

INTERROLL CROSSBELT SORTER

DURABLE, VERSATILE, ECONOMICAL

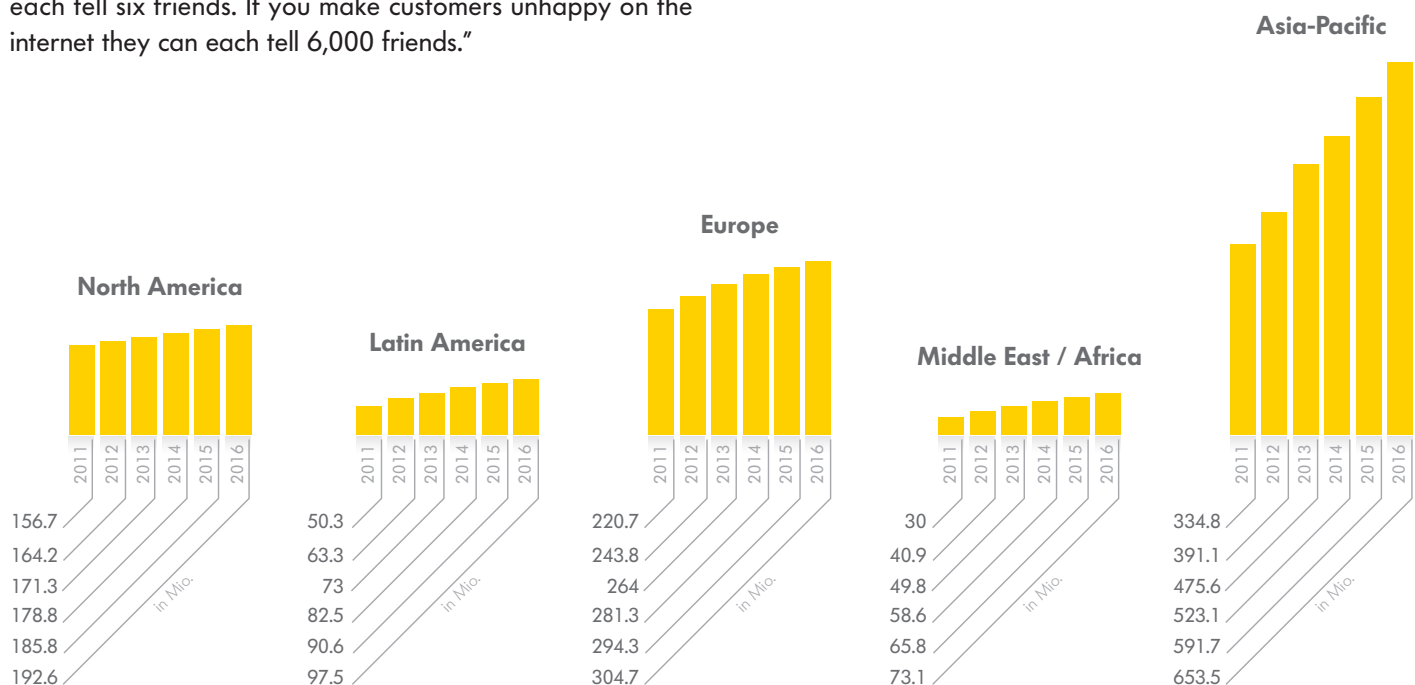


BEYOND EFFICIENCY: TOWARDS “COMMERCE 3.0”

CONSUMER-DRIVEN COMMERCE THAT OCCURS ANYWHERE, ANYHOW, AND ANYTIME THE CONSUMER DECIDES, TURNS TODAY'S LOGISTICS INTO A DECISIVE COMPETITIVE FACTOR. TODAY, THE REMOTE RETAIL SECTOR IS HEAVILY DEPENDENT ON A SOUND LOGISTICS SOLUTION.

Amazon.com founder and CEO Jeff Bezos once said “If you make customers unhappy in the physical world they might each tell six friends. If you make customers unhappy on the internet they can each tell 6,000 friends.”

E-Commerce Buyers Statistics and Forecast by Region (2011 to 2016), adapted from www.emarketer.com



Today, shopping is a whole new experience. Traditional brick-and-mortar shops are leveraging the power of the internet to create online retail shops for the ease of their customers. E-Commerce, as the world knows it, has grown tremendously in the recent years, at constant **double-digit growth rates** in economies around the world. Ever fast data connections and the massive adoption of mobile internet on smartphones, tablets and other internet-enabled devices will further bolster this trend, as shown in the graph.

1.3bn

E-COMMERCE BUYERS WORLDWIDE BY 2016,
ACCORDING TO AN EMARKETER FORECAST

17.1%

GLOBAL GROWTH RATE OF E-COMMERCE
FOR THE YEAR 2013, ACCORDING TO AN
EMARKETER FORECAST

LOGISTICS AS KEY COMPETITIVE FACTOR

Everyone wants to get a slice of this huge cake but competition is fierce. If you can deliver faster, you get the business. The trouble is that customers have the right to return goods purchased online. The consequence: **Return rates of up to 50 percent** must be handled on top of the regular day-to-day business, putting vendors' profitability at stake.

In this complex and demanding market environment, logistics has become a key competitive factor, and **accurate sortation** of a great variety of goods in growing volumes and less time is paramount.

We are convinced that we can help you grow your business – **profitably!**

YOUR CHALLENGES

OUR SOLUTIONS

YOUR CUSTOMERS' SATISFACTION

Erroneous or late deliveries cause you to lose business to the competition

Interroll Sorters' proven mechanical design and patented discharge mechanism assures highest availability and accurate sorting for timely deliveries, even for sensitive goods.



Learn more on pages 6-7

PROFITABLE GROWTH

Gaining market share while remaining profitable, including effective returns management

Interroll Sorters are the most versatile and durable systems available, handling mixed goods (up to 35 kg / 77 lbs), and assuring maximum uptime and scalability for future growth.



Learn more on pages 8-9

COST

Your investment cost should yield the best possible ROI

Interroll Sorters' simple plug-and-play technology guarantees highly economical sorting operations, even for low throughput rates of 2,000 items/hour.



Learn more on pages 10-11

SAFETY AND ERGONOMY

Workers' safety and ergonomics are paramount to assure productivity and employee satisfaction

Interroll Sorters operate at lowest noise levels (< 68dBA) and crucial points like infeeds and destinations can be tailored to optimize your employees' working environment.



Learn more on pages 12-13

ENVIRONMENTAL SUSTAINABILITY

Energy efficiency is vital to reducing environmental footprint

Interroll Sorters operate with a mechanical positive drive principle with up to 90 percent efficiency drives, yielding up to 50 percent energy savings (in comparison to linear motors).



