LEONARDO AUTOMATION

Multisort 600

Crossbelt sortation system

LEONARDO

CROSSBELT SORTATION

Cross-belt sorters are used in various industries to efficiently sort and handle parcels, packages, and other items of different shapes and sizes. They are ideal for high-volume environments such as distribution centres, e-commerce fulfilment hubs, and postal sorting facilities, where accuracy and speed are critical.
These systems are particularly effective for handling mixed assortments of goods, including fragile or irregularly shaped items, due to their gentle handling and precise control. Items are carefully transported through the induction, sortation and ejection process, following the WCS or host systems requirements.
Their modular and flexible design allows for easy integration and scalability, making them suitable for a wide range of logistical applications.

MULTISORT 600: ADVANCED SORTING TECHNOLOGY

CROSSBELT SORTATION

Precise Sorting: The system controls the acceleration and deceleration of items, ensuring precise placement onto the correct output chute or bin. Items are loaded at zero relative speed for precise and controlled transport, regardless of shape or size. Logical loading and unloading points reduce misplacements. When coupled with enhanced accuracy, more destination chutes are possible within a given area and in addition, the ejection point can be varied, ensuring the whole width of a chute can be filled with parcels, improving chute capacity. The controlled movement reduces the risk of damage, making the Multisort 600 ideal for even fragile or irregularly shaped parcels.

Real-Time Monitoring: The control system constantly tracks the position and status of each sorting unit, ensuring accurate and timely commands for optimal performance.

Gentle Handling: Can sort items from small packets to large, heavy parcels without significant adjustments. Two adjacent cells enable efficient processing of large items.

Flexible System Design: The sorter loop can have multiple loading and unloading points, allowing simultaneous sorting and higher throughputs through virtual sorter concept.
The loop design allows items to recirculate, for instance, if a destination is unavailable.

Efficient: Sorts large volumes of parcels quickly, maintaining high throughput rates even with mixed item types. Speed is less affected by item weight or size compared to other technologies.

Power Saving: Designed for significant energy savings, the Multisort 600 adjusts speed to match throughput needs, conserving power.

Low Maintenance: The frictionless propulsion system and robust design reduce maintenance interventions, lowering overall operational costs.

SUPERIOR PROPULSION AND POWER TRANSMISSION

LINEAR SYNCHRONOUS MOTORS (LSMS)

Energy Efficiency: LSMs are more energy-efficient than Linear Induction Motors (LIMs), which typically require more power to achieve the same performance and often need additional cooling.

Precise Control: LSMs provide more accurate control of acceleration, deceleration, and speed, offering a more reliable solution.

Low Maintenance: With no physical connection, LSMs reduce maintenance compared to systems like brushless motors, where physical connections can require higher upkeep.

INDUCTIVE POWER TRANSFER (IPT)

Low Maintenance: IPT is non-wearing compared to bus bars, resulting in lower maintenance and replacement costs over time.

ADVANCED COMMUNICATION

Encrypted Wi-Fi Communication: Provides higher data rates and bandwidth than infrared technologies.

Reliability: Wi-Fi is less affected by sunlight or dust, which can interfere with data transmission.

Flexibility: No additional antennas or mechanical diverters are needed. Cell activation and loading/unloading decisions are logical and continuous along the sorter loop, allowing for simple reconfiguration such as chutes by simply updating the database.

INTEGRATED TECHNOLOGY

ADVANCED MONITORING AND CONTROL

Advanced monitoring and control systems enhance the leonardo sorter's efficiency by providing real-time diagnostics, performance tracking, and automated adjustments. this reduces downtime and optimises overall throughput.

