Baggage Handling System

PSIairport/BHS from

PSI Logistics GmbH
Quality and Safety

Transparency in baggage logistics

Background

For the passengers it is very annoying at their destination, for the airlines it means a lot of expensive effort: Lost & Found.

Services and costs are two essential aspects of the business processes for airlines which can be optimised in particular by an efficient, transparent and safe baggage logistic. Satisfaction of passengers and airlines as well as minimized investigation for lost baggage are only two of the integral objectives of modern baggage handling systems and therefore of the controlling host systems.

PSlairport/BHS

PSlairport/BHS is a very modern and efficient control system for baggage handling and baggage sortation. Based on years of experience gathered at several airports in Germany as well as at international airports several modules were being developed. These modules are available for customers to choose their optimal solution for their baggage handling system. Supplemented by individual installation-specific functions, the operator of the handling system is able to evaluate and to control every situation in the BHS. For example with the help of the graphical planning tool he can react in an optimal way to the current situations. Suggestive graduated system messages support the operator as well as the clear and intuitive possibilities of the user interface. Additionally he has a permanent access to a context sensitive online-help.

Material Flow

Every baggage transportation and sortation system consists of conveyor technique. To monitor this installation and to optimise the transport and the baggage flow is the task of an intelligent material flow control system. On the base of status-messages and sortation-queries from the PLC-Level PSlairport/BHS controls the material flow at the diverters. Every single baggage items is controlled to it’s target (chute, carousel working place etc.) by it’s individual characteristics.

- Supervision of the conveyor technique
- Optimised routing of baggage items
Get the processes under control with PSIairport/BHS

Connection to PLC and host-systems

- Alternative routing of baggage items
- Prevention of blockades
- Management of transport tasks
- Run-time-control of the transport tasks
- Material flow overview
- Historical material flow information

Communication

Typically PSIairport/BHS is installed at airports with an infrastructure of existing IT-systems. Due to this fact, PSIairport/BHS provides a lot of interfaces and protocols for the flexible integration.

Typical systems to connect:

- AODB/FIDS
- SITA (e.g. BagMessage)
- DCS (Departure Control System)
- PLC (even high available systems)
- BRS (Baggage Reconciliation System, e.g. PSIairport/BRS)
- 100% HBS

Examples for supported interface-technologies:

- TCP/IP (stream socket telegrams)
- XML
- CORBA
- Oracle (Replication)
Latest Technologies

Graphical planning tools conveying supervision

Graphical Planning Tool with automated planning methods

The complexity of the distribution of the sorting destinations (chutes, carousels etc.) regarding to the flights, baggage characteristics, airlines etc. is rising with the amount of sorting destinations. To facilitate this task for the operators PSI Logistics provides individual planning tools with the following services:

- Automated planning of resources for new flights
- Periodically inspection of the current flight plan
- Presentation of current conflicts regarding the planning results
- Manually distribution of the sorting destination by the operator
- Saving of daily profiles in the database
- Usage of daily profile as the base for automated planning
- Creation of rules for the automated planning tool (e.g. definition of standard groups of chutes)
- Resources-optimising distribution of sorting destinations
- Automated release of sorting destinations which are not in use
- Parallel Handling of one current “working plan” and one “plan in use”
- Permanent planning control
- Management of system destinations (for special use cases)
- Management of the flight plan

Today’s requirements to the sortation of baggage items are more and more rising. PSIairport/BHS divides the sortation characteristics in the following main sections:

Security criteria
- Results of the manual and automated x-ray-devices (100% HBS)

Flight criteria
Most the baggage items which should be sorted can be identified and assigned to a specific flight. The sorting criteria of a flight are transferred from the flight to the individual baggage items. The following sorting characteristics can be defined for an individual flight:

- Early destination
- Last-minute-destination
- Late destination
- Flight destination chute or carousel
- Flight via1 up to via5 chute

Baggage criteria
The following baggage criteria can be used for sorting baggage items