Learn more on pages 14-15





THE KEY SUCCESS FACTORS FOR HIGH-SPEED SORTATION: AVAILABILITY, FLEXIBILITY, ACCURACY

On the following pages you will learn why the Interroll Crossbelt Sorter satisfies these prerequisites for success better than any other sorting technology.

You will also discover Interroll's unique position as neutral provider of sorters and our unmatched product line of highly flexible horizontal and space-saving vertical Crossbelt Sorters.



Sorting in action: two horizontal sorters with a throughput of 10'300 pcs/h each are at the heart of Fiege's efficient returns handling operations in Bürstadt/Germany.



Watch the video to learn about the benefits of Interroll's Crossbelt Sorter

A woman with long, wavy blonde hair is sitting on a light-colored, textured couch. She is wearing a beige long-sleeved shirt and dark pants. She is looking down at a laptop in front of her, with her right hand on the keyboard. In her left hand, she holds a white credit card with a black magnetic stripe. The background is a soft, out-of-focus indoor setting.

QUICK EFFICIENT
RELIABLE RELIABLE
EFFICIENT QUICK

Logistics has become
a key competitive factor

"The efficiency and high performance of the Interroll Crossbelt Sorter convinced us most. It has managed not only to reduce the error rate in the distribution process but also improved the accuracy of the sorting process, exceeding our expectations. Moreover, our throughput increased enormously."

*Shin Maruyana,
General Manager Personal & Administration
Department Nippon Record Center Company, Ltd.,
Kanagawa Prefecture, Japan*

HERE'S HOW WE CAN HELP YOU

**HIGHEST AVAILABILITY AND PRODUCTIVITY
DUE TO PROVEN MECHANICAL DESIGN**

**MAX UPTIME GUARANTEED THANKS
TO SIMPLE PLUG-AND-PLAY TECHNOLOGY**

**EXTREMELY RELIABLE, EASY-TO-OPERATE
SORTING TECHNOLOGY**

Interroll Vertical Crossbelt Sorter processing up to 8,000 items per hour (and more) at Cyrillus and Vertbaudet, the prestigious French brand names in children's fashion.



YOUR CHALLENGE

KEEP YOUR CUSTOMERS HAPPY

... AS WRONG OR LATE DELIVERIES CAN MAKE YOU LOSE BUSINESS AGAINST COMPETITION

Ordered today, delivered tomorrow

Speed, reliability and efficiency are the keys to success in today's marketplace. The globalization of the world economy, ever-shorter innovation cycles and a high level of market transparency put companies under pressure and call for more efficient supply chains and best-in-class business processes.

The internet is the leading driver of customers' rising expectations. "Ordered today, delivered tomorrow" has become the ambitious promise of large retail chains – and is taken for granted by most consumers. If it takes longer, you lose out, not only in social networks' ratings systems but in terms of customer loyalty.

The key: fast and accurate delivery

Management consulting firm Accenture, in an eight-country survey conducted in 2012, found that four out of five consumers only reach for their wallets if what they are looking for is immediately available. Every third consumer uses their retailer's online shop outside opening hours, and a 55-year-old is no different in this respect from a 25-year-old.

It is clear that this transition requires an extraordinary effort – from **sorting** and distribution to IT. Considering that sorting, next to order picking, is the most cost-intensive area of logistics, it pays to invest in best-in-class solutions, like the **Interroll Crossbelt Sorters**.



80% of all customers purchase only if article is immediately available



33% of all customers purchase in their retailer's online shop outside opening hours



Mechanical simplicity: Once a crossbelt carrier reaches its intended destination, a pneumatically actuated plate makes contact with a drive wheel mounted beneath the chassis of the carrier. The motion of the carrier drives the crossbelt and gently transfers the goods to the desired destination.



Interroll Crossbelt Sorter assures maximum uptime in day-to-day production thanks to its simple, mechanical drive mechanism.

High system availability thanks to robust, smart mechanics

To handle individually picked product orders quickly and in line with demand, efficient and highly available sorting systems are required. Interroll's Crossbelt Sorters are a particularly efficient and robust solution; in contrast to competitors' products, our crossbelt carriers operate on a **mechanical basis**. The Interroll Crossbelt Sorters are deliberately designed to keep the electronic components to a minimum: no sensitive electronics, no complex control systems, and no need for specially trained electricians for installation or maintenance.

Pinpoint accuracy all the way

At the heart of the system is a patented, highly efficient flap mechanism which ensures that the movement of the carrier can be used to drive its crossbelt. Mechanically designed through

and through and fitted with premium-quality parts, the Interroll Crossbelt sortation technology assures reliable left or right belt action and accurate discharge of goods into the defined destination points.

Often more than 10 years of continuous operation with minimal maintenance and servicing

The Interroll Crossbelt Sorter's ease of operation and extreme robustness guarantee highest availability and uptime in production. With approximately 150 installations around the globe, our Crossbelt Sorter is the first choice of global companies like **Amazon, DHL, FedEx and Fiege**, as well as the **world's most profitable postal companies, including USPS, Deutsche Post and Swiss Post**. We can proudly state that it's not uncommon to have 10 years' continuous operation with minimal need for maintenance.



↑ THIS
SIDE
UP ↑
FRAGILE

↑ THIS
SIDE
UP ↑
FRAGILE

COST-EFFICIENT
FLEXIBLE HIGH-SPEED
COST-EFFICIENT HIGH-SPEED
FLEXIBLE

Handling
of returns is critical

"If you are operating in an environment as dynamic as AEC, you need genuinely flexible solutions that are maintenance-free and reliable, solutions that can be configured flexibly with regard to size and use, now and in the future. Interroll's horizontal sorter meets our requirements."

James Rink,
Alliance Entertainment Corporation, USA

HERE'S HOW WE CAN HELP YOU

HIGHLY VERSATILE SORTING SYSTEM GUARANTEES
SAFE HANDLING OF YOUR EXISTING — AND FUTURE —
PRODUCT MIX

SCALABLE, MODULAR DESIGN ALLOWS EASY
SYSTEM EXTENSIONS

ECONOMICAL SORTING FOR LOW AND HIGH
THROUGHPUT LEVELS



High-speed returns handling with Interroll Crossbelt Sorter technology at the DHL logistics center in Greven, Germany. It's all about ensuring the satisfaction of the customers who place 20,000 orders with the company daily.

YOUR CHALLENGE

GROW YOUR BUSINESS PROFITABLY

... AS THE HANDLING OF RETURNED GOODS BECOMES MORE AND MORE CRUCIAL

The recommerce phenomenon

The management of returns – so-called reverse commerce or recommerce – is tightly linked to the booming e-commerce market: research of the technology firm Bazaarvoice shows that almost half (44 percent) of German online shoppers send back every forth product purchased online.

