



## MULTISORTING BAGGAGE HANDLING SYSTEM (MBHS)

**The MBHS® - Multisorting Baggage Handling System is an innovative cross-belt sorter for airport baggage handling.**

It can be used both to route baggage arriving from check-in desks to the various control systems (X-ray scanners and tomographic imaging), as well as to sort checked baggage to the chutes assigned to departing flights.

Installations consist of a continuous loop transport system, induction lines to load baggage automatically onto the transport system and unloading stations.

The MBHS is based on cross-belt handling technology, which is the preferred technology for baggage as it ensures optimum handling for all articles, including objects that are fragile, have high friction surfaces or are irregular in shape. The transport system is made up of trains of carts, with onboard cross-belt cells that move perpendicularly to the direction of the carts and assist baggage loading and unloading to the assigned destination. Each train is equipped with a processor to allow all cells to be managed independently.

The typical layout is based on a loop designed for flexible configuration depending on service requirements, the room available and existing structural constraints.

The MBHS is based on consolidated technology, but

includes a series of innovations and improvements that position the product as one of the most advanced, high-performance propositions in its category.

Two technologies, in particular, deserve mention: the use of synchronous linear motors to move carts, and an induction system to transfer power on board, ensuring that a constant flow of power is available for moving cross-belt cells, without requiring sliding contacts or onboard batteries.

### MAIN TECHNICAL FEATURES

- Propulsion system based on synchronous linear motors that are free of wear and ensure low noise levels.
- Contactless energy transmission onboard by means of an induction system that ensures a constant flow of power for moving cross-belts, without requiring sliding contacts, onboard batteries or energy accumulation systems.
- Cell control without electronic devices on board.
- Motor-rollers on the cells, eliminating the need for belt transmission mechanisms.

- Rails coated in harmonic steel and high-strength wheels that significantly reduce friction.
- Distributed cell control to increase sorter reliability.
- Long-life, self-lubricating bearings in the needle elements.
- Ball-and-socket coupling between carts with elastic cell overstrain recovery.
- Flexible unloading trajectory configuration.
- High loading capacity, with 30-degree induction lines and acceleration/speed adjustment according to sorter throughput, in order to increase the stability and correct orientation of baggage, and maximize production capacity.
- Wide range of outlet types based on belt conveyors, carousels, chutes and gravity roller conveyors.



## FOCUS ON MAIN BENEFITS

### High sorting throughput

MBHS sorting capacity is in excess of 10,000 [Cells/h], making it possible to process a baggage flow with very high throughput and productivity, as well as guaranteeing no stress or discomfort for operators and very low machine errors and jam rate, even during peak periods. Moreover, speed and operating throughput can be changed dynamically according to actual service needs. High sorting capacity and flexible speed control ensure an attractive return on investment for customers.

### Energy saving

The MBHS has very low energy consumption. Further significant savings can be obtained by reducing the sorter speed and its throughput in time bands when there is less air traffic. Based on typical traffic fluctuations during the day at main airports, it has been estimated that adjusting speed according to real operating requirements can achieve energy savings of more than 30% compared with systems that operate at constant speed.



### Very high reliability

All MBHS components have been designed and produced to assure the maximum availability and operating consistency.

All critical components are redundant. Each train of carts, for example, has a “head cell” with an onboard processor that manages the train carts and their cross-belt cells independently and autonomously of other trains of carts. This means that if a cell fails, it can be taken out of service without affecting the others, or in the case that the failure affects a whole train, only that train can be taken out of service. So, to restore the full functionality of the system, it is possible to postpone recovery operations until maintenance time windows.

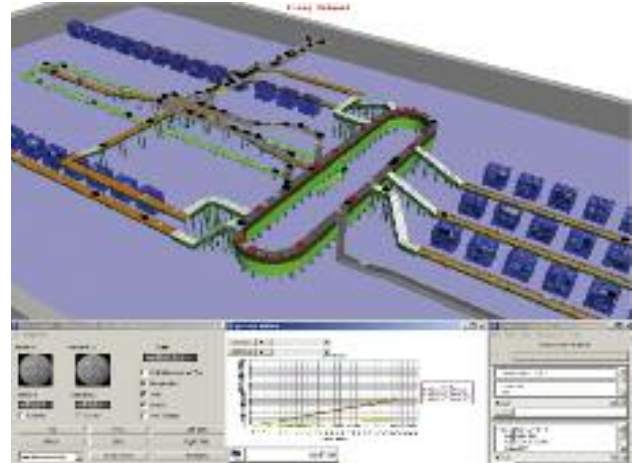
### Low maintenance costs

The MBHS has limited and simple to perform maintenance requirements.

Targetted design choices assure very low maintenance costs:

- no mechanical wear for sliding contacts (linear traction motors, electromagnetic induction, wireless signal transfer);
- no cell motor transmission devices;
- no batteries on board;
- larger diameter, improved hardness run wheels;
- high-strength, long-life rails;
- onboard “test cells” with self-diagnostic functions;
- excellent modularity and flexibility: failed cells don't affect the operation of other cells and can be replaced during scheduled maintenance.





### Very high configurability

The layout of the sorter, usually based on a “ring”, can be configured flexibly according to service requirements, available room for installation and existing structural constraints.

Important features of the MBHS are the exceptional modularity of its components, the availability of many different types of outlet, and the possibility of varying the number and position on the ring of induction lines and outlets.

### Integration of recognition technologies

MBHS increases productivity and delivers high throughput and sorting accuracy by integrating state-of-the-art material handling solutions and advanced identification and recognition technologies.

These components are compatible with the machine and easy to integrate:

- imaging readers (for objects in motion and with varying depth of focus);
- multidirectional bar code decoding systems (based on laser or imaging reading technologies);
- multidirectional Rfid decoding systems;
- manual coding stations;
- Tracking & Tracing systems.



### High performance with a broad range of baggage

The MBHS can sort all kinds of baggage that respect, and in some cases exceed, the maximum dimensions established by IATA. Maximum weight is up to 60 kg, or more than the maximum limit of 55 kg established by IATA.

Bags are loaded with their long side perpendicular to the carrier transport direction; so even the longest bags can be loaded onto a single cell without reducing the operational capacity of the system.



## TECHNICAL SPECIFICATIONS

	<b>MBHS</b>	<b>MBHS LC</b>
Size of sorted items (mm)	Up to 1,200(l) x 800(w) x 800(h)	Up to 1,200(l) x 950(w) x 800(h)
Weight of sorted items	Up to 60 kg	Up to 60 kg
Sorter speed	Up to 2.8 m/s	Up to 2.8 m/s
Cell pitch (mm)	950	1,150
Cell size (mm)	800 (width) x 1,000 (length)	950 (width) x 1,000 (length)
Incline	Up to $\pm 12$ degrees	Up to $\pm 12$ degrees
Sorter nominal capacity	> 10,600 Cells/h	> 8,700 Cells/h
Sorter Noise level	< 65 dB(A)	< 65 dB(A)
Environmental conditions	5 °C to 45 °C max. humidity 90% non condensing	5 °C to 45 °C max. humidity 90% non condensing

