

MBHS

ELECTRONICS DIVISION



 **LEONARDO**



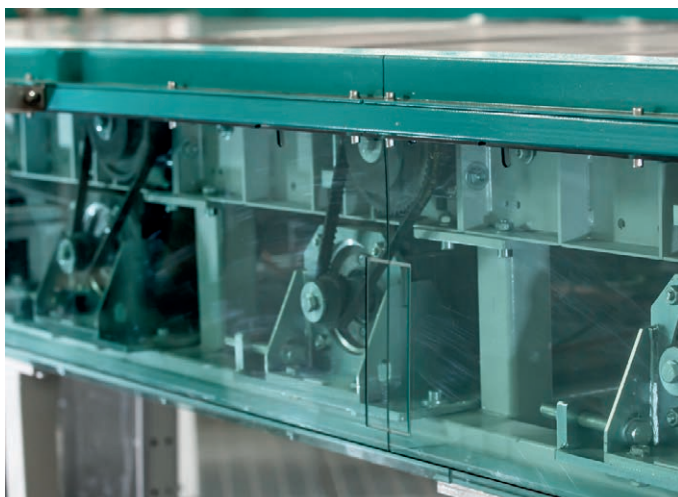
MULTISORTING BHS (BAGGAGE HANDLING SYSTEM)

The Multisorting Baggage Handling System (MBHS®) is Leonardo's cross belt suite sorter for baggage handling.

Always looking for the latest, most suitable and efficient solution to satisfy customer needs and requirements, Leonardo has been enlarged its cross belt offers portfolio with the new MBHS-HD Heavy Duty (HD). This introduces a series of innovative functionalities in order to improve the ability to fit to every sorting process.

The sorter is the core of modern Baggage Handling Systems. The cross belt is now the preferred technology for baggage processing as it ensures optimum handling for all items, including the bags with high friction surface (e.g. wrapped in the protective plastic film or with rubber parts), with irregular shape, protruding wheels, laces and non-conventional bags.

Advanced technologies, such as linear motors, inductive power distribution and Wi-Fi data transmission, give this



product an extremely high reliability, a sorting capacity up to 6,600 bags per hour and a high operational flexibility. The intrinsic redundancy and lower footprint of the MBHS® ultimately results in highly efficient BHS systems. Reliability, security and low O&M costs are the key factors of the success of the Leonardo's MBHS.

The possibility of reducing the speed of the sorter according to the required throughput and the minimal points of friction in all the components allow significant O&M cost savings.

MBHS® is able to take total control over the loading and unloading motions of the baggage, eliminating the dependency on 'natural forces' (gravity and friction) within the system. This guarantees the maximum reliability and resilience in tracking and almost removes all risks of bag jams and mis-sorting.

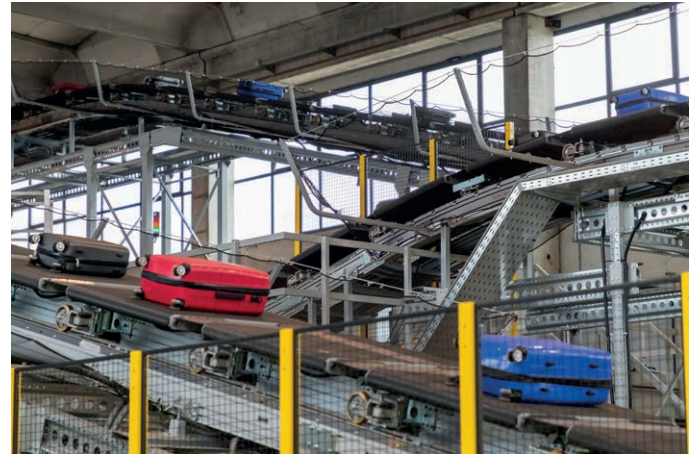
KEY POINTS

- > Top level reliability
- > Lower Operation and Maintenance cost
- > Intrinsic redundancy
- > Zero jam technology
- > Reduced volume requirement.

MAIN FEATURES

The MBHS® cross belt technology guarantees precision and smoothness of the baggage handling process: no bags can get stuck due to hanging of straps or to high adherences of the surfaces.

The technologies and the technical architecture implemented in the MBHS® give an intrinsic redundancy to the entire sorting system. The control system modulates the speed of the sorters according to the required throughput, reducing the total length travelled by the sorter.



Leonardo is so confident in the selection and engineering of our systems, we offer for some components of the sorter a “lifetime warranty”.