Depending on the type of product, the percentage of returned goods can reach **50 percent and more**, as in the case of textiles. Firms must content with this trend on top of the regular order fulfilment operations; it is paramount to find effective ways to deal with this additional flow of goods.

The key: highly flexible and cost-efficient sorting solutions

Management of returns and the related expenses are often underestimated, especially by smaller and mid-sized online retailers, who fail to efficiently address the issue. For many, this soon puts their financial stability under pressure, ultimately forcing them out of business. With strategies like price discounts, detailed product descriptions and intensive communication with the customer, the percentage of returned goods can be decreased but not eliminated.

44% of German online shoppers return every fourth product purchased online



About 50% of all textiles purchased online are returned





Unique in the market:
The vertical configuration can save valuable space by transporting full trays inside the sorter.

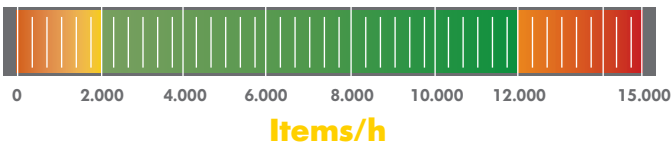


Interroll's application-oriented design at AEC, Shepherdsville, Kentucky: The degree of freedom allowed in designing the destinations made it possible to incorporate the perfect number of target locations to save valuable space and costs.



A flexible, future-proof solution

Flexibility in your sorting system is essential to your ability to react quickly to unexpected demand peaks and expansions required to fulfill your growth strategy. Other sorting systems yield good performance at a certain throughput rate but are inefficient at lower throughput volumes. Interroll Crossbelt Sorting technology guarantees **highly economical sorting** operations also for throughput levels as low as 2,000 items/hour. Our mechanical positive drive mechanism with up to 90 percent efficiency drives can yield energy savings of up to 50 percent, compared to linear motors used in other sorting systems. This makes our Crossbelt Sorter an efficient solution, even for smaller hubs with lower capacities.



Easy system reconfiguration for future growth

The **simple, modular design** of the Interroll Crossbelt Sorter and its infeeds and destination points make relocation or reconfiguration of an existing system easy, with minimal downtime or work required. To do the same thing with alternative sorter technologies, significant electrical and controls involvement is required and relocating of a destination point is difficult due to the need for complex programming and wiring.

Versatility for your product mix

In terms of product mix, often difficult for third-party logistics (3PL) service providers to foresee, you need a sorting technology that guarantees safe sorting at all times – especially when more sensitive goods (e.g., eggs, yogurt, cups or glasses) or heavier goods (e.g., 25 kg / 55 lbs sacks of dog food) suddenly must be processed. Such scenarios challenge any sorting system – and are impossible for some – but Interroll's unique experience in designing **tailor-made destinations** – all developed and tested in our Center of Excellence – guarantees your success.

Fiege, Germany: Likely the world's most multifunctional sorter

In Bürstadt, Fiege, a **3PL pioneer**, handles all returns of non-food items for a leading European retailer: a vast array of retail goods, multiple sorting operations, with product mix and peak levels changing daily. To optimize of their regional hub, Fiege chose Interroll's Horizontal Crossbelt Sorter as a retrofit solution, making it possible to:

- ✓ achieve efficient operations at all times, up to highest throughput rates of up to 10,300 items per hour and per sorter during demand peaks
- ✓ optimize space utilization through its compact design
- ✓ increase capacity in existing building through a double structure
- ✓ rearrange infeed and end points to increase system performance for future growth



LONG - TERM
ON GAIN
SHORT - TERM ROI

LONG - TERM
GAIN
ON SHORT - TERM
ROI

It pays to do your math



"We get tens of thousands of orders here every day, which means an effective sortation solution is the be-all and end-all for us. This is why the compact design of the Interroll Crossbelt Sorter proved a particular convenient option for us."

Jeannine Harnisch,
Project Manager, Robert Klingel GmbH & Co KG,
Pforzheim, Germany

HERE'S HOW WE CAN HELP YOU

HIGHLY ECONOMICAL SYSTEM, WITH EFFICIENT OPERATION EVEN AT LOWER THROUGHPUTS

LOW MAINTENANCE, INSTALLATION AND TRAINING COSTS DUE TO SIMPLE PLUG-AND-PLAY TECHNOLOGY

EXPERTISE IN DESIGNING FUNCTIONAL AND COST-EFFICIENT DESTINATIONS & INFEEDES

Interroll Horizontal Crossbelt Sorters are ideally suited for operation in areas with space limitations. For example, two sorters with identical routes can be installed, one on top of the other, to double capacity.



YOUR CHALLENGE

CAPITAL INVESTMENT PROJECTS SHOULD YIELD A FAST ROI

... BUT ONGOING OPERATING COSTS NEED TO BE AS ECONOMICAL AS POSSIBLE

CapEx and OpEx count in the end

The relative importance of capital expenditures (CapEx) and operational expenditures (OpEx) can vary from company to company, but where technology investment projects are concerned, the two must be considered together. Whatever figure you use to weigh one project versus another (ROI, NPV, IRR, etc.), wise investment decisions are more crucial than ever in today's business world.

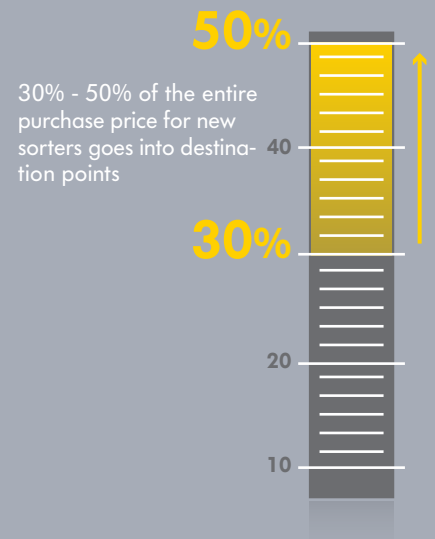
Take maintenance costs into account

For your sorting operations and projects, this means – in addition to the purchase price, payment conditions and the ongoing operating expenses – cost factors such as **maintenance, installation and training** must be taken into account when laying out your ROI calculation.

Long-term gain on short-term ROI

This is what the Interroll Crossbelt Sorter represents. With a significant number of sorter projects around the globe, our experience shows that the typical payback period is between two and three years.

Experience has also shown us that when evaluating sorting technologies and resulting investments, people often forget that a significant part of the overall CapEx for the system goes into the **destination points** (chutes, spirals, conveyors, etc.), typically 30 percent of the entire purchase price. With a greater number of, and/or more complex, destination points, this figure can reach 50 percent.