ADVANCED INDUCTION

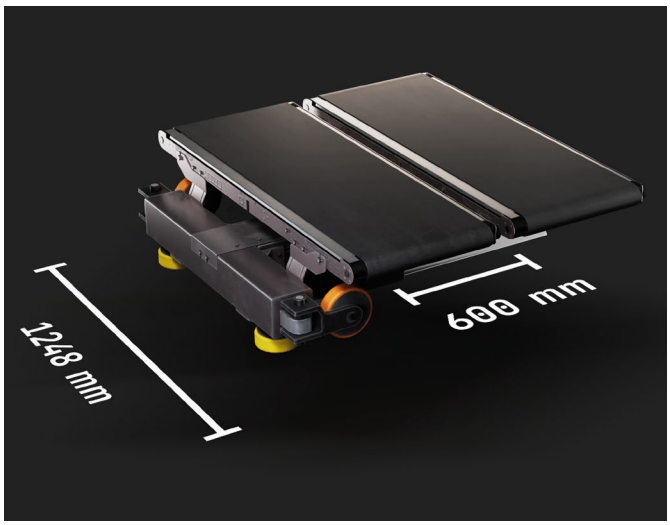
Advanced induction technology ensures precise, high-speed sorting by accurately positioning items on the sorter, minimising errors, and enhancing operational speed and reliability.

SMART INSPECTION CELL SYSTEM (SICS)

The smart inspection cell system improves efficiency by detecting the presence and exact location of items (including flat and thin objects) on the sorting cells, improving sorting trajectories and sorting efficiency, recognising incorrect loading, and ensuring smooth, continuous operation.

ROBOTICS FOR STRANDED ITEMS

Robotic systems for stranded items automate the extraction of misplaced items on the sorter, reducing manual intervention, providing more available cells to induct to, and improving operational flow.



THE MULTISORT 600 ADVANTAGE

- → **High capacity**: maximise throughput with a high density of cells per minute
- → **Wide range of loadable items**: sort parcels of any shape and size with ease
- → **Low vibration**: enjoy smooth operations with minimal noise and disturbance
- → **Easy speed regulation**: adjust the system to meet varying demands effortlessly
- → **Gentle loading and unloading**: ensure items are handled with care for better quality assurance

TECHNICAL DATA

CHARACTERISTICS	VALUE
Maximum item size [mm][1] lxwxh	1,200 x 800 x 800
Minimum item size [mm] lxwxh	100 x 75 x 1
Item weight [kg]	0.02 to 50
Maximum sorter speed [m/s]	up to 3
Sorter nominal capacity [cells/h]	18,000
Average cell pitch [mm]	600
Carrier pitch [mm]	1,200
Cells per carrier	2
Incline	up to ±12 degrees
Sorter noise level[2]	< 65 db(a)
Environmental conditions	5°c to 40°c max. humidity 90% non-condensing

→ [1]Double cell loading for Width > 600mm
→ [2]At sorter speed of 2.0 m/s

KEY FEATURES

Welcome to the future of logistics.

