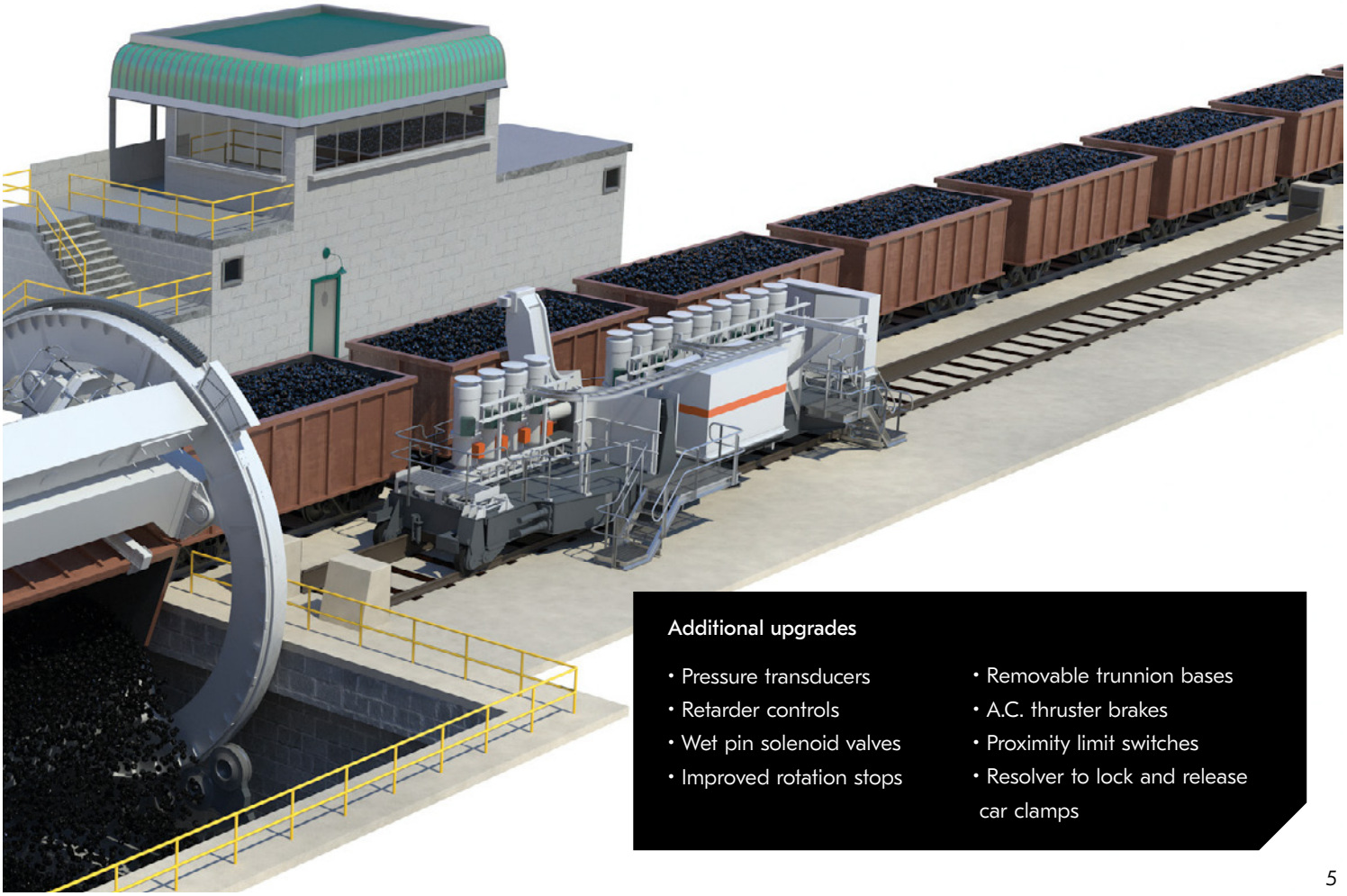
Wire rope style railcar positioner
Alternately, a wire rope cable and drum arrangement is used to move the positioner.



Double/quad wheel trunnions
Excellent for heavy railcar handling. Distributes the end ring load to 8 or 16 points instead of 4. Reduces fatigue loading of each cycle on the end ring, greatly extending barrel life. Rail and trunnion wheel surface wear life is improved due to reduced stress.

Blocking mechanism
Maintains support of railcar sidewalls during rotation. Maximizes railcar side support and minimizes car shifting during dumper operation. Prevents damage to railcar caused by excessive side stresses. Two-position shiftable blocking can be provided to accommodate wide locomotives.