- First-class baggage
- Economy baggage
- Business baggage
- Transfer baggage
- Origin baggage

Additional flight-specific criteria
Beside the normal flight criteria the security criteria and individual baggage criteria can be combined with the fol-
following flight specific characteristics:
• Operating Airline of the corresponding flight
• Operating agent of the corresponding flight

Special cases:
The following special cases are considered by PSIairport/BHS:
• Wrong flight
• NO-BSM
• NO-READ
• BSM-DELETE
• Rotating baggage

Integration 100% HBS

Security is the most important item at airports nowadays. Modern baggage handling systems must have the possibility to integrate devices for the screening of baggage. Due to the transport speed and to the precision of the screening results, the x-ray devices are divided into several steps. To take this into consideration for the flow of baggage is one additional task of PSIairport/BHS. PSIairport/BHS provides the required interfaces and coordinates the flow of baggage in front of the x-ray devices as well as the flow of baggage after scree-
Additional features and invest for the future

Reduced total cost of ownership

ning, regarding to the individual screening result. Even in case of a malfunction of one device PSIairport/BHS provides several emergency strategies. In agreement with the public authorities the alternative sorting strategy (e.g. a different device or manual screening at a carousel) can be defined in this case. An uninterruptible operation of the baggage handling can thus be guaranteed.

System and early baggage storage (EBS)

The early baggage storage is mainly used for storing baggage items from those flights, whose chutes are not opened for the sortation yet and if the flights have no special early baggage destination chute. Because there are many more functions an EBS can be used for, it is also called system storage. The system storage can be used for the following functions:

- Storing of baggage for flights
- Storing of baggage for airlines
- Storing of baggage for agents
- Storing of baggage for time-zones
- Automatic time-driven remove of the baggage from the storage
- Manually remove of single baggage from the storage
- Manually remove of all baggage of one flight / airline / agent
- Visual control of the fill level of the storage

Statistics and management information system

In the database of PSIairport/BHS a huge amount of data is stored and managed. On the base of this data, statistics are maintained, which can be exported and printed at any time:

- Flight specific statistics
- Baggage specific statistics
- Statistics regarding the use of the system storage
- Interface statistics
- Use of chutes and carousels
- Use of conveying areas
- Statistics regarding each x-ray-device
- Quality of barcode-scanning

Integration of automated robotic loading of baggage

The immense pressure of costs and time leads to the fact, that many airport-operators are thinking about additional possibilities of automation. Specially the unhealthily and exhausting process of baggage loading comes to the fore.

The installation of automated robotic loading devices requires special strategies implemented in the IT-System for the baggage handling system.
Only a constant flow of baggage during the whole day for every robotic loading station leads to cost efficient and better processes. PSIairport/BHS is prepared for this task.

**The early detection of system malfunctions**

With the help of an autarkic module, PSIairport/BHS is able to supervise various conditions in the conveying installation. If PSIairport/BHS identifies a malfunction, a notice to the operator is visualized. If possible, this notice is combined with suggestions for various solutions.

**Hardware and Operating Systems**

PSIairport/BHS is a modern, efficient IT system for the control for baggage handling systems. It is based on a client-server-architecture. PSIairport/BHS runs on simple personal computers as well as on high availability server systems. Due to the availability and importance of such installations, it is typically installed on cluster systems. Because PSIairport/BHS is platform independent, nearly every requirement of the customer regarding the operating system can be satisfied. The java-based client-application is communicating via the server with the central database (relational database, RDB).

**Services**

The installation of business critical applications at airports requires special services by the supplier. Availability of 24 hours a day, 7 days a week is only one important condition. Very short reaction time in case of clarifying questions or solving problems is strongly recommended. To do this, PSI Logistics provides the necessary infrastructure. Best trained service personnel guarantees a permanent care and support of the customer. Individual support-services can be adapted to the technical requirements of the daily operation.
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