Encoders

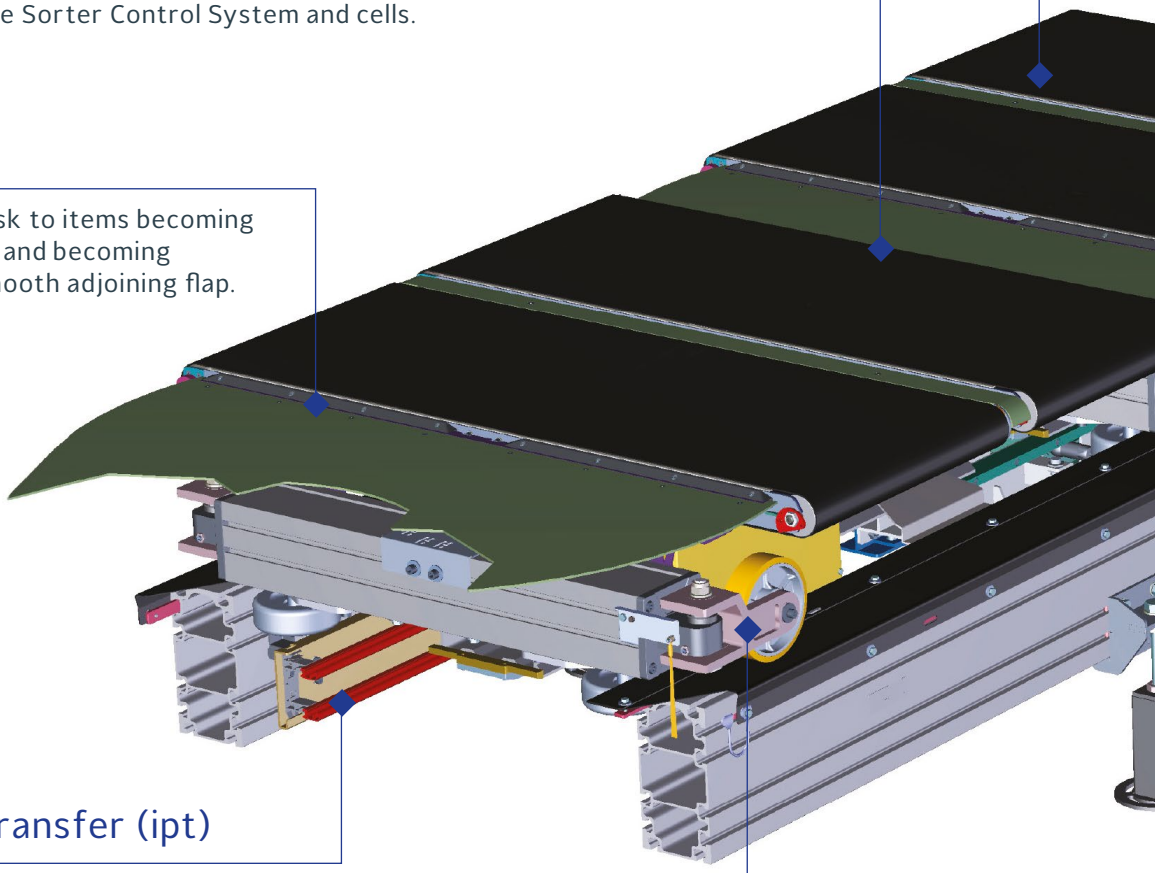
Continuous operation without loss of performance is ensured for critical components, like encoders through a hot backup configuration.

Advanced wi-fi communication

Encrypted and contactless data transmission is provided between the Sorter Control System and cells.

Flaps

Significant reduction of risk to items becoming trapped between carriers and becoming damaged provided by a smooth adjoining flap.

