Automation Systems

MULTISORTING BAGGAGE HANDLING SYSTEM

The sorter is the core of modern Baggage Handling Systems. Reliability, security and low O&M costs are the key factors of the success of the Multisorting Baggage Handling System (MBHS®), Leonardo's cross- belt sorter.

Cross-belt is now the preferred technology for baggage processing, as it ensures optimum handling of all items, including bags with high friction surfaces (e.g. wrapped in protective plastic films or with rubber parts), with irregular shapes, protruding wheels, laces and non-conventional bags.

Advanced technologies, such as linear motors, inductive power distribution and WiFi data transmission, give this product an extremely high reliability, a sorting capacity up to 10,000 bags per hour and a high operational flexibility. The intrinsic redundancy and lower footprint of the MBHS® ultimately result in highly efficient BHS systems.

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 or 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 costs
- Intrinsic redundancy
- Zero jam technology
- Reduced volume requirement

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MBHS

MAIN FEATURES

The technologies and 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 lenght travelled by the sorter.

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

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 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 curves allow the design of smaller footprint sorting systems. Some out-of-gauge bags 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.

MBHS® is a "friction free" mechanism:
- Linear motors are used for the traction of the continuous train of cells; inductive power distribution and WiFi 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 bags in a specific section of the chutes, avoiding the creation of "piles" of bags and increasing chutes availability.
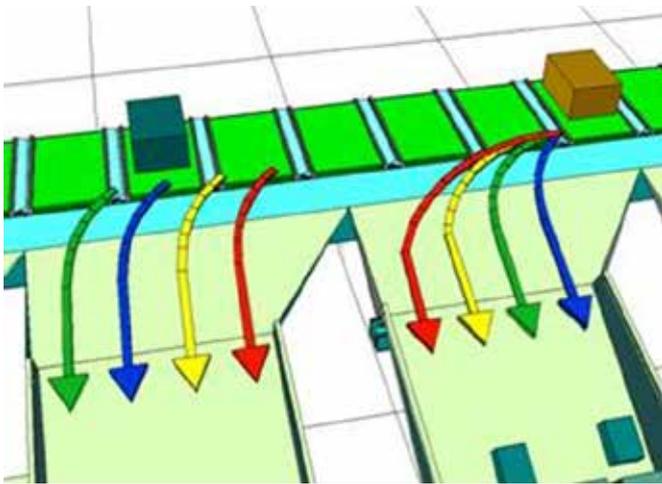
- The possibility to install chutes in curve allows an optimization of the layouts.
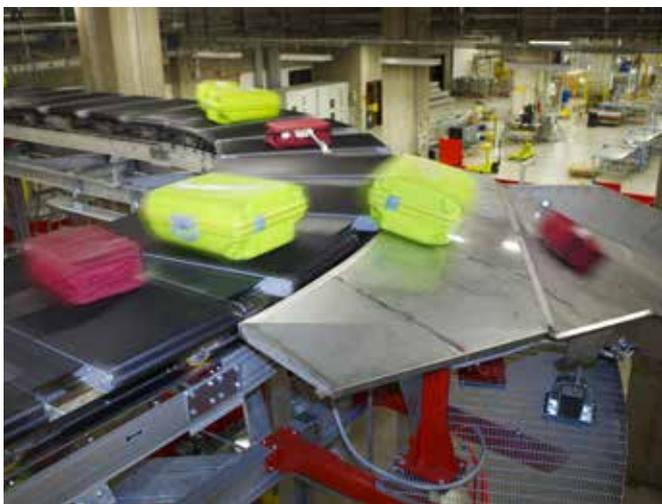
- The MBHS® has been designed to have the smaller possible vertical profile, in order to be installed in existing building where the limited height of the ceiling could not allow the installation of other technologies. Moreover, two sorters can be installed on top of each other in a limited vertical space.

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 drive mechanisms
- The absence of any contact parts for the transmission of power and data to the sorter's cells guarantees the higher possible reliability of these mechanisms.
- The coating of aluminum rails with stainless steel guarantees a 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 components, without disrupting the service until the next programmed maintenance session.

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

Two models of MBHS sorter are available:

TECHNICAL SPECIFICATION

	MBHS	MBHS - LC
Cell length (mm)	1078	1084
Cell width (mm)	780	970
Cell pitch (mm) (center belt to center belt)	950	1200
Incline	± 12°	± 12°
Max sorter speed (m/sec)	2.8	2.8
Sorter nominal capacity (cells/h)	10600	8400
Sorter noise level (dB)	< 65	< 65

SORTED ITEMS (SINGLE CELL) (A)		
Max weight (kg)	60	60
Max length (mm)	900	900
Max width (mm)	700	700
Max height (mm)	500	500

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

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