Dimark

baggage handling systems

clever move

check-in | baggage | sortation | security

AIRPORTS

clever move

WE SPECIALIZE IN DESIGNING, MANUFACTURING,
ASSEMBLING, COMMISSIONING AND SERVICING
OF **BAGGAGE HANDLING SYSTEMS**.

Dimark
AIRPORTS

about us

We provide reliable, top quality and innovative systems for sorting, inspection and storage of baggage and parcels. We support our customers with knowledge, experience and individual approach from concept to maintenance.

clever move

how we operate

Our solutions can be implemented at any airport, either new, extended or upgraded one. We provide optimal solutions at every stage of project execution.

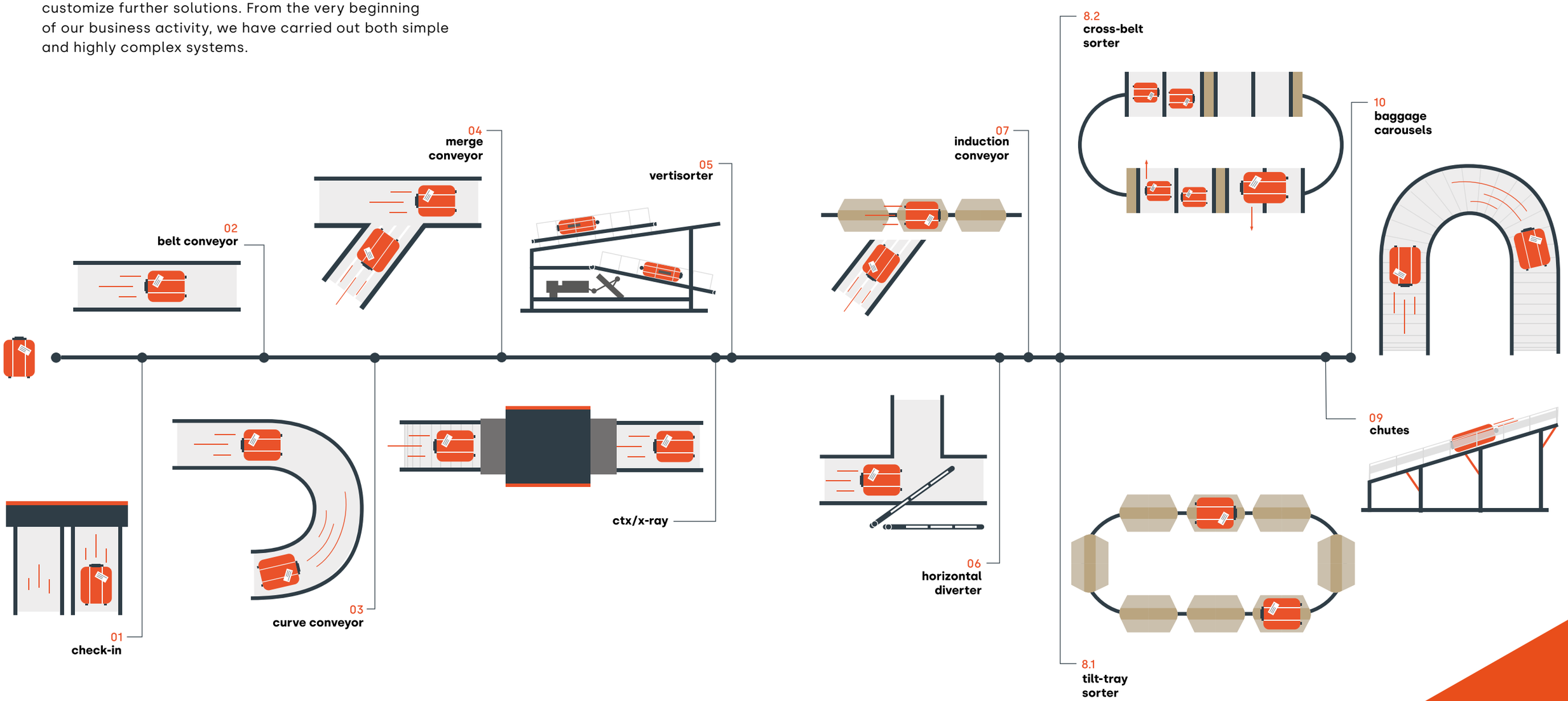
1. Analyzing the Client's needs at the stage of preliminary baggage handling system concept;
2. Developing a final design of the System complying with all the needs and requirements of the Investor.
3. Manufacturing all the components of the Systems in Europe, in accordance with the highest quality and environmental standards;
4. Assembly and commissioning of the System in accordance with previously approved final designs, quality and safety norms;
5. Servicing, maintenance and repair of the implemented baggage handling system.

INTERNATIONAL OUTREACH

Our advanced and high-tech solutions have been acknowledged all over the world. We gradually implement baggage handling system in the countries of Europe, Africa, Asia and Latin America.

We are a company that offers complex and innovative baggage handling systems adapted to the individual Client's demand.

These high-tech systems, customized to the individual airport requirements, provide the highest security standards compliant with ECAC and TSA norms. It is already at the design phase that we are able to recognize the Investor's needs, which help us customize further solutions. From the very beginning of our business activity, we have carried out both simple and highly complex systems.



baggage handling systems

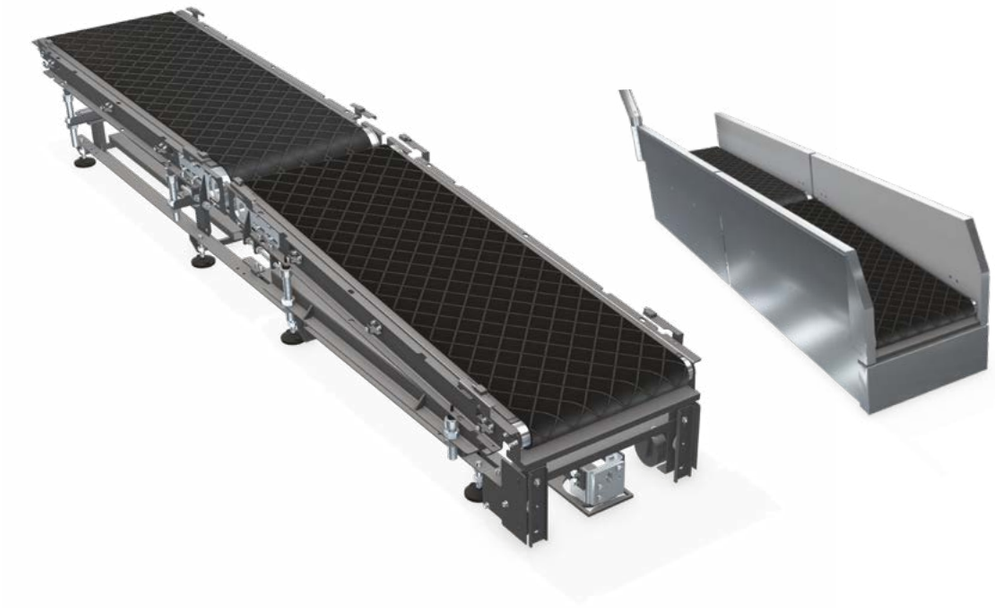
We offer a complex execution of baggage handling systems investments. These high-tech systems, customized to the individual airport requirements, provide the highest security standards compliant with ECAC and TSA norms.

