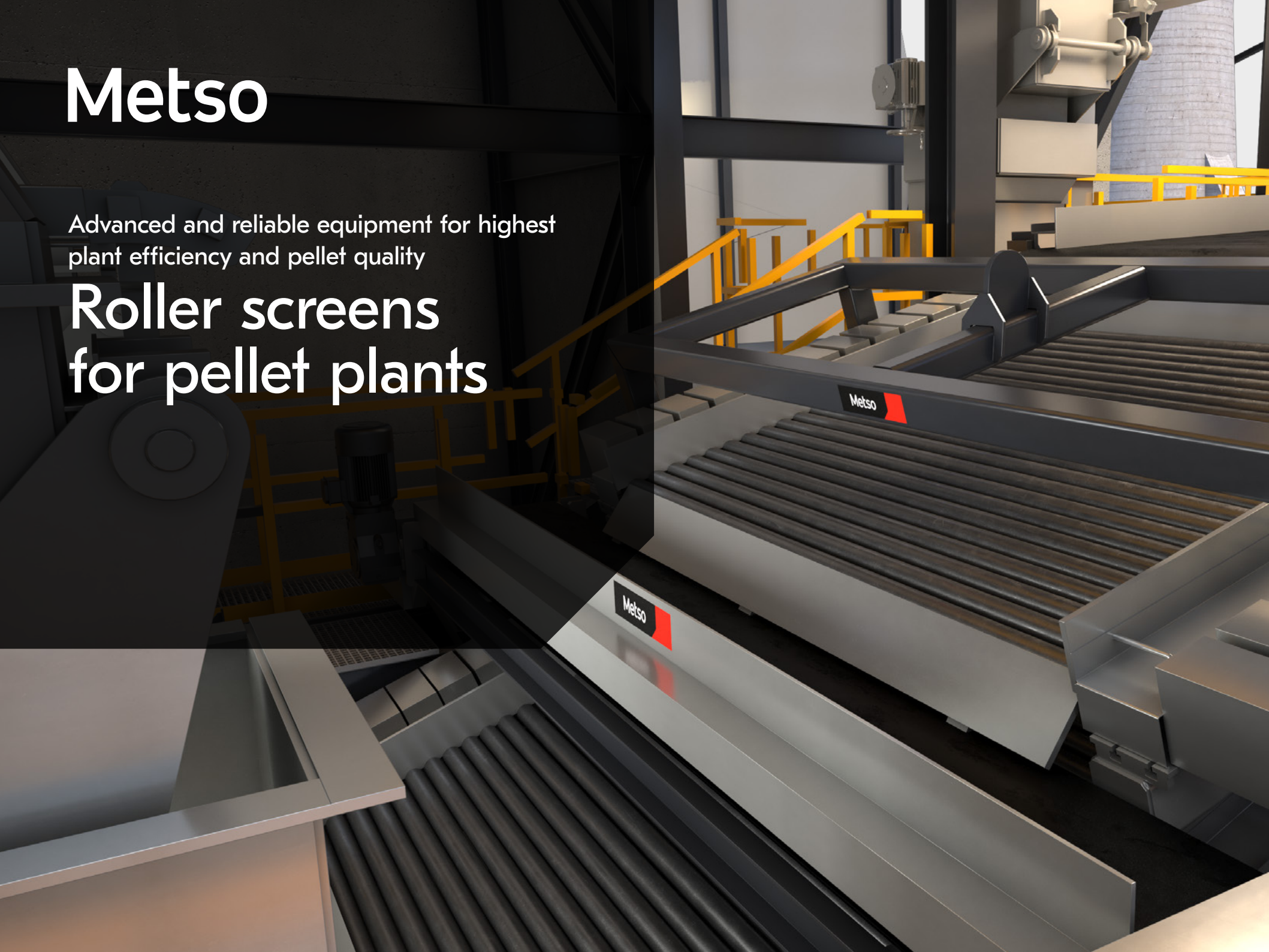
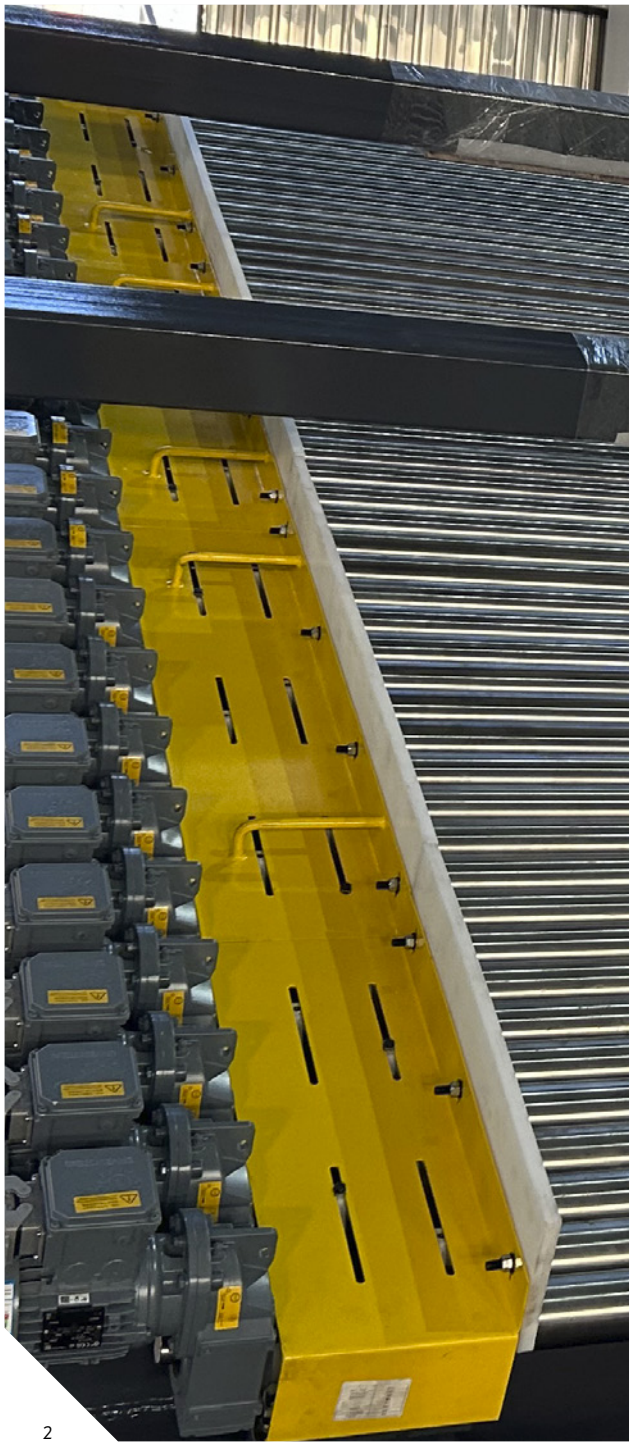
Metso