The reduction of the maintenance effort, the absence of extra costs due to possible damages or mishandling of bags and the possibility to reduce the speed of the sorters in periods of low throughput demands, result in considerable savings in the operational and maintenance costs. Independent studies quantify savings of about 20%.

The precision of the unloading process of bags and the possibility to install chutes in curve allow the design of smaller footprint sorting systems. Some kinds of out-of-gauge baggage can be loaded onto two cells and unloaded into standard chutes.

TECHNICAL DESCRIPTION

MBHS® is intrinsically redundant:

- › The continuous loop of cells is divided in independent “trains”; each train has its own communication and control system. The failure of a component of one train does not affect the others. Each single cell can be put out-of-service in case of failure, without any impact on the functionality of the train.
- › The linear motors are distributed along the loop, according to the design rules, in order to balance the traction force. In case of the failure of one motor, the performances of the sorter are not downgraded. Note that, due to the absence of contact between the motors and the moving part of the sorter, the failure of one motor, does not overload the traction system.
- › The HD version is designed to have a variable density of linear motors along the track, in order to give extra traction where needed and limit internal forces among the cells.

MBHS® is a friction free mechanism:

- › Linear motors are used for the traction of the continuous train of cells; inductive power distribution and Wi-Fi data transmission eliminate any contact between the moving and the fixed parts of the machines except with the rolling wheels.
- › Motor rollers are used for the movement of the belts of the cells, for the loading and unloading of the bags, without any leverage, gear or drive belt.

- › The aluminum rails are coated with stainless steel in order to minimize the friction with the rolling wheels.

MBHS® is a “small” sorter:

- › The full control of the motion and the trajectories of bags when unloading allows the use of smaller chutes. Moreover, it is possible to target the unloading of individual bag in a specific section of the chutes, avoiding the creation of “piles” of bags, and increasing chutes availability.
- › The MBHS® has been designed to have the smaller possible vertical profile, in order to be installed in existing building where the limited height of the ceiling could not allow the installation of other technologies. Moreover, two sorters can be installed on top of each other in a limited vertical space.
- › The HD version has a reduced curves’ radius, which allows the design of even more compact solutions

MBHS® is a reliable sorter:

- › The absence of moving parts in the main traction system, using synchronous linear motors, guarantees a reliability level much higher than conventional friction drives mechanisms
- › The absence of any contact part for the transmission of the power and the data to the sorter’s cells guarantees the higher possible reliability of these mechanisms.
- › The coating of the aluminum rails with stainless steel guarantees the much higher life expectancy of these components compared with aluminum-only rails.
- › The above mentioned intrinsic redundancy guarantees the maximum availability of the sorter in case of failure of some of the components, without disrupting the service until the next programmed maintenance session.



THE NEW MBHS-HD SORTER

Leveraging the experience in cross belt based BHS in several airports in Europe and the rest of the world, Leonardo developed a new product that extends the already top-level characteristics of MBHS with some new features:

- > Increased slope: 15° - this allows a further footprint reduction of about 20% in the change of level
- > Difference of level of up to 8 meters - allows the connection of different levels of airport facilities (i.e. one single sorter can be used to move baggage among the floors of the building, without the need to use elevators)
- > Curves with radius reduced

These features allow for a significant further reduction of the footprint of the entire BHS and let the system architects design systems that better fit the constraints of the buildings, making this product the ideal solution for the renewal of the end-of-life BHS and for the creation of new high performance systems where other solutions cannot fit.



High friction belts guarantee that the baggage can be transported without moving in long sloping sections, even in emergency brake situations.

TECHNICAL SPECIFICATIONS

Two version of the MBHS® sorter are available. Every MBHS® is fully integrated with the other components of the Leonardo's BHS solution portfolio, in particular with the IT systems (SAC and SCADA).

	MBHS 1200	MBHS HD
> Slope	± 12°	± 15°
> Difference of level (m)		8
> Max sorter speed (m/sec)	2.8	2.8
> Sorter Nominal capac. (cells/h)	Up to 8400	Up to 7000
> Sorter noise level (dB)	< 65	< 65
SORTED ITEMS (SINGLE CELL) (A)		
> Max weight (kg)	50	50
> Max length (mm) (A)	900	900
> Max width (mm)	700	700
> Max height (mm)	500	500
ENVIRONMENTAL CONDITIONS		
> Max Operating Temp. (C°)	5 to 40	5 to 40
> Max Operating Humidity	85% non-condens.	85% non-condens.

(A) Items with length up to 1500mm are loaded on two cells



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