01

check-in

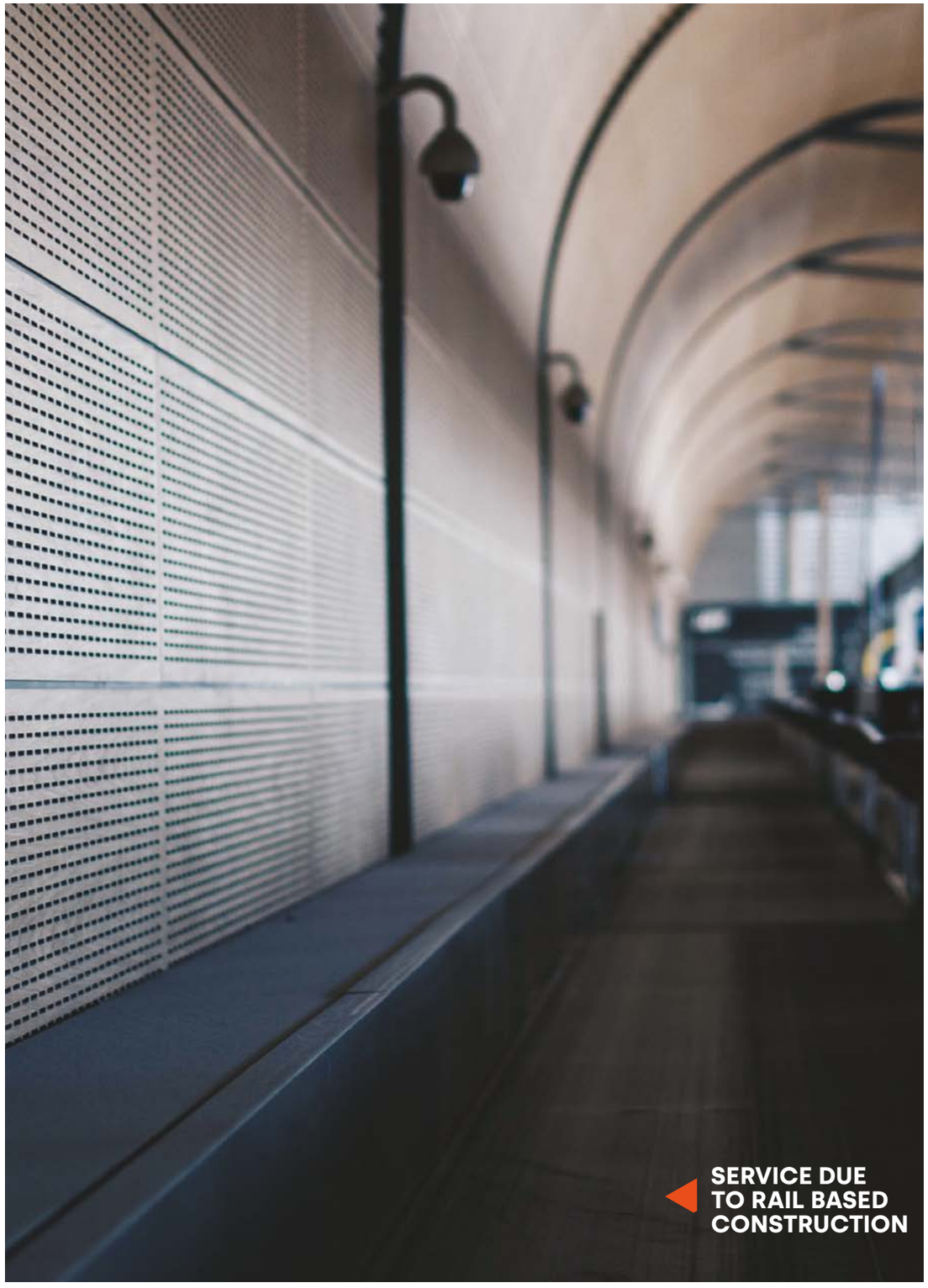
The Dimark check-in can be provided as a standard product or designed according to the requirements of the client.

All conveyors meet ergonomic, environmental and functional standards, ensuring user-friendly operation for both passengers and check-in personnel. The conveyor rail based design enables quick and easy access to the maintenance space in emergency situations, like a stuck passport or a ticket that fell inside. Additionally, we offer tilting devices which can be installed at the end of a dispatching conveyor to ensure a horizontal position of checked bags for further transport. The collecting conveyor is located behind the check-in and specialistic algorithms are implemented in order to maximize space distribution to ensure the highest possible system throughput. All covers are made of stainless steel.



Features & benefits:

- design flexibility
- efficient check-in process
- possibility to pull out the whole check-in on a rail
- high quality stainless steel finish
- durable construction
- easy removal of the front casing



02

belt conveyor

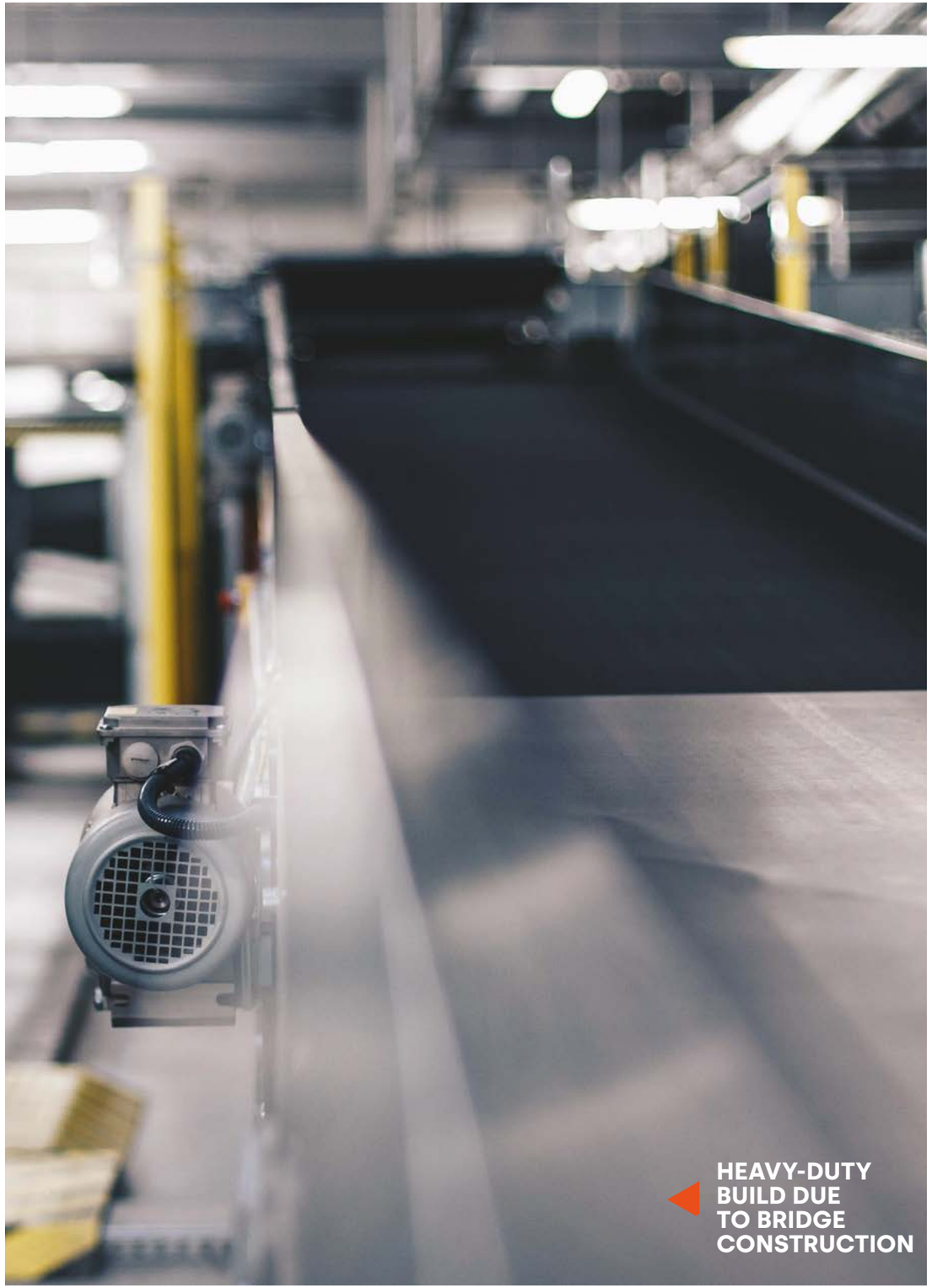
Belt conveyor is the basic element for transporting baggage at every stage of security control and sorting.