10 years of continuous operation with minimal need for maintenance is common for Interroll Crossbelt Sorters



Tailor-made chutes as destinations guarantee safe sorting of a huge product mix, from CDs to books, shoes and frying pans, at Fiege in Bürstadt, Germany.



Distinctive space-saving, compact-modular design: Installing an Interroll Vertical Crossbelt Sorter with its linear, straight route, a width of just 1.7 m (5.5 ft) is sufficient when using 400 x 400 mm (15 x 15 in) crossbelt carriers.

Highly economical sorting operations

Based on your sortation requirements in terms of throughput, product mix and space utilization, the Interroll Crossbelt Sorter delivers **real added value** and is highly competitive in any ROI comparison with other sorter technologies: low investment, compact, space-saving design, lowest maintenance costs, and low energy consumption, in high- and low-speed applications.

As one of our French customers puts it: "We chose the Interroll sorter for its quality. It's a product that offers a number of economic advantages and the drive mechanism is very robust and remarkably well made."

Mechanical simplicity means low maintenance

The mechanical simplicity of our Crossbelt Sorter makes servicing easy and – in contrast to other sorting technologies – maintenance doesn't require specialized electricians. The **mechanical robustness** of the Interroll Sorter has been proven around the world: It's not uncommon to have 10 years of continuous operation with only minimal need for maintenance. This is what makes the Interroll Crossbelt Sorter – and our customers – so successful.

As electrical components have been deliberately kept to a minimum when designing our drive system, no complex control system is required and the need to constantly monitor and tweak the system is eliminated. Powered by high-efficiency gear motors with extremely low energy consumption, our Crossbelt Sorter guarantees accurate speed control at all times, no monitoring required.

Proven configurations of infeeds and destinations

The crucial points in most sortation projects are infeeds and destinations and their design needs to meet the requirements of functionality and cost. In this aspect, you can benefit from our **wealth of experience** gained from a vast number of proven infeeds, be it manual, semi-automatic or fully automatic and destinations such as cascade buffer chutes, roller conveyors, belt conveyors, wide chute for double carriers and many more. All of them are tailored to your system requirements and tested at our own in-house test center.

A man with dark hair and a light beard, wearing a light blue button-down shirt over a white t-shirt, is operating a forklift. He is looking directly at the camera with a slight smile. His hands are on the black steering wheel of the forklift. The background is a blurred warehouse setting with shelves and equipment.

EMPLOYEE SAFETY SATISFACTION SAFETY EMPLOYEE SATISFACTION

for higher productivity

"The Interroll Crossbelt Sorter is close to 100 percent accurate and very easy to operate, as well as offering outstanding reliability with virtually no need for servicing."

*Agnieszka Malinowska,
Managing Director, Frisco.pl,
Warsaw, Poland*

HERE'S HOW WE CAN HELP YOU

ENHANCED WORKING ENVIRONMENT DUE TO EXEMPLARY
LOW-NOISE OPERATION (< 68dBA)

CRUCIAL POINTS LIKE **INFEEDS AND DESTINATIONS**
CAN BE TAILORED TO OPTIMIZE YOUR EMPLOYEES'
WORKING ENVIRONMENT

MAXIMUM OPERATOR FRIENDLINESS DUE TO SIMPLE,
PLUG-AND-PLAY TECHNOLOGY



Proven configuration of destinations, all tried and tested in the Interroll Center of Excellence in Sinsheim, Germany, provide not only gentle handling of unit loads but also ergonomic picking operations.

YOUR CHALLENGE

ENSURE A SAFE AND HEALTHY WORKPLACE...

AS EMPLOYEE SAFETY AND ERGONOMICS ARE IMPERATIVE FOR BEST PRODUCTIVITY AND EMPLOYEE SATISFACTION

The link between ergonomics, safety and productivity

Managers are responsible for providing a safe and healthy workplace for employees, who in many industries and occupations may be exposed to risk factors such as lifting heavy items, bending, reaching overhead, pushing and pulling heavy loads, working in awkward body postures and repeatedly performing the same or similar tasks.

In the workplace, the number and severity of **musculoskeletal disorders (MSDs)*** resulting from physical overexertion, as well as their associated costs, can be substantially reduced by applying ergonomic principles.

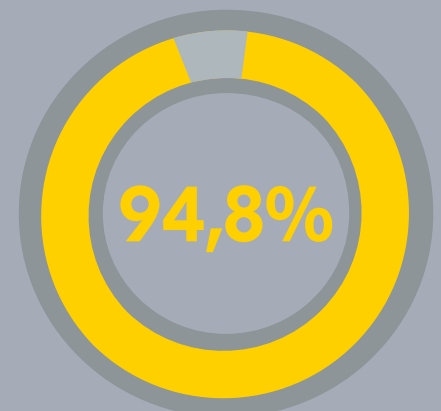
The goal of ergonomics is to reduce stress and eliminate injuries and disorders associated with the overuse of muscles, bad posture, and repeated tasks. Implementing an **ergonomic process** has been shown to be effective in reducing the risk of developing MSDs in industries as diverse as construction, food processing, office jobs, healthcare, beverage delivery and warehousing.

* Work related MSDs (including those of the neck, upper extremities and low back) are among the leading causes of lost workday injury and illness.

3 million



3 million nonfatal occupational injuries and illnesses reported by US private industry employers in 2011
(Source: U.S. Bureau of Labor Statistics)



94,8% of nonfatal occupational injuries and illnesses in 2011 were injuries
(Source: U.S. Bureau of Labor Statistics)



Tailor-made infeeds have been installed in Frisco's distribution center in Poland to maximize ergonomics and safety for their factory workers.



Interroll Crossbelt Sorters dovetail perfectly with existing systems. Precision pre-assembly of sorting modules in our factory enables rapid on-site plug-and-play installation.

Enhanced working environment due to exemplary low-noise operation

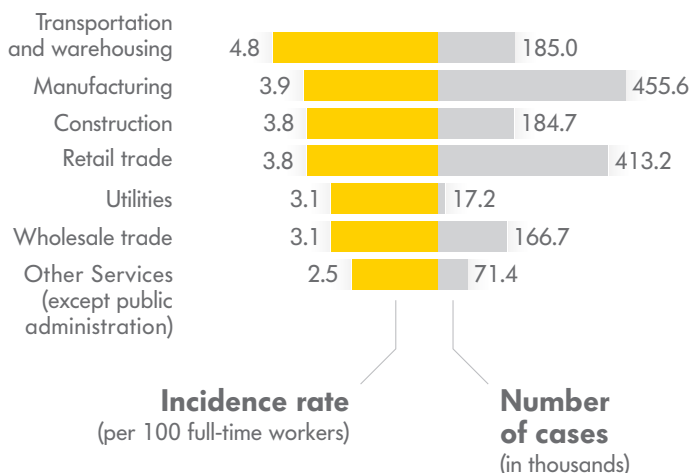
With an average noise level of less than 68dBA, the Interroll Crossbelt Sorter's noise level is among the lowest in the market and no louder than the average home air conditioner. Our mechanical drive concept allows our products to operate silently at highest throughput rates. That's music to the ears of factory employees.