Advanced and reliable equipment for highest plant efficiency and pellet quality

Roller screens for pellet plants





Decades of technology and market leadership in iron ore pelletizing

Metso has a unique heritage in the iron ore pelletizing industry. Our know-how in designing and building iron ore pelletizing plants has been continuously evolving.

Metso pelletizing solutions are optimized to increase capacity at highest levels of efficiency with a low environmental footprint. Metso plants are renown for consistent production of pellets with excellent physical and metallurgical properties for high-quality steel production. This is achieved through an unrivalled range of pelletizing process equipment that is designed with a process mindset and the know-how of the technology leader.

Optimum plant performance is controlled through the green pellet quality and size distribution, as these determine the gas permeability of the pellet bed in the furnace and thus the product quality, energy consumption and process stability.

To control the green pellet size and quality, Metso is offering proprietary roller screens which are designed with the entire process chain from green pelletizing to firing the pellets in the furnace in mind. With unparalleled expertise in process engineering, equipment design and project implementation Metso's equipment for the pelletizing process is designed to produce pellets of highest quality, reduce fuel and power consumption, and cut operation costs.

Benefits

- Ensures pellets with excellent and consistent metallurgical and physical properties
- Optimal plant performance with regard to productivity, energy efficiency, process stability and product quality
- Designed by the technology leader, focusing on the entire pelletizing process
- Lowest TCO due to longevity and maintainability of the equipment and service support