All conveyors have a heavy-duty bridge construction, ensuring high durability and low noise levels. Belt conveyors have a channel shaped body. Designed for ease of maintenance as any key component can be removed and reassembled in less than 30 minutes.

All conveyors are equipped with a system protecting bags against damage during transport. Belts are carefully selected to assure proper adhesion, preventing bags from rolling up or sliding. They are antistatic, low noise with an impregnated work surface for friction reduction.

Features & benefits:

- durable construction
- low noise level
- low energy consumption
- high load capacity
- easy maintenance
- quick and effortless belt replacement
- belt centering mechanism

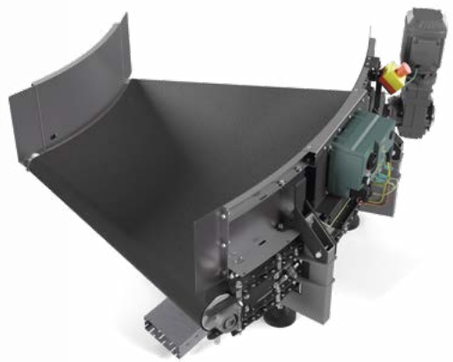


03

curve conveyor

Curve conveyors enable baggage transport on bends angle connections of up to 180 degrees.

Curve conveyors are used where the line changes direction to ensure smooth and efficient baggage movement. This solution also provides tracking, taking into account the very high efficiency of the system. The wing construction allows the unit to be supported only on one side. This solution enables quick and easy service. The applied technological solutions enable many years of operation of the device without the necessity of replacing the belt.



Features & benefits:

- durable construction
- quick service and repair
- low noise level
- high load capacity
- wing structure
- quick installation of the belt
- bearing sets guarantee excellent lifecycle performance of the belt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04

merge conveyor

A merge conveyor is a device that allows a smooth connection of two streams of baggage.

The merge conveyor is a device designed for transporting baggage up to 55 [kg]. It is driven by an electric gear-motor. It allows for the smooth transport of baggage to the take-away conveyor. Each of the conveyors has a welded mainframe, and other elements connected to the body. The merge conveyor is equipped with sidewalls to prevent baggage from falling off the line.

Features & benefits:

- smooth baggage transfer
- adjustable conveyor height
- easily removable motor drive and rollers
- easy adjustability and replacement of belts
- wide range of speed
- high capacity
- low noise level

05

vertisorter

The high capacity vertisorter enables switching the baggage between two vertical lanes.

This process is fast enough to separate an individual bag from a stream of bags. The vertisorter merges or divides two conveyor lanes into one without any disruption of the baggage flow. The compact structure allows for usage in tight spaces. An efficient cooling system enables continuous operation. It is characterized by the highest efficiency and operating speed on the market.

Features & benefits:

- smooth operation
- high sort rate
- noiseless operation
- easy to maintain
- durable construction
- low energy consumption

06

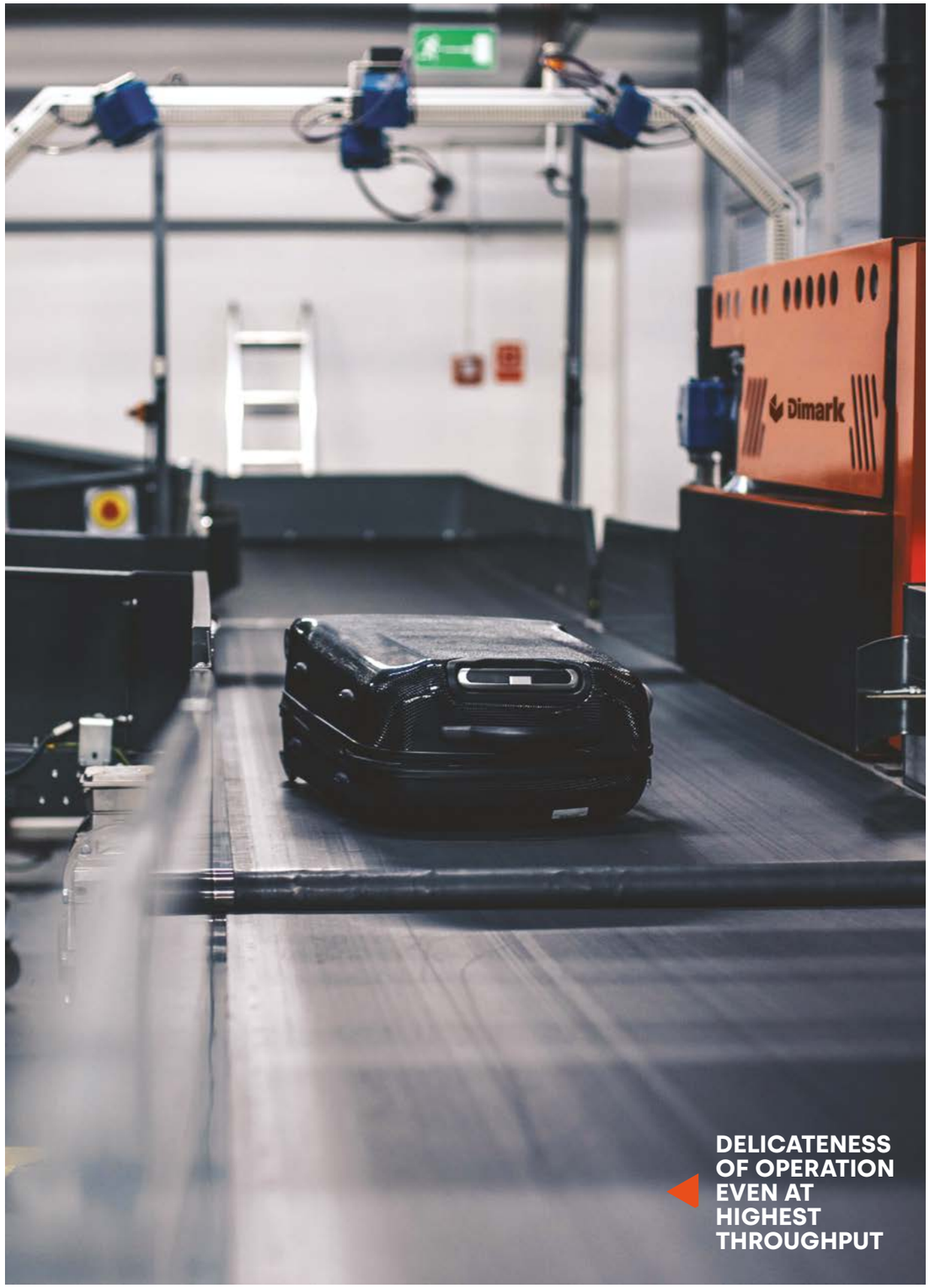
horizontal diverter

A horizontal diverter is a device designed for the safe change of the bag direction.