Safety and ergonomics first

In the Interroll Center of Excellence in Sinsheim, Germany, all product design and development efforts are carried out with operator's safety and ergonomics in mind. In particular, all crucial points like infeeds and destinations are designed and built based on **our customers' requirements**. Prior to installation at the customer's site, we conduct thorough testing in our own in-house test center, with the ultimate goal of optimizing your employees' working environment.

User-friendliness thanks to uncomplicated, easy-to-grasp technology

The proven mechanical design of the Interroll Crossbelt Sorter assures highest availability in day-to-day operations as well as maximum operator friendliness due to its ingeniously simple, **plug-and-play** technology: your guarantee for reaching highest productivity levels. Finally, only pre-assembled sorter modules leave our factory so that fast, safe installation is guaranteed.



A man with short brown hair and a light beard, wearing a dark blue suit jacket over a light blue button-down shirt, stands against a light grey textured wall. He is holding a large, bright green arrow that points from the left towards the right, partially obscuring his torso. The arrow is a solid, vibrant green color.

SUSTAINABILITY

TOMORROW TODAY TODAY
SUSTAINABILITY TOMORROW

Focus on energy-efficient operations

"It is absolutely essential that our customers perceive Solar as a company committed to superior quality and reliable delivery. Therefore, continuously enhancing the efficiency of our logistics chain is one of our top priorities. The Interroll sorter represents a key component in this quest."

Finn Kristensen,
Logistics Manager, Solar Danmark A/S,
Kolding, Denmark

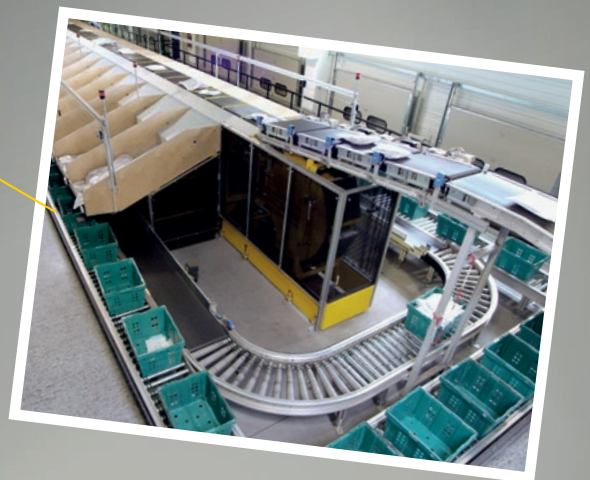
HERE'S HOW WE CAN HELP YOU

**ROBUST MECHANICAL DRIVE PRINCIPLE WITH UP
TO 90 PERCENT EFFICIENCY**

**UP TO 50 PERCENT ENERGY SAVINGS (COMPARED
TO LINEAR MOTORS)**

HIGHLY EFFICIENT MOTORS WITH LOW MAINTENANCE

Positive drive principle means
energy efficiency, safe tracking
and highest availability



YOUR CHALLENGE

PRACTICING CORPORATE RESPONSIBILITY...

ENERGY EFFICIENCY IS VITAL TO REDUCING ENVIRONMENTAL FOOTPRINT

"If you want to be a great company today, you also have to be a good company." That is the often-repeated wisdom of General Electric CEO Jeff Immelt, one of American's most influential business leaders, on the concept of sustainability. Leaders like Immelt know that sustainability goes beyond corporate social responsibility statements (CSR) and large corporations' "go green" programs. It means truly acting as a **responsible corporate citizen** and it is a prerequisite for business success and shareholder value.

As undisputed megatrend for logistics, sustainability therefore must be built into each business function and process, from production through picking to sorting and transportation. As cornerstone of a firm's environmental pledge, reducing your operation's energy consumption throughout the entire supply chain is fundamental, and a plethora of initiatives is usually undertaken to enhance logistics management.

The 20-20-20 targets in Europe

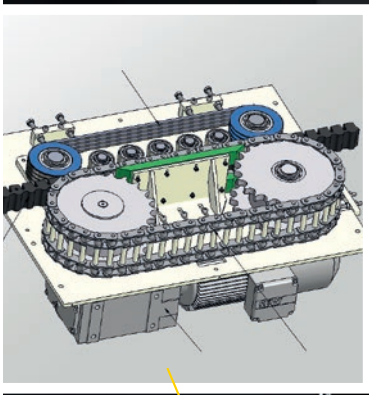
In 2009 a major policy package, proposed by the European Commission, was adopted by the EU countries and has become binding legislation, known as the **20-20-20 targets**. This climate and energy package includes the following targets for 2020:

- A reduction in EU greenhouse gas emissions of at least 20 percent below 1990 levels
- At least 20 percent of EU gross final energy consumption to come from renewable energy sources
- A 20 percent reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency



by 2020

20% reduction in primary energy use in Europe, to be achieved by 2020 by improving energy efficiency



Simple. Robust. Proven. The drive module consists of a rubber block chain with steel cords, a drive chain, a counter pressure unit, and a standard gear motor with frequency inverter.



Mechanically designed through and through, the Interroll Crossbelt Sorter is fitted with premium-quality parts to guarantee pin-point precision and reliable sorting operation.

Energy-saving and reliable drive principle

Designed to be mechanically robust and maintenance-friendly, Interroll Crossbelt Sorters operate with a mechanical positive drive principle that takes advantage of standard, high-efficiency gear motors. In comparison to heat-producing linear motors with efficiency rates around 50 percent, our rotating drives work with **up to 90 percent efficiency**, yielding up to 50 percent energy savings.

In addition, the direct drive principle and a fixed connection between each crossbelt carrier and the drive belt ensures secure tracking of products via a single, standard industrial encoder. Alternative sorter technologies require complicated control systems for the carrier chain to minimize wear.