Roller screens in the pelletizing plant

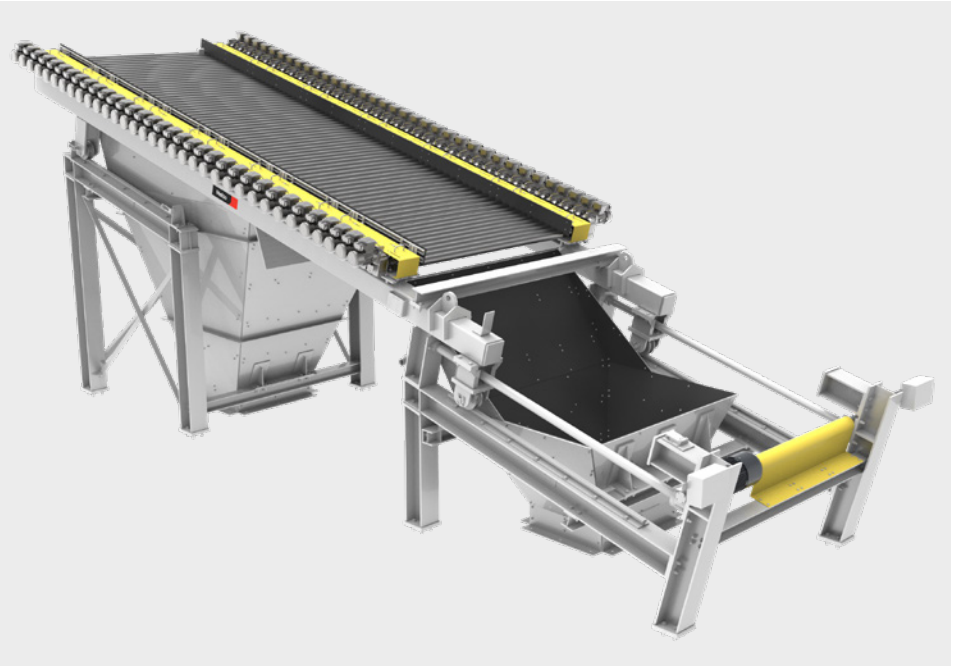
Reliable screening operations to remove fines and broken pellets are of utmost importance to ensure an efficient indurating process with even pellet qualities. In general, green pellets can be screened at two locations: at the discharge of the green pelletizing discs or drums and before feeding them onto the pallet cars of the travelling grate or onto the preheat grate.

The general set-up of the green pellet screening is mainly determined by the plant capacities:

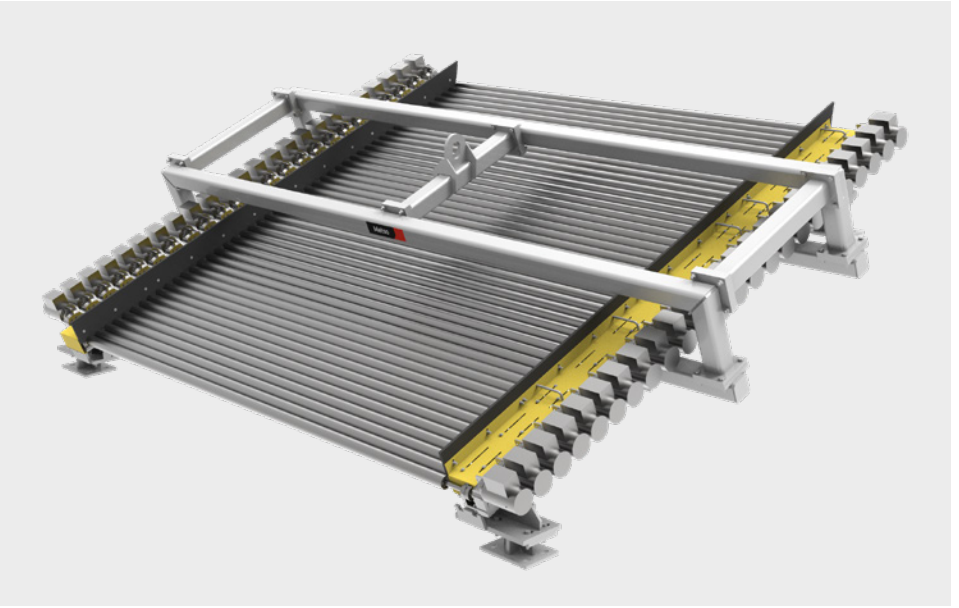
- For plants < 4 Mtpy one screening stage is sufficient, therefore a Double Deck Roller Feeder (DDRF) is installed at the feed station of the furnace to screen out over- and undersize pellets.
- Pellet plants with capacities > 4 Mtpy are typically equipped with Single Deck Roller Screens (SDRS) under the balling equipment to size the green pellets and relieve the downstream green pellet handling by the burden of off-spec pellets. The final screening stage through Metso's Single Deck Roller Feeder (SDRF) reliably distributes and feeds the pellets to the furnace.