The device sorts baggage to different lines by a horizontal arm movement. The diverter arm is equipped with a properly assorted belt, which ensures smooth bag transfer. The belt, driven by a gear motor, has adjustable speed to provide precise movement of the bag. Thanks to the high rate sortation, the device improves the efficiency of the system.

Features & benefits:

- high sort rate
- variable speed
- smooth baggage handling
- design flexibility
- durable construction
- high belt durability, easy maintenance
- low noise level



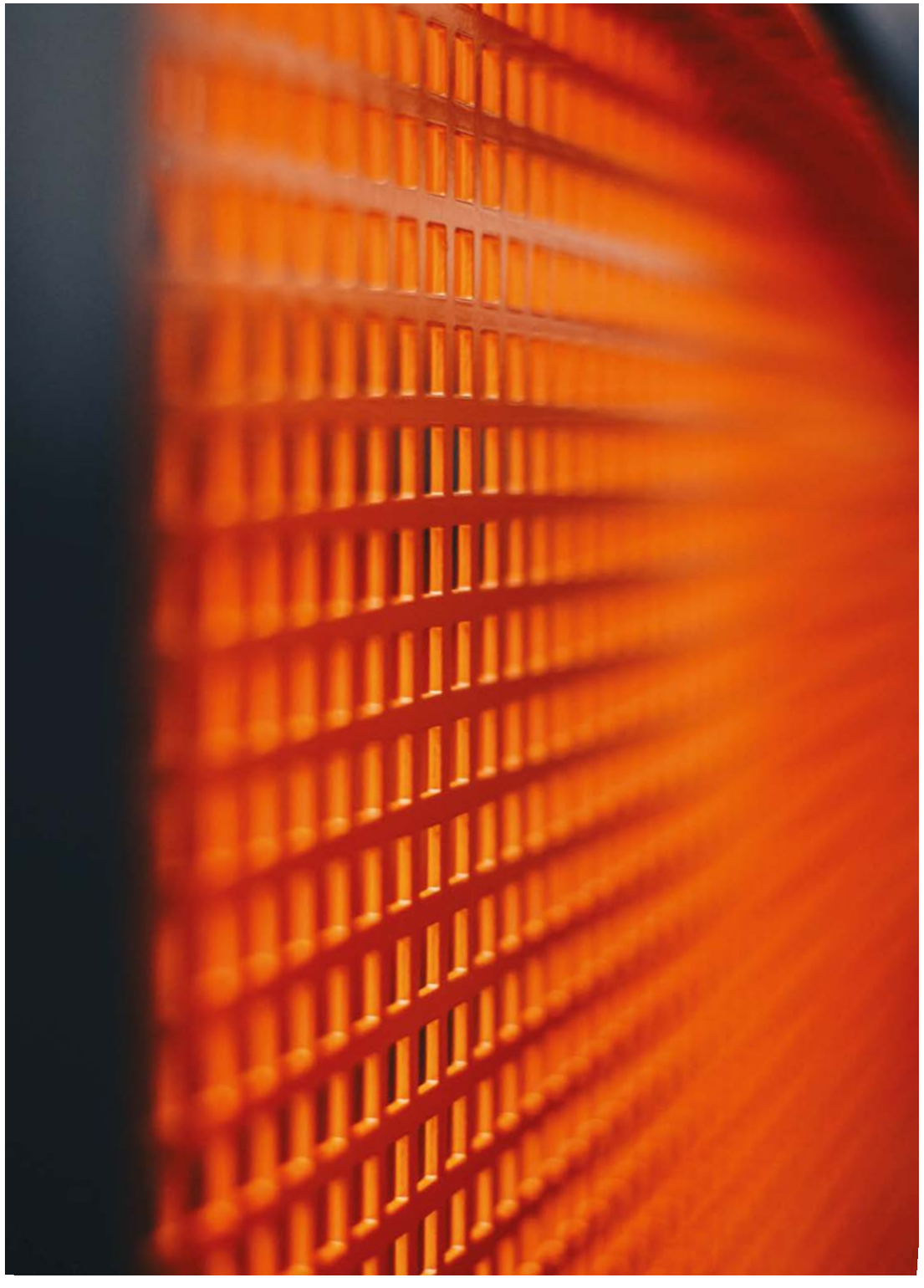
ALL PARTS OF DIMARK'S DEVICES ARE MADE IN HOUSE

07

induction conveyor

The Dimark induction conveyor allows for the smooth and efficient input of the baggage to the sorting system.

The induction conveyor is a device designed for transporting baggage up to 55 [kg]. Each of the conveyors has a robust mainframe, and other elements are connected to the body. The induction conveyor is equipped with small sidewalls to prevent baggage from falling off the line. Sensors, mounted at the end of the induction conveyor, check the position of baggage and dispatch baggage to the sorting device.



Features & benefits:

- smooth transport of baggage to the sorting device
- equipped with sensors controlling the position of baggage
- adjustable conveyor height
- easily removable drive
- easy adjustability and replacement of belts thanks to the design of the conveyor
- wide range of speeds
- high capacity
- low noise level

8.1

tilt-tray sorter

The Dimark tilt tray sorter can be designed according to the requirements of the client.

The tilt tray sorter is designed for transporting and sorting baggage. This fast closed loop device accurately and precisely sorts baggage or packages of various dimensions. The tilt tray sorter consists of three main components:

- track (bend and straight units)
- carts
- supporting structure

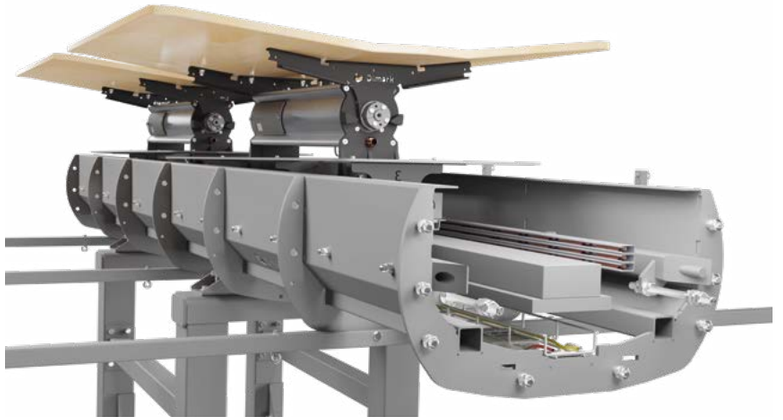
The drives are mounted on the straight unit of the track, which amount depends on the length and sorter efficiency. All sorter carts are assembled in a single loop pattern and lay on the sorter track. The sorter can be equipped with two kinds of drives:

- electromagnetic
- frictional

Baggage is placed on the cart trays by the system of transporters called “Induction”. There is a merged belt conveyor at the end of this system which places precisely transported objects. Baggage is dropped by tilting trays to the chutes, which are the collection points.

Features & benefits:

- anti-vibration mountings for sorter supports
- automatic levelling of carts
- smooth and precise dispatching of baggage on a sorter carts
- possibility to mount safety sidewalls on the whole length of the sorting device
- modular design
- adjustable chain length
- high quality construction
- flexible adaptation of the support structure
- service area, allows for easy maintenance
- closed circuit, carts are powered from each position of the sorter



8.2

cross-belt sorter

The Dimark cross-belt sorter can be designed according to the requirements of the client.