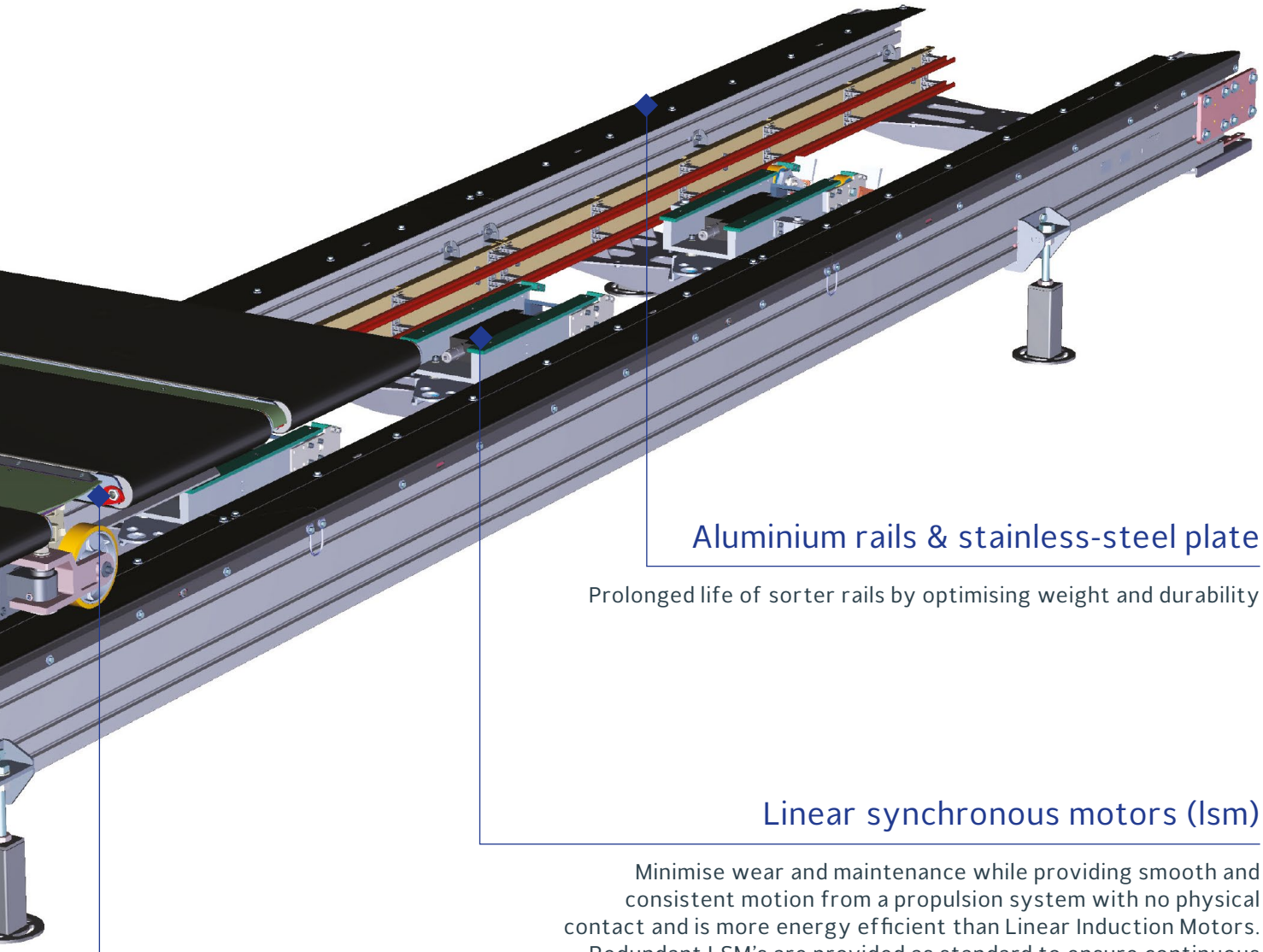


Inductive power transfer (ipt)

Achieve stability and efficiency with minimal maintenance, with, non-contact power distribution system.

Wheels

Wear resistant Neoprene wheels are the only contact point between carrier train and rails, further reducing maintenance needs.



Aluminium rails & stainless-steel plate

Prolonged life of sorter rails by optimising weight and durability

Linear synchronous motors (lsm)

Minimise wear and maintenance while providing smooth and consistent motion from a propulsion system with no physical contact and is more energy efficient than Linear Induction Motors. Redundant LSM's are provided as standard to ensure continuous operation without loss of performance.

Motor rollers

No physical (mechanical) actuation via spur gears etc. means less maintenance, wear and downtime.

SORTER INDUCTION

ENHANCED STABILITY

The induction system minimises parcel rotation during transfer, ensuring precise item alignment and stability. It features an Orientation Belt that positions items precisely at a 30° angle, preparing them seamlessly for sorting. Transitions between conveyor belts are filled with a low friction material, that also ensures thin items and packaging materials transition smoothly, without being ingested between conveyors and causing downtime or damage.

PRECISE LOADING

Merge Belts with low-friction surfaces facilitate smooth transitions between conveyors, preventing jams and maintaining high throughput. Synchronism Belts equipped with direct mounted brushless motors enable precise speed control, aligning items accurately for efficient sorting operations. Multiple sensors monitor the items position making adjustments to conveyor speeds and sorter cell bookings to ensure safe and accurate loading. Items are controlled during the induction, removing any sliding that might provide uncertainty to the true position of the item.