By utilizing the bi-layer principle, pellets can be segregated into two distinct layers in the pellet bed. The principle ensures that larger pellets are charged in the upper section of the bed, increasing their hardening time and quality.

Plant capacity	< 4 Mtpy	> 4 Mtpy	Bi-layer principle*
Balling section		Single deck roller screens	Single deck roller screens
Feed station	Double deck roller feeder	Single deck roller feeder	Bi-layer feeder



Single deck roller screen (SDRS)



Single deck roller feeder (SDRF)



Single deck roller screen (SDRS)

Holistic design for pellet screening in balling section

Single Deck Roller Screen (SDRS)
Metso's single deck roller screen provides a reliable and efficient solution to screen fines and oversize from pelletizing discs or drums.

Benefits:
- Excellent screening efficiency
- Reduction in overall drop-height through direct charge to collecting belt
- Rollers available in two qualities
- Movable screen to optimize pellet distribution on the collecting belt
- Reject position to avoid charging off-spec pellets to the furnace
- Available with single roll drive and chain drive

Comparison of single drive and chain drive
Single roll drive offers the benefit of higher reliability, easier roller exchange and re-gapping procedures. Chain drive offers greater space economy, less cabling and a robust, well-proven drive mechanism

Holistic design from one source
Metso's single deck roller screen is designed for our optimized arrangement of the pelletizing building, that reduces footprint. It allows for easier maintenance and optimum process conditions, such as direct charge from the pellet disc discharge and smooth transfer of the green pellets.

VisioPellet

- Metso's pellet size-control system that measures the size of green pellets using proven camera technology installed in a pelletizing disc or drum.
- Based on the measurement data the process control system can optimize the rotation speed of pelletizing discs/drums the feed rate and the water addition in real time.
- Proven for two decades in numerous references
- Can in combination with Metso's roller screens further optimize the performance of the induration process

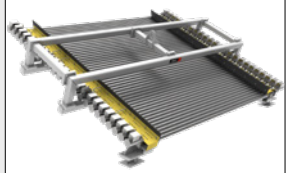
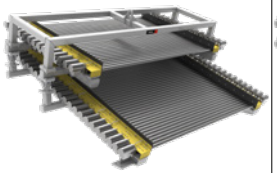
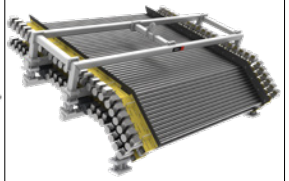
Optimized feeding of the green pellets to the induration furnace to ensure gas permeability

Optimum size control and efficient and careful pellet transport are crucial to evenly load the pallet car with pellets. Metso's roller feeders are designed with the process in mind. Our range of roller feeders reliably removes fines and broken pellets, thus ensuring that only on-size pellets are uniformly charged to the indurating furnace.