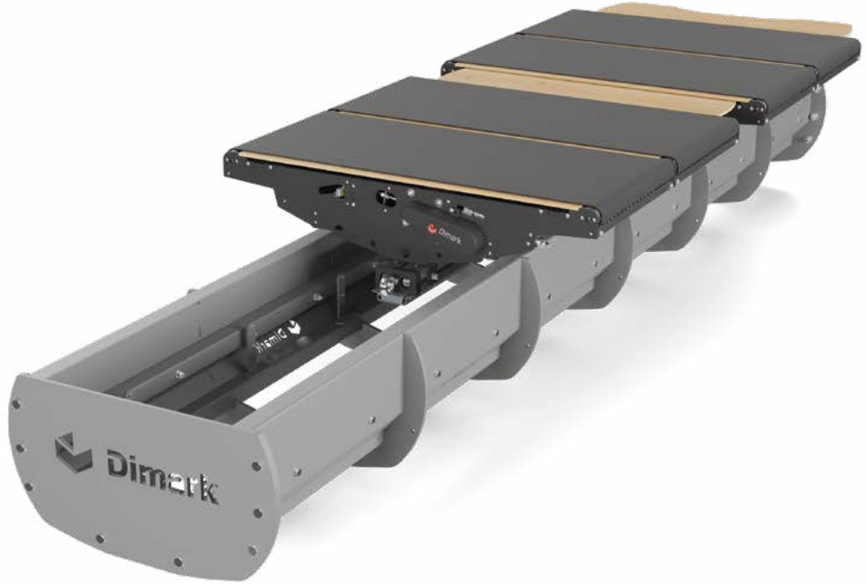
A cross belt is an automated device used for effective baggage sorting. Its safe design allows to sort a wide range of products (delicate and fragile, etc.) of various shapes.

Bags are transferred from the transport system to the sorter by the induction unit, which guarantees the safest and most optimal way to appropriately transfer the product to the sorter.

Modular sorter design with flexible layout options assure optimal solution selection for a specific application.

Features & benefits:

- high sortation rate
- modular and optimized design
- smooth baggage sorting
- possibility of sorting various shapes and sizes of baggage with high efficiency and low noise level
- low noise level
- baggage self-positioning function
- low maintenance
- energy-saving drive system



09

chutes

The Dimark chutes can be provided as a standard product or designed according to the requirements of the client.

The chutes are the last point of the baggage handling system. The chutes are equipped with a tracking sensor, and a filling sensor. Each chute is designed accordingly to the local site conditions. Slide modules, legs and sidewalls are connected to the mainframe. Sidewalls are made of plywood or metal.

Features & benefits:

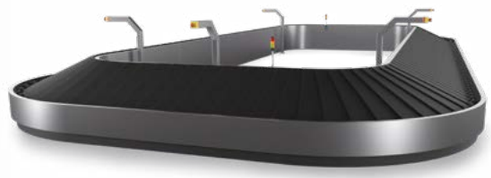
- adjustable chute height, angle and size
- equipped with sidewalls, to prevent baggage falling off the chute
- modular design
- high capacity
- high-friction mat compatible

10

baggage carousels

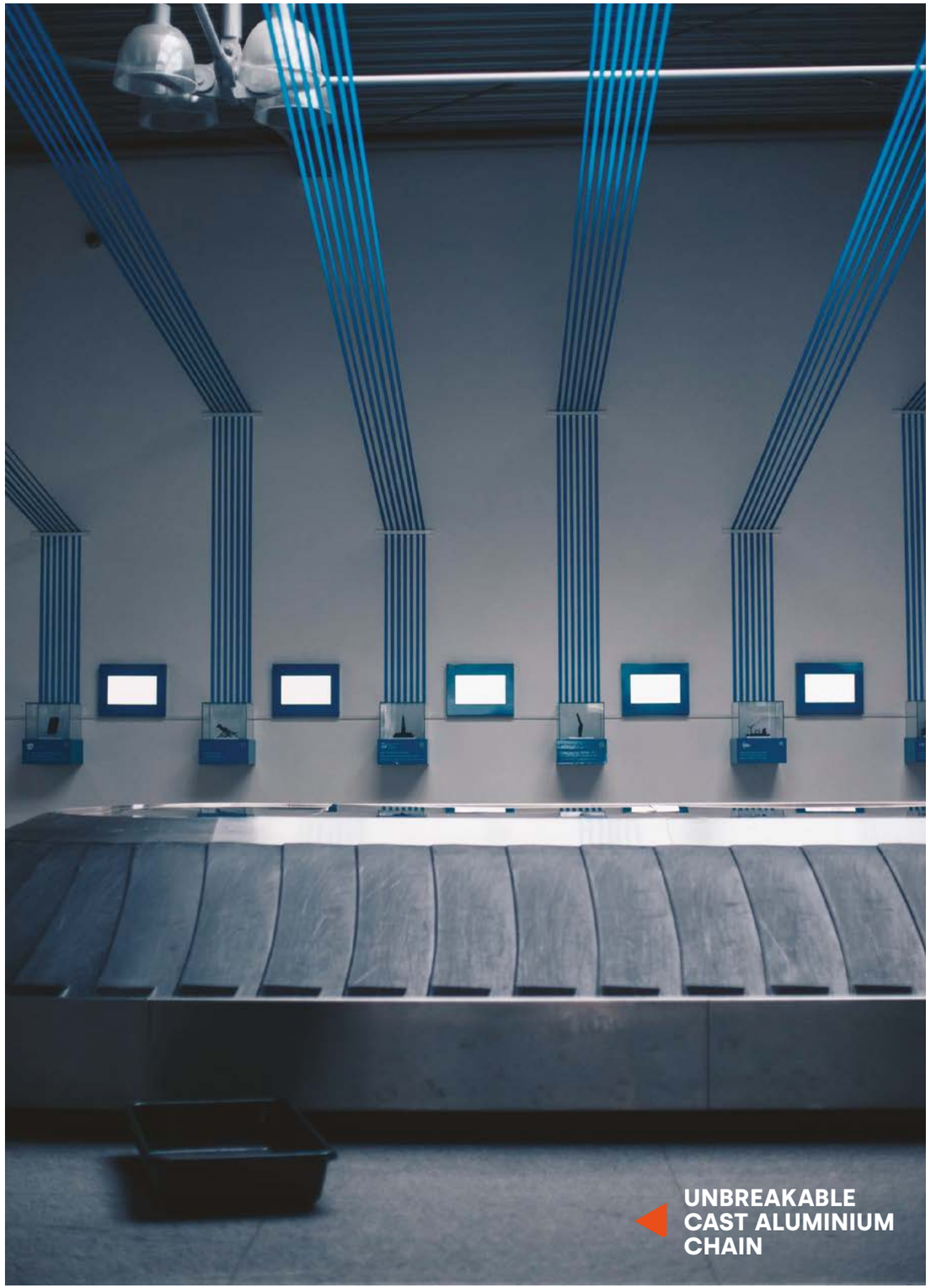
The Dimark baggage carousels can be provided as a standard product or designed according to the client's requirements.