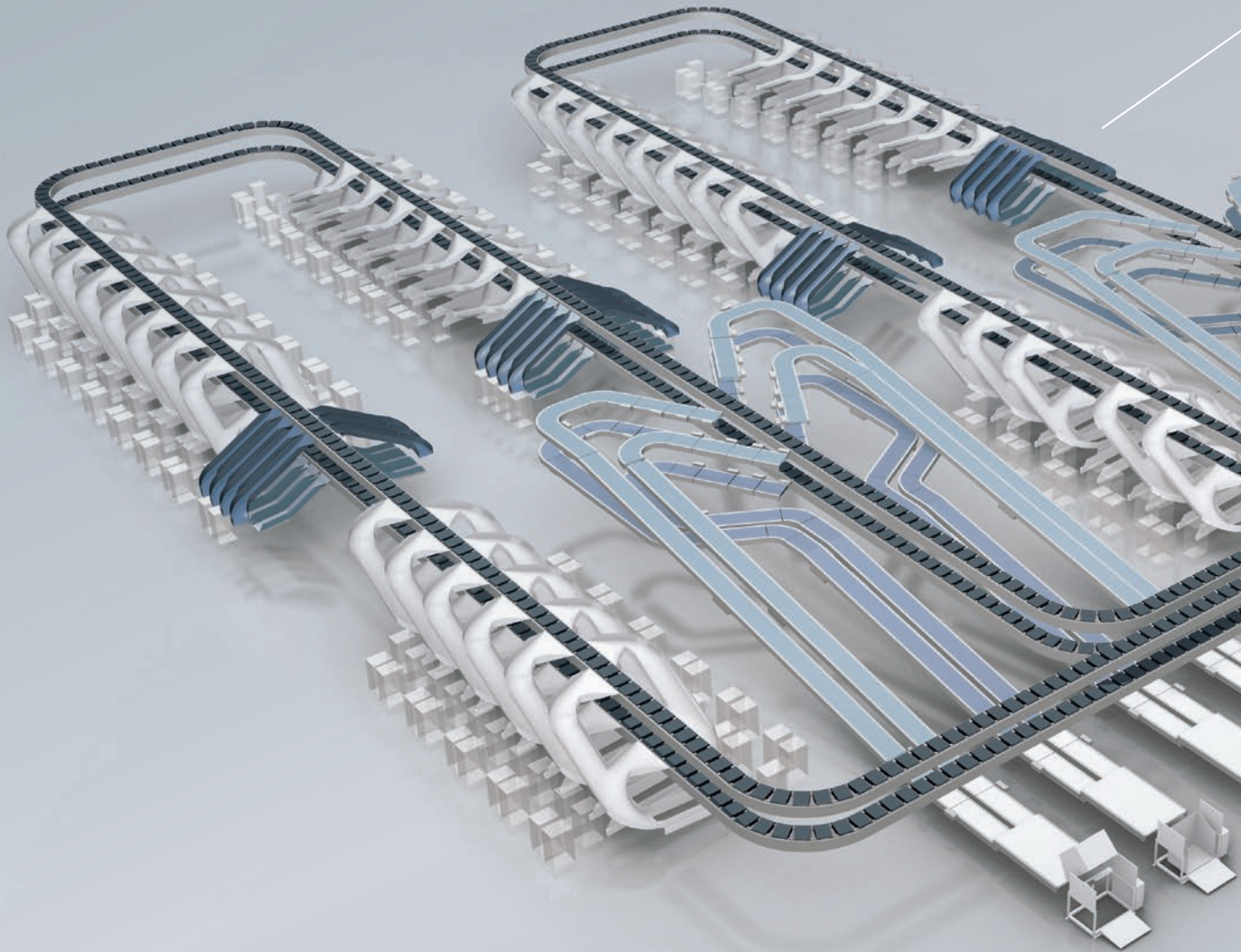
Long lifetime and high flexibility

The pulling mechanism of Interroll's Crossbelt Sorters is a reinforced rubber block chain with internal steel cables, to which the crossbelt carriers are connected via flexible attachments. Its average lifespan of more than **15 years** is unmatched in the market and proven worldwide in various applications – from Courier Express Parcel (CEP) to food processing – and harsh environments.

Regarding the drive unit, it's worth noting that Interroll's Horizontal Crossbelt Sorters require only one drive module every 70 meters (230 feet) of sorter length, thereby minimizing energy consumption. Furthermore, this drive unit can be located at any position around the loop, providing ultimate flexibility during installation.

HORIZONTAL CROSSBELT SORTER

FOR MAXIMUM FLEXIBILITY AND
UTILIZATION OF AVAILABLE SPACE




According to the unit loads conveyed, performance targets and spatial conditions, sorters with either a horizontal configuration (circular structure) or vertical configuration (linear structure) can be employed.

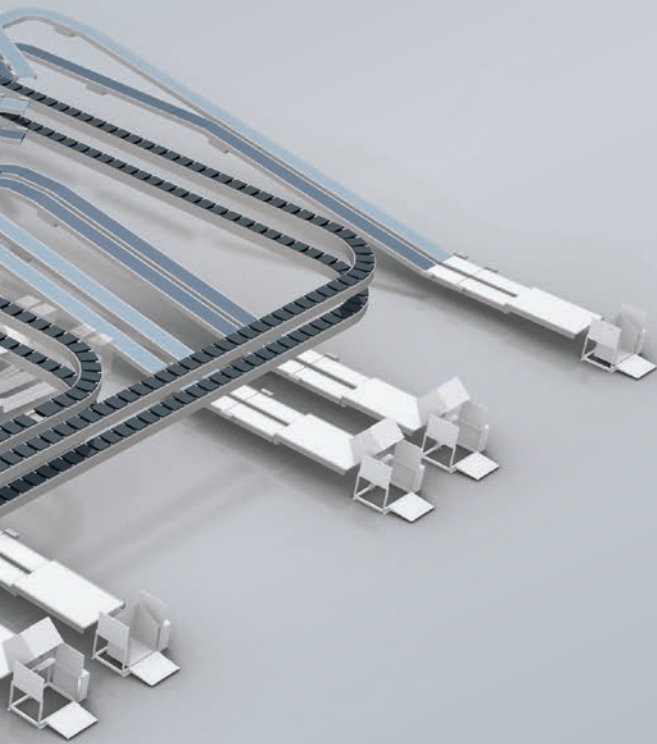
Flexible, space-maximizing configuration

Interroll Horizontal Crossbelt Sorters are characterized by their **flexible, space-utilizing routing** with curves that also conquer inclines and declines. Merges and destinations can be arranged in various ways and be optimized to increase the system's performance. With an appropriate layout it is possible to create several sortation areas with just one cycle. The Interroll Horizontal Crossbelt Sorters are also ideally suited for operation in areas with limited space. For example, two sorters with identical routes can be installed one on top of the other, as a two-tier solution to **double the capacity**.

Highest sorting performance due to recirculation

In contrast to their vertical counterparts, Horizontal Crossbelt Sorters can **recirculate goods** which have either not been recognized by the bar code reader or not discharged, when the allocated destination was full ("overflow"). Their circular configuration provides this built-in advantage and ensures the highest level of sorting performance due to automatic recirculation of "no-reads" and cases of "overflow".