Dual heavy-duty rack and pinion rotate drive system
Eliminates extreme torsional forces in the dumper barrel. This lengthens barrel life by minimizing shear stresses in front and rear girders and bolted connections. Each drive supports half the load for longer drive life. Redundant drive arrangements also promote safer operating characteristics.



Additional upgrades

- Pressure transducers
- Retarder controls
- Wet pin solenoid valves
- Improved rotation stops
- Removable trunnion bases
- A.C. thruster brakes
- Proximity limit switches
- Resolver to lock and release car clamps

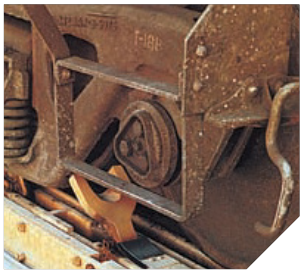
Metso's rotary car dumper makes handling a wide variety of materials a rapid, automatic process

Multiple barrel configurations dump 2, 3 or 4 railcars simultaneously to increase traditional unloading capacity

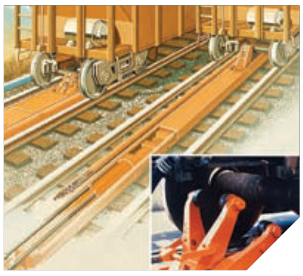
Positioning systems

... to service any application

Metso's train positioner systems are designed to move individual blocks of 1-10 railcars up to unit trains in excess of 200 railcars. Most systems are computer-monitored and SCR-controlled to meet exacting dumping requirements. For high speed, high capacity requirements, Metso offers an over-the-coupler positioning arm, holding arm, and a truck/wheel locking assembly. For lower capacity requirements, car positioning devices are available to handle 1 to 40 cars. Each complete dumper/positioner system provides fast, dependable train turnaround requiring only one operator. At Metso, we design systems specifically for your particular train unloading requirements, ranging from 5 cars per hour to more than 90 cars per hour.

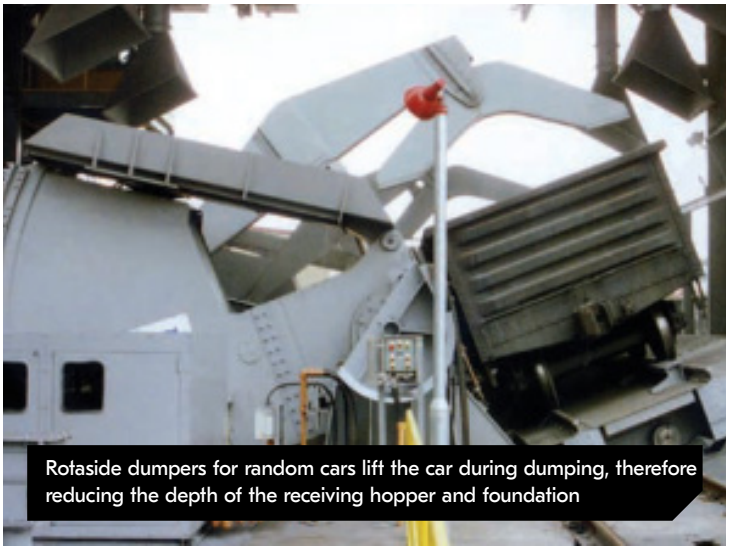


Nolan Hydraulic Car Movers™
(HCMs) are used where cylinders are preferred over wire rope due to site conditions or for pulls up to 20,412 kg. HCMs move strings of railcars for dumping materials with spotting accuracy of ±152 mm.



SCAMP®
Reversible hydraulic indexers can be used in two-directional applications, for up to 22,678 kg pull, or for applications requiring a spotting accuracy of 25.4 mm. SCAMPs are usually arranged to index a string of cars one car length at a time. Units can be arranged to traverse scale platforms or to be integrated into rotary dumper platforms. Recommended for dumping 5 to 15 cars per hour.

Gemini®
Car PositionerTwo over-the-coupler-positioners index cars at high rates through the dumper. One positioner moves the train into the dumper while the second simultaneously returns to the starting position in preparation for the next index. Significantly reduces overall train dumping time.