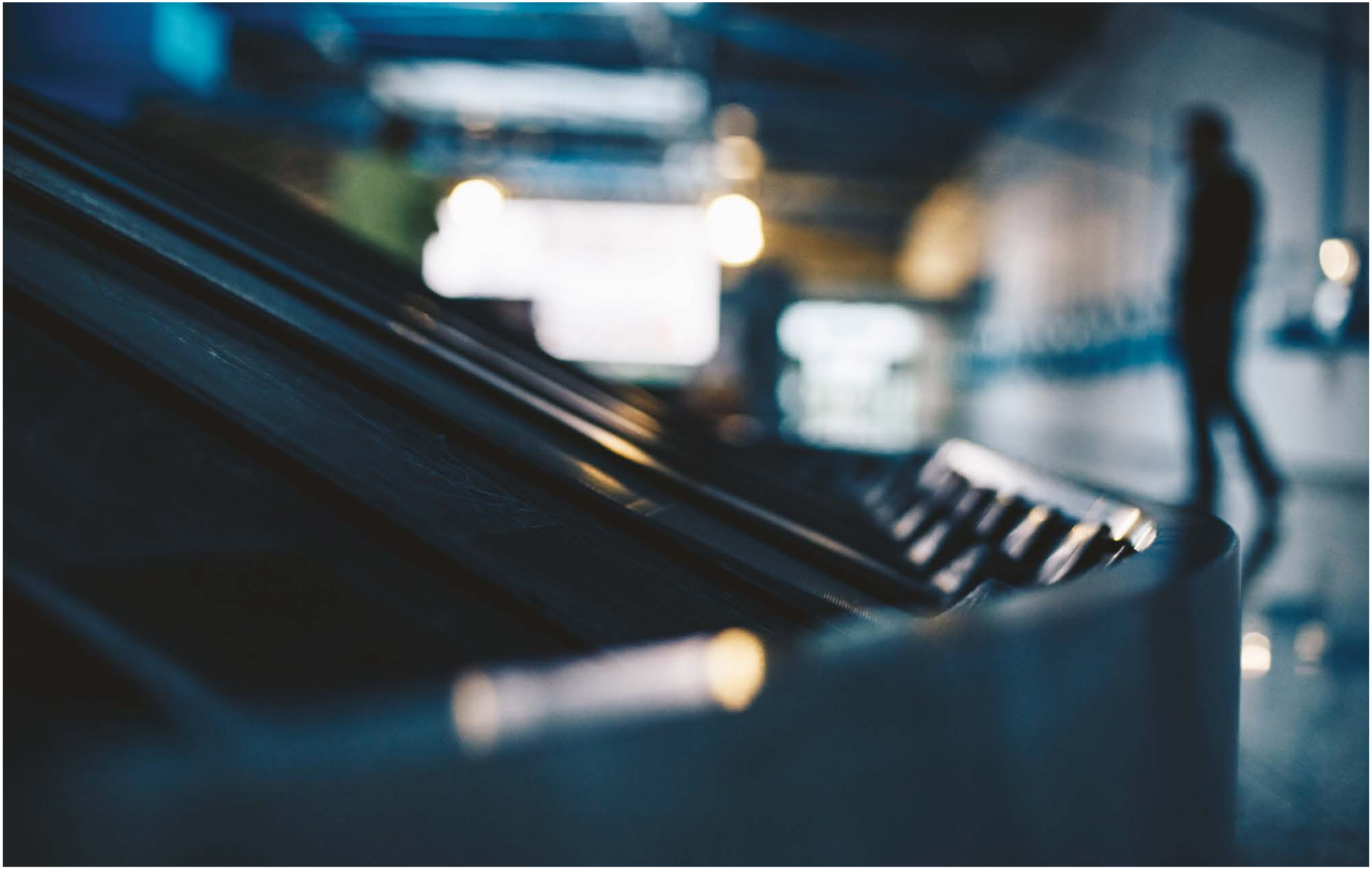
Inclined baggage carousel is used for horizontal transport of bags. Our baggage carousels assure easy assembly and maintenance due to the modular construction. A complete circuit consists of standard straight and curved sections, allowing to create the desired shape of the carousel. The carousel is equipped with a friction drive, which enables very silent operation. Specially cast chain – very light and durable, ensures trouble-free operation. Thick slats are available in various colours. The inclined configuration of the carousel guarantees better ergonomics of use which facilitates quick and simple baggage claim.



Features & benefits:

- modular and versatile design allows to get the required length and shape
- high load capacity
- durable structure
- simple bag removal
- low noise level – construction assuring silent operation
- easy device assembly and maintenance
- reliable and resilient drive
- easily dismantling friction drive
- it has a friction drive, without lubrication
- cast chain provide extended work of carousel
- bumpers on a slat prevent to slide baggage on outer covers