This is provided by accelerating the item to the speed of the sorter and with the activation of the sorter cell, it accepts the item at zero speed.

VERY HIGH THROUGHPUT

Designed for speed and efficiency, High-Capacity Inductions support rapid item handling with 30-degree induction lines. This capability, combined with adjustable acceleration and speed settings, maximises throughput capacity while maintaining operational stability.

SORTER INDUCTION ADVANTAGES

- → Reversibility to remove non-tracked items automatically
- → Manual loading, robotic arm and conveyor options
- → Photo eyes to monitor item positioning
- → For short bursts, capacity may exceed Peak capacity

SYSTEM SPECIFICATION

	PACKETS	PARCELS	SACKS
Maximum Size Items LxWxH [mm]	1,200 x 800 x 800	1,200 x 800 x 800	1,200 x 800 x 800
Maximum Item weight [kg]	30	50	50
Minimum product dimensions [mm]	100 x 75 x 1	100 x 75 x 1	200 x 100 x 5
Nominal Capacity [item/h]	4,500	4,000	2,000
Operational Capacity [item/h]	4,000	3,600	1,600
Peak Capacity (short period) [item/h]	6,000	5,500	2,500

PACKET INDUCTION

Due to variability in their shape, their weight and packaging material, Leonardo has designed dedicated inductions specifically for packets and light item.

REDUCED FOOTPRINT

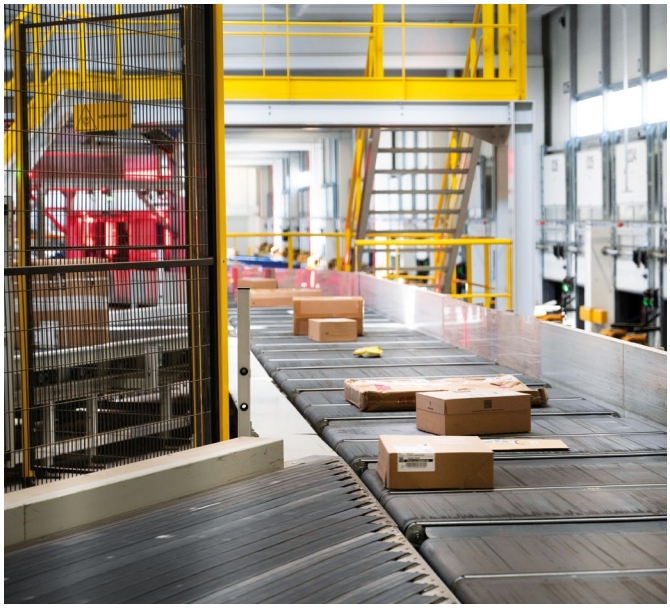
Due to the dimensions and weight typically exhibited by packets, inductions are narrower and are lighter to parcel inductions. This allows inductions to be grouped closer together, not only increasing the usable area for operations, but also reducing the mezzanine area and energy consumption, providing a better value solution.

PARCEL INDUCTION

Due to parcel size and weight, dedicated parcel inductions have been developed, to ensure that the efficiency and throughput of the system is maintained at its highest level.

PRECISE INDUCTION LOGIC

Parcels are typically included onto one cell of the sorter, through precise induction logic. For larger items that cannot fit onto one cell, the system recognises the item characteristics and automatically adjusts the induction logic and cell booking enabling the item to be inducted onto two cells.



SACK INDUCTION

Particularly useful in the postal industry and after consolidation of parcels for delivery, sacks can be large and heavy and require manual handling, typically by operators. Leonardo have developed a dedicated induct to manage these items.

REDUCED MANUAL LABOUR

The sorter is capable to accept both postal items (parcels, packets) and parcel sacks. These items can be inducted to the sorter with a dedicated induction suitable for their bulky and heavy nature, used also to induct bags in Baggage Handling systems. What is better, is the sorter can deliver these sacks anywhere around the sorter loop, without the need to manually transport them.

For more information:
automation@leonardo.com

LEONARDO AUTOMATION

leonardo.com