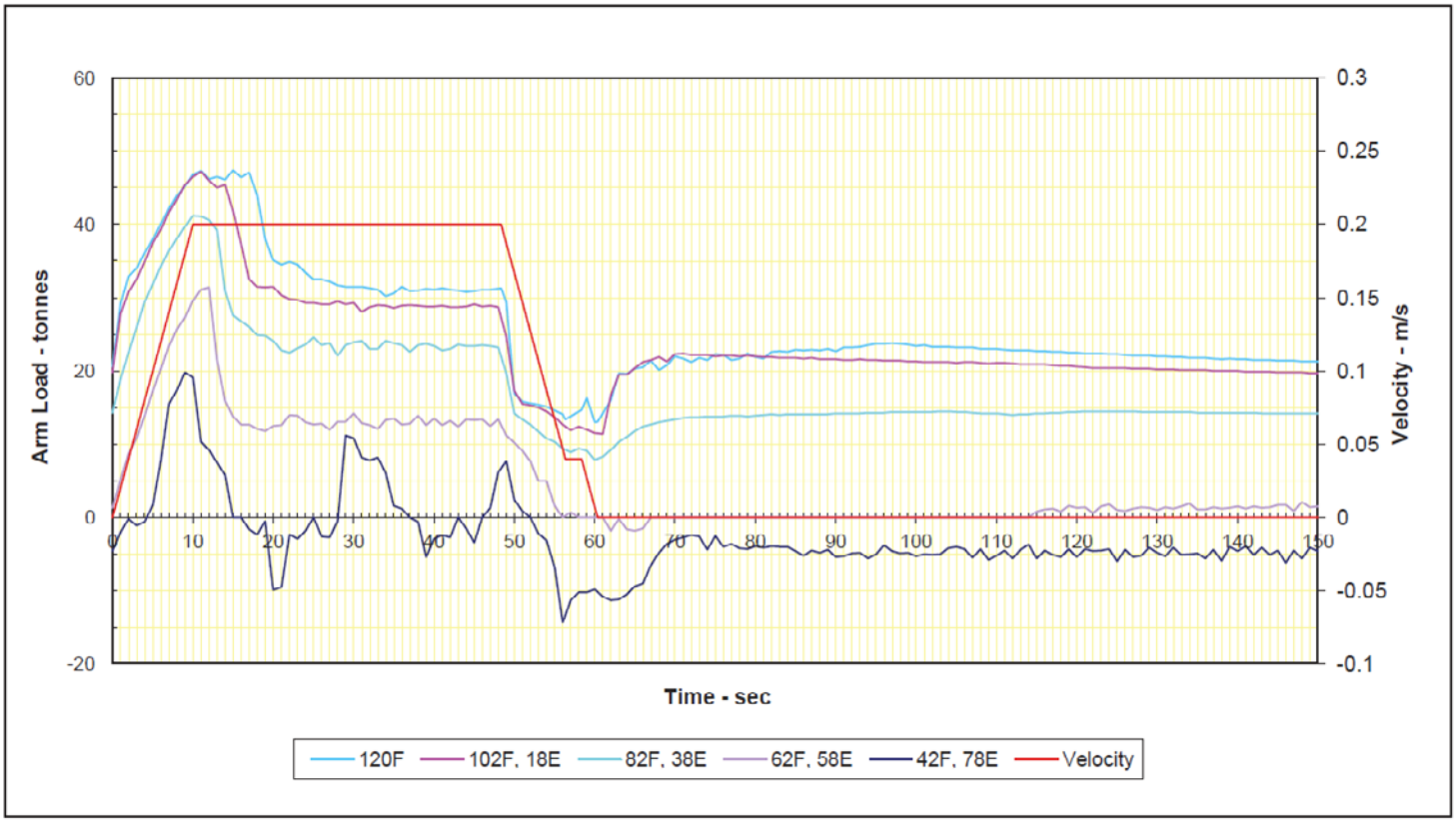
Rotaside dumpers for random cars lift the car during dumping, therefore reducing the depth of the receiving hopper and foundation

This C-frame (crescent) design allows the positioner to move through the barrel, promoting efficient handling of random cars

Train simulation program

Metso's train simulation program evaluates the dynamics of the train configurations for the facility.

- Calculates speeds, loads, cycle times, and in-train forces
- Calculates load on coupler and positioner system arms



Metso's train simulation program calculates speeds, loads, cycle times, and in-train forces, and evaluates the dynamics of the train configurations to be handled by the facility. Adjustments are made by a Positioner Optimizing Control (POC) system to accommodate site-specific requirements.

Metso is a frontrunner in sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. We improve our customers' energy and water efficiency, increase their productivity, and reduce environmental risks with our product and service expertise. We are the **partner for positive change.**

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Partner for positive change