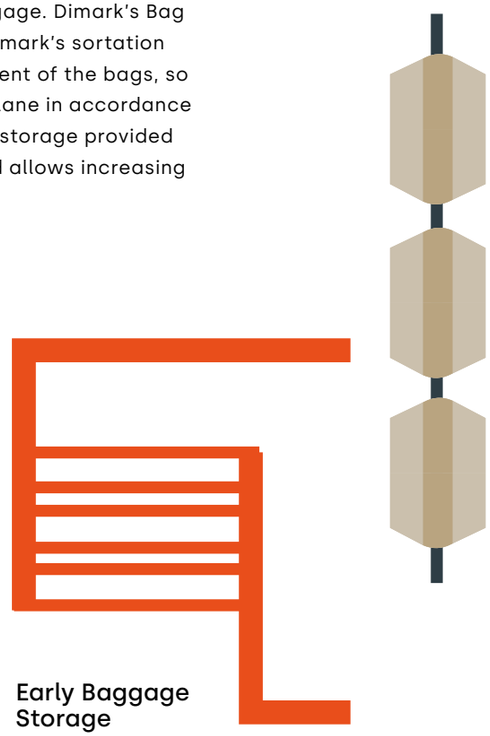


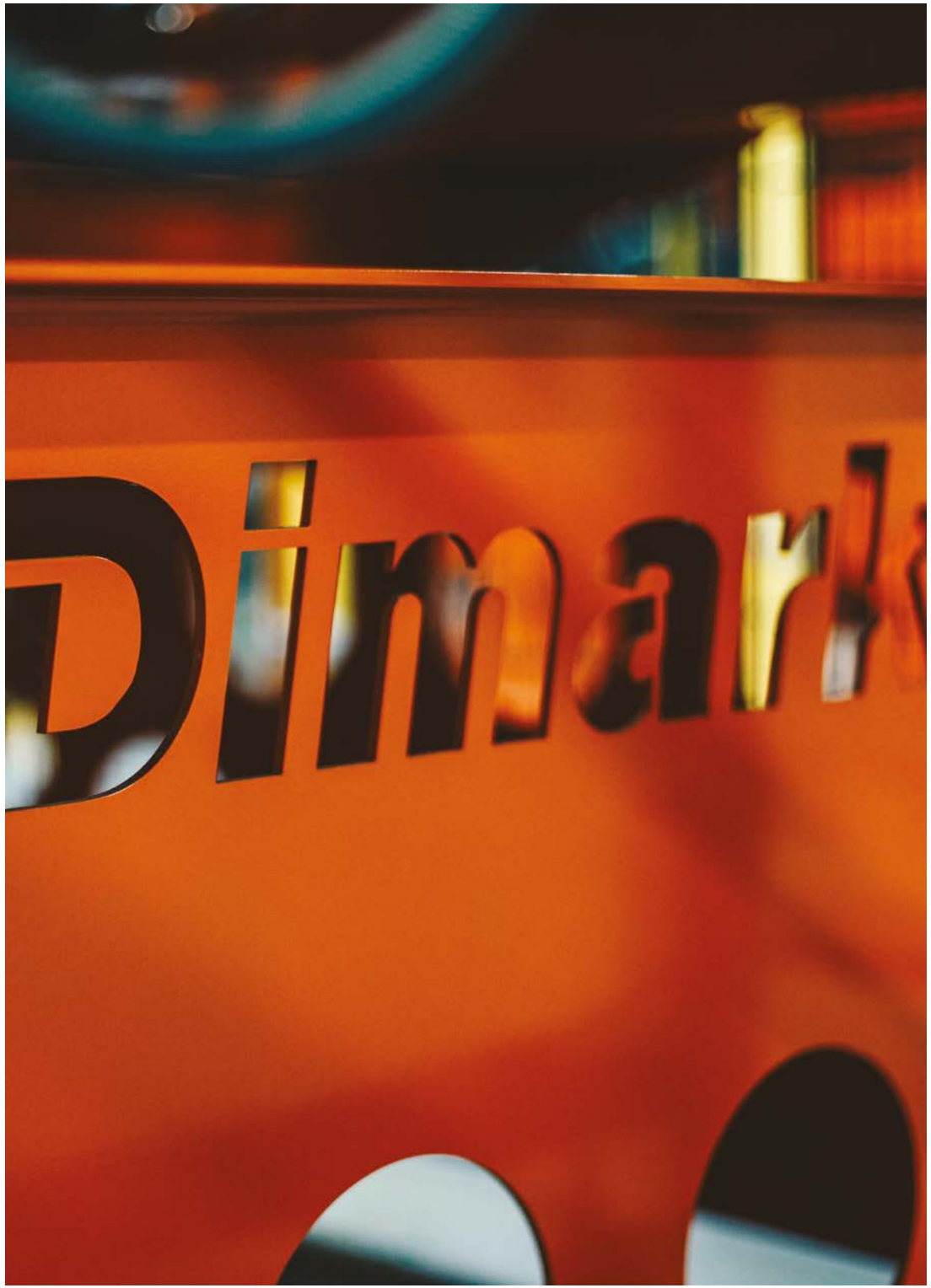
11

early baggage storage

Dimark offers an early baggage storage system (EBS) to transfer bags and checked baggage, hours before flight.

Our solution ensures safe storage until flight time and enables easy access to stored baggage. Dimark's Bag Deposit is efficient and accurate. Dimark's sortation algorithms assure proper management of the bags, so that these are delivered to the airplane in accordance with flight schedule. Early baggage storage provided by Dimark has a modular design and allows increasing capacity of the system.





12

automation

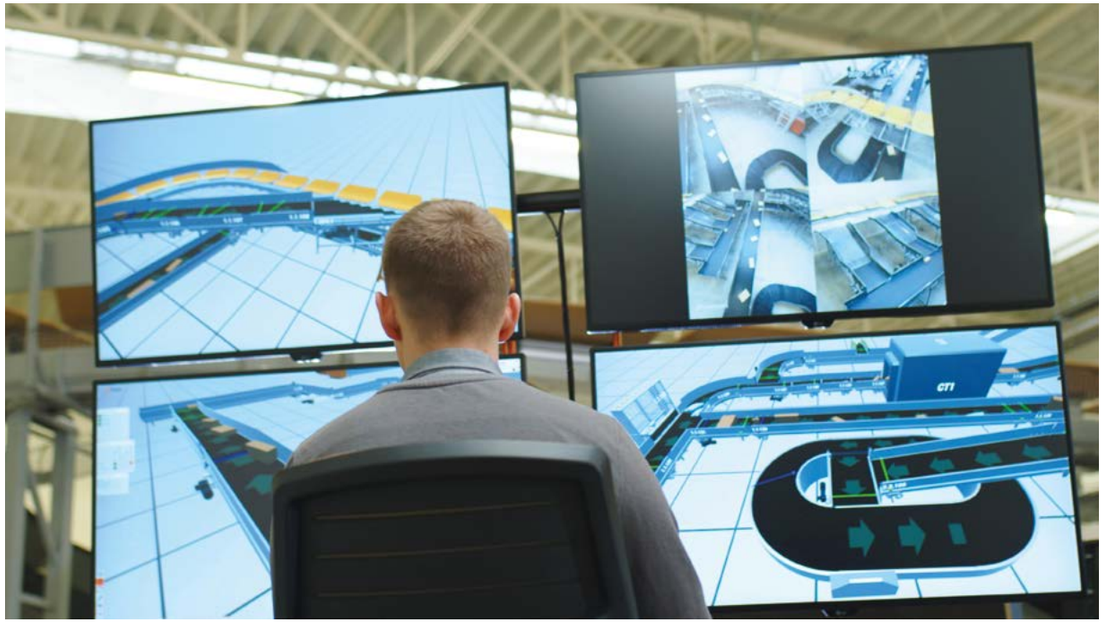
SCADA

SCADA stands for Supervisory Control and Data Acquisition.
This is a full-scale monitoring and control system.

An absolutely revolutionary tool, which thanks to advanced techniques makes it possible to take the operator's work to a whole new level. The platform enables clear, precise and fast presentation of all information about the BHS system and luggage. Integration with PLC, SAC, BRS, CCTV and SCADA provides access to all necessary information about every element of the facility, including baggage and flights data. The possibility of using multi-monitor workstations combined in the walls of monitors, thanks to realistic 3D visualization, significantly affects the perception of the entire installation.

Features & benefits:

- simulation of physical parameters of baggage and transporters
- current and historical analysis of the baggage stream flow
- interactive and intuitive user interface
- prediction of system behaviour
- easy access to project and service documentation
- virtual and augmented reality
- service planning
- realistic reflection of reality
- improving the system perception in operational planning
- reduction of service and maintenance time to a minimum
- optimalization of operational, investment and business activities



1 Visualization

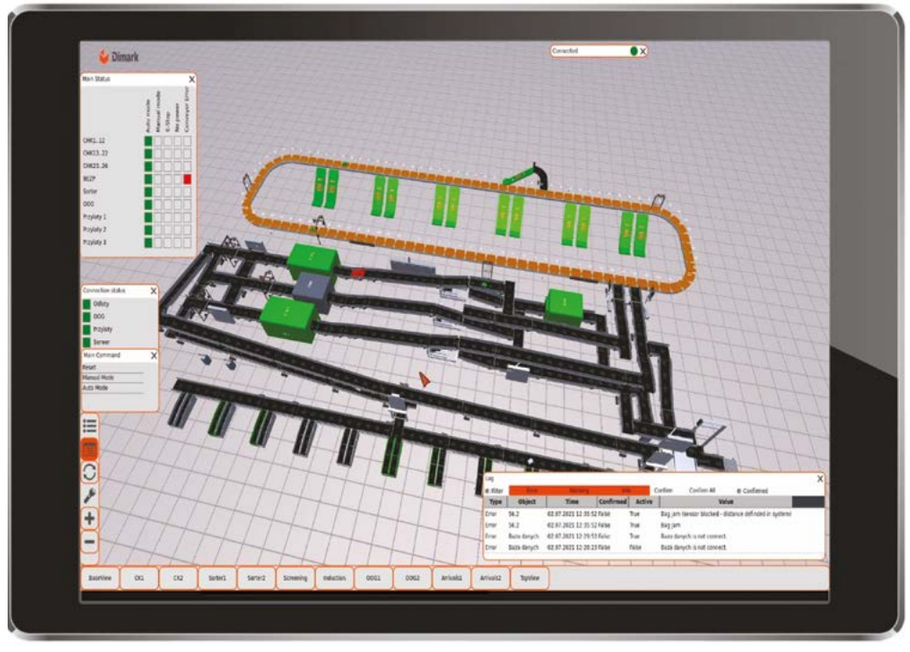
Excellent model mapping allows for precise diagnostics using augmented reality technology. The software also allows working on tablets for quick access to data on BHS components. Remote access provides support for competence centers. The software, using full tracking and control of the system, presents the current flow of baggage along with the status of the entire BHS system. Thanks to data backup and user-friendly interface, it is possible to quickly analyze historical events. Recording alarms, warnings and events together with integration of CCTV allows for quick and precise actions based on in-depth diagnostics and system perception.