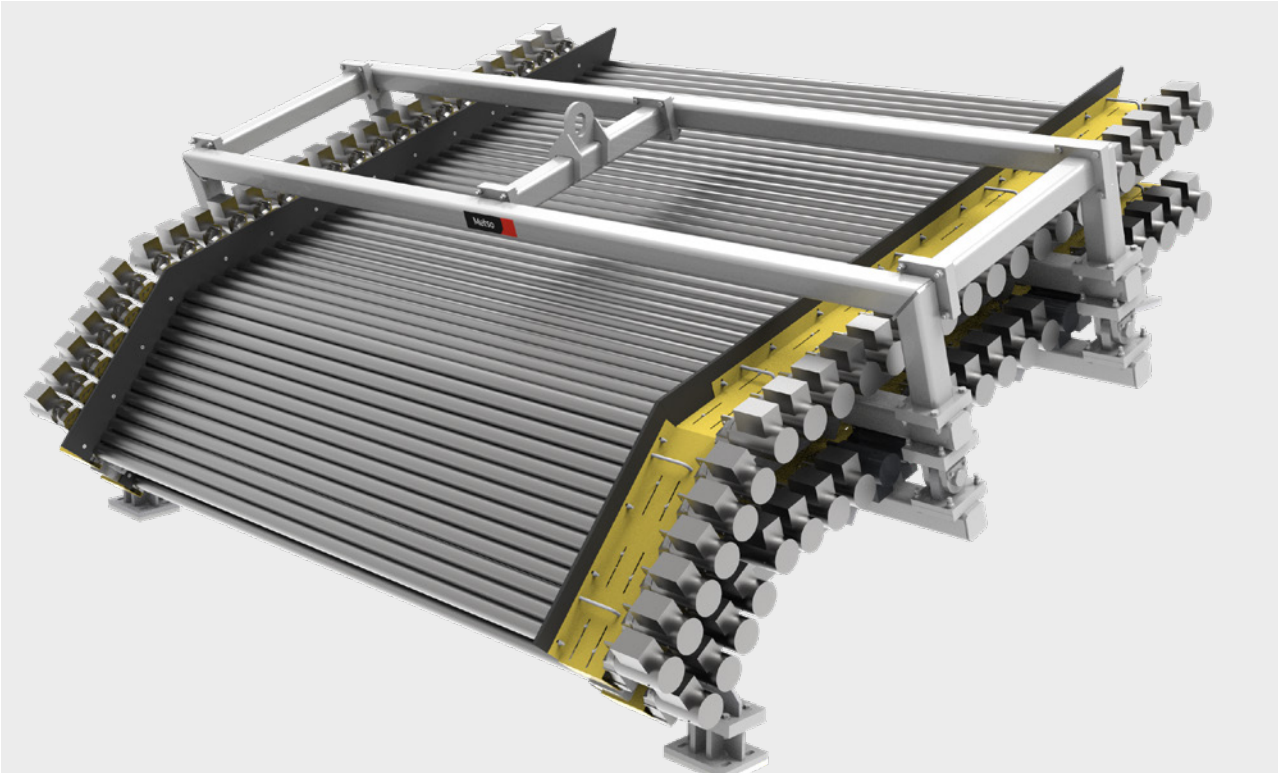
Metso's roller feeders are proven, reliable and simple to maintain. The robust design allows for swift installation and each unit is quality tested in our dedicated workshop. The roller material can be selected to optimize life-time while providing great value over comparable offerings.

Benefits:

- High-efficiency screening
- DEM-optimized design for better pellet distribution
- Robust, reliable design with optimized lifetime
- Variable roller speed
- Inbuilt gap flexibility

	SDRF	DDRF	Bi-layer feeder
			
Machine width	3 m & 4 m		
Roller data	3000 mm – 4000 mm, 85 mm diameter		
Roller setup	2 different roller qualities available		
Conveyors	Metso proprietary undersize conveyor	Metso proprietary over- and undersize conveyor	Metso proprietary undersize conveyor





Bi-layer feeder

Bi-layer feeding to further boost plant performance

The bi-layer feeder is designed to enhance the pellet bed properties in the indurating furnace even further. The system contributes significantly to efficiency and quality control in pellet production.

Using the bi-layer principle to feed pellets into the indurating furnace can help optimize the heat treatment process and improve the overall quality of the pellets.

Metso's bi-layer feeder fulfills two distinct functions:

- **Size segregation:** It removes fines on the upper and lower deck, ensuring uniformity in the production line.
- **Layering:** It layers the pellets into two distinct fractions on the pallet car. Larger pellets are fed in the upper section of the pellet bed, so they are exposed to the firing temperature for longer time, which results in better CCS and Abrasion Index figures. The smaller pellets, which require less heat, are placed underneath.

Design set-up

Upper deck with 50 rollers:

- 38 screening rollers with a 12.5 mm gap
- 12 transport rollers

Lower deck with 48 rollers:

- 38 screening rollers with a 9 mm gap
- 10 transport rollers

Rollers:

- Diameter: 85 mm
- Length: 3,000 mm and 4,000 mm
- Material: stainless steel

Partner over the entire lifecycle of your pellet plant

Retrofit of existing plant with new roller screens
By replacing existing roller feeders at the feed station of your travelling grate by a specially designed double deck roller feeder or bi-layer feeder, you can achieve:

- More efficient fines screening by larger screening area
- Increased reliability through single roll drive
- Improved product quality of fired pellets

Enhanced product quality can be traded to optimized energy consumption and/or productivity. Metso is also supporting in installation planning to reduce shut-down time and prevent loss of production

Original spare parts
Metso OEM rollers are produced in various locations, close to our main customer base in China and India. The standardised roller design and local manufacturing possibilities ensure swift availability of spare roller sets.

Installation of VisioPellet
Optimize your roller screen performance by controlling the pellet disc discharge size distribution. Proven, image-based algorithm that fine-tunes the disc performance.



Highest quality pellets with consistent properties

Optimized energy consumption and low emissions

Best TCO (total cost of ownership) over the lifecycle of the plant

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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