 Horizontal Crossbelt Sorters can adapt to the requirements of available space and allows easy re-location of infeeds and destinations.



BEST-IN-CLASS LETTER SORTING AT SWISS POST

The letter sorting center in Zürich is considered the linchpin of the largest reorganization in the 320-year history of Swiss Post. Four Interroll Crossbelt Sorters with horizontally configured conveyors have been installed at each of the mail sorting centers in Zürich, Härkingen and Eclépens; two sorters sort **up to 10,000 plastic trays per hour** in both the receiving and order-picking areas, 24/7.

Operating features: Maintenance-friendly and wear-proof construction, < 68dBA noise level, as well as zero error tolerance. The letter containers should not become jammed, twisted or fall off the sorters during transport on the crossbelt carriers, across 60 merges, or when being discharged into **250 destinations**.

Interroll proved the sorter's efficiency prior to initial start-up. A four-week system test with automatic 24-hour sorting demonstrated the sorter's safe transport, no stop-and-go and fault-free merging once the container barcodes were scanned. And other features also passed the tests with flying colors: accurate discharging according to computer-controlled target destinations and reliable 90-degree cross transfer.



Space-saving double structure of Interroll's 12 Horizontal Crossbelt Sorters installed at SwissPost's three sorting centers in Switzerland.

"The Interroll Crossbelt Sorter is a flexible and robust sorting solution which reliably covers our needs for the sorting of envelope containers with A and B post of all volumes. This is very important to us; the quality of the overall process has to be constantly kept on a high level, be it in daily business or in case of volume peaks, as for example before Christmas."

Peter Stoop, Director Business Technology Center, Swiss Post

TECHNICAL DATA

Suitable for handling	Cartons, packages, maxi letters, packaged food, catalog goods, padded envelopes, multimedia products, garment, etc.
Dimensions of items min. (L x W x H): max. (L x W x H):	150 x 100 x 5 mm (5.9 x 3.9 x 0.2 in) 600 x 500 x 500 mm (23.6 x 19.7 x 19.7 in)
Weight of items	min. 100 g (3.5 oz) max. 35 kg (77 lbs)
Double carrier max. (L x W x H):	1,200 x 700 x 700 mm, 35 kg (47.2 x 27.6 x 27.6 in, 77 lbs)
Capacity/speed (samples)	For carriers 340 x 400 mm (13.4 x 15.7 in) → 14,000 carriers/h at 1.7 m/s (5.6 ft/s) For carriers 460 x 700 mm (18.1 x 27.6 in) → 10,000 carriers/h at 1.65 m/s (5.4 ft/s)
Added benefits	High availability, high sorting capacity, low noise, space-saving configuration, energy saving

VERTICAL CROSSBELT SORTER

"THE SPACE-SAVER"

Highly compact and cost-effective

The main feature of the Interroll Vertical Sorter with linear, straight routing ("over – under") is the distinctive space-saving, compact modular design. For example, a width of just 1.7 m (5.5 ft) is sufficient to install a vertical sorter with 400 x 400 mm (15 x 15 in) crossbelt carriers. This configuration can save valuable space by transporting full trays inside the sorter. And that is unique in the market.

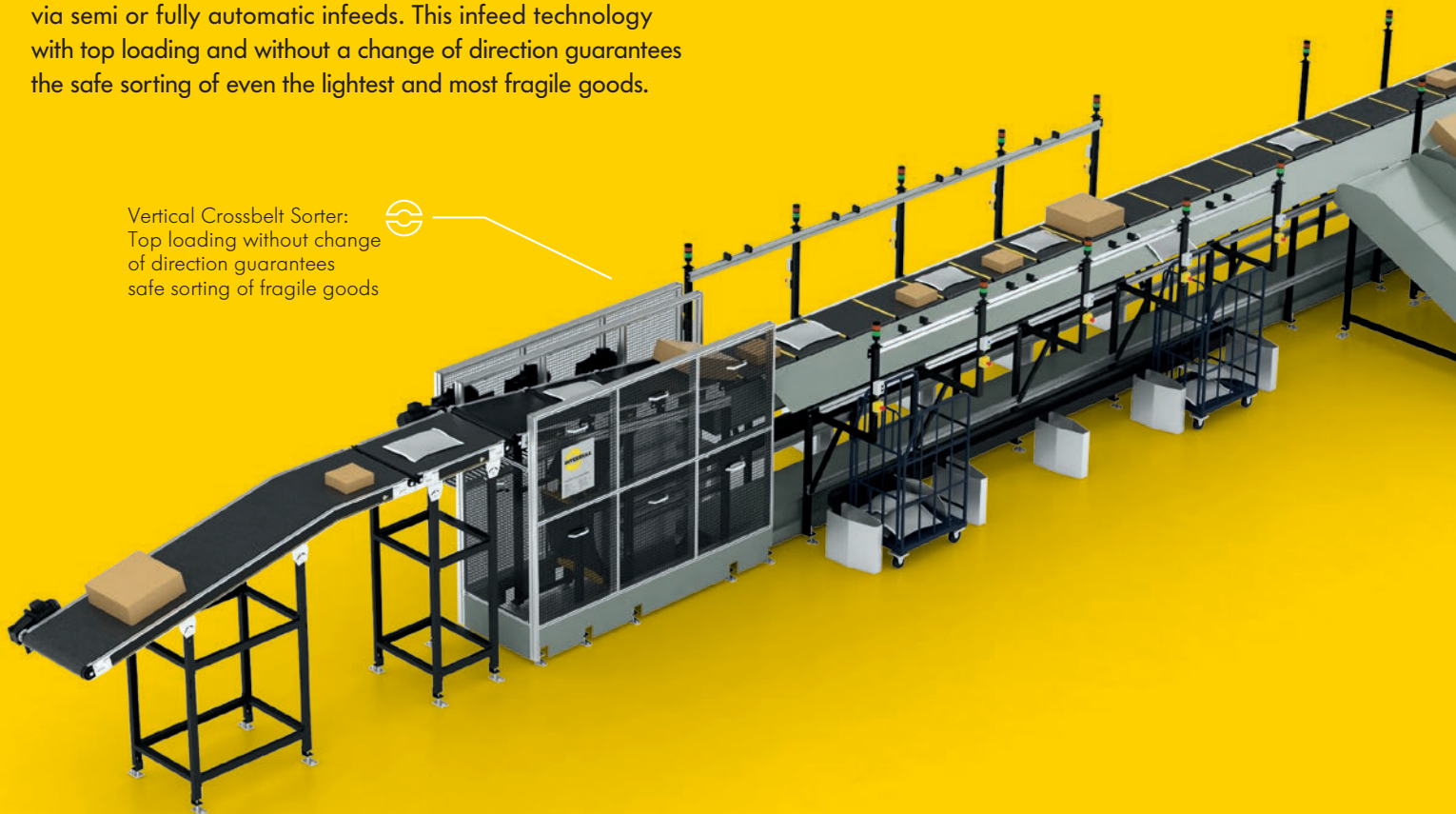
Safe infeeds for fragile goods

Infeed to the vertical sorter usually starts with an accumulating conveyor in front of the actual sorter: a simple conveyor belt. Operators are able to manually feed goods onto this accumulating conveyor, an ideal cost-effective and ergonomic solution. And the accumulating conveyor can, of course, be loaded via semi or fully automatic infeeds. This infeed technology with top loading and without a change of direction guarantees the safe sorting of even the lightest and most fragile goods.