2 Simulations and Predictions

An innovative solution developed by Dimark IT, taking into account physical properties, such as shape, weight, center of gravity, friction, etc., allows for an accurate representation of reality. Thanks to this it is possible to simulate and predict the behavior of the entire installation in extreme situations, find the bottleneck of the system and choose the most efficient way to use the facility or propose modifications.

3 Management

User-friendly, advanced diagnostic and control tools allow for quick access to all necessary information from a single location. Interactive visualization and integration with design and maintenance documentation allows for planning and verification of the service and planning. Information support about the history of system operation, extensive diagnostics along with reports and statistics allow for precise planning of BHS service. Quick and easy access to project and service documentation and the ability to easily operate the system, reduces to a minimum the time needed to restore the system to work in the event of any failure or maintenance work.



SAC

The Dimark SAC is a computer system supporting the management of the luggage flow, control and sorting processes.

This solution is an integral part of the BHS (baggage handling system) and consists of a series of modules responsible for different areas of baggage managing processes. All modules are integrated and share a common database. Once entered into the system, information will be available wherever one may need it. At the same time, the modular structure of the system guarantees adaptation to the current needs and rights of defined user groups.

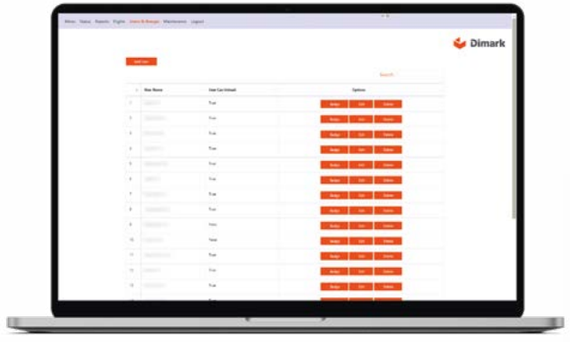
It includes the following functions:

- flight Schedule Editing (Arrival and Departures)
- automated/manual chute allocation
- gantt chart for chute allocation
- - timeline visualization
  - drag & drop function
  - on-line change
- analysis and reporting of system operations – graphic charts and text reports
- baggage flow information
  - viewing all bags information
  - tracking information
  - time of milestone registration in the system (on check-in, CTX, sorter, manual coding, sorter, chute, truck)
- multi- station operation
  - system is able to work on many workstations at the same time

BRS

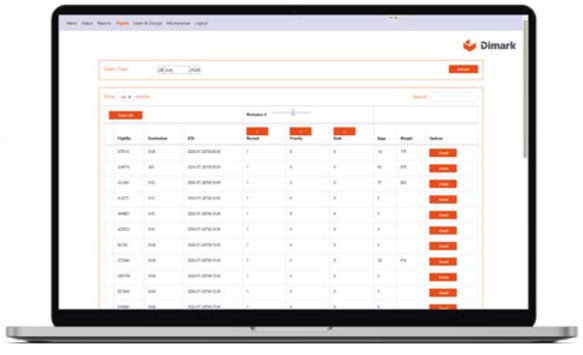
The Dimark BRS (baggage reconciliation system) is a complete solution for managing the flow of luggage during aircraft loading and unloading.

The BRS system is designed to improve and speed up the handling of luggage, as well as reduce the number of problems related to their handling (lost, thefts, damage etc.) to a minimum. The BRS system operates on the border of several airport systems, correlating data collected from several sources and data generated from airport operations. BRS user has the possibility to analyze and track the full route that the passenger's baggage travels, starting from check-in all the way to the aircraft.



It includes the following functions:

- simplified one-page interface
- user groups and rules
- full bag history
- custom BPM messages
- actual and historical flight manifests
- scalability
- multi-user / multi-station architecture
- online / offline work modes
- integration with BIDS as option
- custom BPM messages
- advanced tag scanners
- photo documentation of bags



Automation Control System

The Dimark automation control system ACS is a group of automation subsystems that manages and controls the entire process of controlling the transport process and identification system.

ACS consists (LLC) Low Level Control, Identification, Measuring and Communication subsystems.
These systems are based on modern components from reputable companies such as SIEMENS, EATON, Peperl & Fush, DATALOGIC, SICK, RITTAL, PhoenixContact, DELL, etc. Many years of close cooperation with these companies and our own research and development department have resulted in many excellent solutions ensuring fast, failure-free, precise and resistant to difficult working conditions. The implemented Industry 4.0 solutions put great emphasis on verifying the correctness of work, remote monitoring, shortening the time of service and possible repairs; anticipating the need to implement preventive actions to prevent failures and extensive analysis of the operation of the entire system.

Features & benefits:

DECENTRALISED SYSTEM ARCHITECTURE
- enables service work limited to a single drive without shutting down the entire system
- providing a local and manual control system at the site of each drive
- simplifies diagnostics
- reduces installation and service time and cost
- significantly reduces the impact of the work on the operation of the entire system

REDUNDANCY
- possibility of using redundant PLC controllers
- automated immediate switching operation between controllers allows for uninterrupted operation of the entire system even in the event of a PLC failure
- communication connections in the ring provide resistance to single faults or exclusions of a fragment of the network

IDENTIFICATION & MEASURING
- timeline visualization
- speed measurements of each transporter
- precise multi-head barcode readings with great efficiency and effectiveness
- video coding systems
- precise flow measurements of weight, dimensions and volume

SERVICE & MAINTENANCE
- HMI (human – Machine Interface) allow easy access and diagnostic on each mains cabinets
- extensive diagnostics allows for a thorough analysis of the system operation
- a mobile support system for service work with access to full documentation, operating instructions and spare parts inventory drastically reduces service time and allows you to avoid many errors caused by improper operation
- standardization of solutions in the entire system allows for easy maintenance of service efficiency

Dimark

Remote Access

Firewall

Airport Network

SAC & SCADA Servers

CCTV Server

BHS Control Room

SCADA& SAC& CCTV Workstation

SCADA& SAC& CCTV Workstation

BHS CCTV Cameras

BHS ETHERNET NETWORK

HMI

Arrivals

HMI

Reclaim 1 - 5

PLC

New separetly PLC for every carousel

Departures T2 - BHS & HBS & Transfer

HMI

Fiber

PLC

New redundant PLC

Departures T2 - Sorter

HMI

Fiber

PLC

New redundant PLC

Departures T1

HMI

PLC

New PLC

OOG

PLC

New PLC

Siemens Switch

PROFINET RING (PLC NETWORK)

carousels

roller shutters

Remote I/O

Remote I/O

ASI network

Level3 X-Ray

roller shutters

EDS Std3

Remote I/O

OOG X-Ray

ATR's

EDS Existing in T1

HBS Control Room

HBS Matrix sever

HBS Workstation

L3/L4 Workstation

Why Dimark?

Experience
We commenced our business activity in 1994. Over the years we gained the experience that now is a guarantee of the highest quality service employing optimal technology customized to the needs of every Client.

Solutions of International Standard
Currently, we offer our Clients high-tech, state-of-the-art solutions that meet top international requirements of the industry.

Trusted Suppliers and High Quality
We rely on dependable and well operating supply chains, thanks to which we guarantee the highest quality of offered products. Selecting appropriate materials means maximal durability, as well as reliable and easy maintenance of our appliances at operation.

New Technologies
Our company owns a comprehensive research and development department (R&D) where regular tests and monitoring are carried out. As a result, we don't only continually upgrade and improve our systems, but also introduce the market with new, more advanced products.

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