Easy access to destinations

The Interroll Vertical Crossbelt Sorter allows the greatest possible carrier density, thus increasing throughput at moderate speeds, a particular advantage for lightweight and fragile goods. The destinations of the Vertical Sorter are directly accessible from both sides. They are designed with maximum density and tailored to the sizes, shapes, weights, etc., of the unit loads. Optionally a re-circulation line can be integrated to automatically return goods not discharged at the allocated destination.

Vertical Crossbelt Sorter:
Top loading without change
of direction guarantees
safe sorting of fragile goods

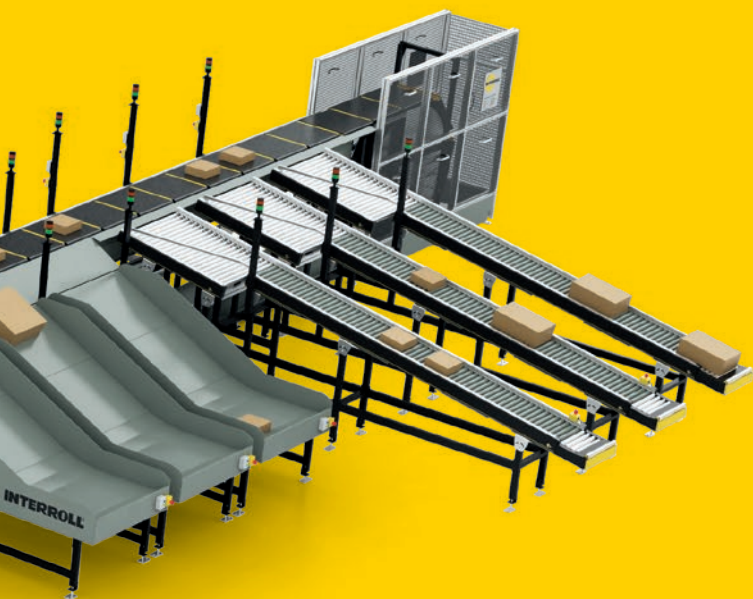


HIGH-SPEED RETURNS HANDLING IN GREVEN, GERMANY

For teleshopping channel HSE24, only the best is good enough. The one and only aim of all its processes at the central logistics center in Greven is ensuring the satisfaction of the customers who place **20,000 orders** with the company every day. Flexibility, precision and speed are essential 24 hours a day. Everything from LCD television sets to diamond necklaces. Interroll's Crossbelt Sorter is in charge of sorting returns at the Greven logistics center.

Typically, 20 percent of sales in the mail order world are returned; 1.2 million items every year. With some **24,000 different products** that DHL keeps in stock for the shopping channel and a sorting capacity of up to 6,000 returns a day (10,000 items per day), the crossbelt carriers in Interroll's vertical sorter are certainly being put through their paces.

Early every morning they receive advance warning from DHL's freight center of the volume of customer goods returned by post. The returned goods are offloaded from the trucks using telescopic belts onto a conveyor system that delivers them to a 2,000 (21,530 square feet) square-meter mezzanine floor in the logistic center. First, the control system checks the contents against the original order and identifies the goods. From there it's on to the Interroll Crossbelt Sorter, which carries out a **full pre-sort of the returned items** with a total of 64 chutes leading to collection points on each side; from there the items are either immediately reprocessed or repackaged onto pallets for storage in the high-bay warehouse facility.



TECHNICAL DATA

Suitable for handling	Cartons, packages, maxi letters, packaged food, catalog goods, padded envelopes, multimedia products, garments, etc.
Dimensions/weight of item	
min. (L x W x H):	100 x 80 x 5 mm (3.9 x 3.1 x 0.2 in)
max. (L x W x H):	600 x 600 x 500 mm (23.6 x 23.6 x 19.7 in)
Weight of items	
min. 100 g (3.5 oz)	
max. 35 kg (77 lbs)	
Double carriers	
max. (L x W x H):	1,200 x 800 x 800 mm, 35 kg (47.2 x 31.5 x 31.5 in, 77 lbs)
Capacity/speed (samples)	For carriers 335 x 300 mm (13.1 x 11.8 in) → 15,000 carrier/h at 1.65 m/s (5.4 ft/s) For carriers 660 x 800 mm (26.0 x 31.5 in) → 8,500 carrier/h at 1.7 m/s (5.6 ft/s)
Added benefits	High availability, high sorting capacity, low noise, space-saving configuration, energy saving



Interroll Vertical Crossbelt Sorter at DHL/Greven with 64 custom-made chutes, accessible from both sides

"Nowadays, the professional handling of returns is the norm as part of an innovative mail order logistics strategy. Proven and dependable technical solutions such as those offered by the Interroll Crossbelt Sorter help us to maintain a consistently high level of quality throughout the entire process."

Peter Huch, DHL Logistics Center Manager, Greven

CONVEYOR MODULES

FOR SEAMLESS SORTING... AND PEACE OF MIND

Interroll Crossbelt Sorters in sync with connecting conveyor technology

Unlike other sorter manufacturers, Interroll not only develops, produces and markets its Crossbelt Sorter technology but also every type of conveyor elements needed to handle the critical task of condensing the material flow in front of the sorter and transporting to dispatch areas after the sorter.

In its Center of Excellence (see on next page), Interroll state-of-the-art modules for the conveyor technology to and from your sorter are designed and tested. Perfectly synchronized with the sorter loop, these modules guarantee optimal system throughput and seamless integration:

- **Belt conveyors: Nonstop flexibility**

From horizontal to incline and decline. From a mini conveyor belt with an installation height of just 40 mm (1.6 in) to a maxi belt conveyor for heavy loads.

- **Merges / infeeds: For a material flow with controlled right-of-way**

Interroll Merges are designed to combine the flow of two separate lines and merge them into one. Easy to install and commission as every conveyor module is pre-assembled, adjusted and tested.

- **Belt curves and spiral belt curves: Gently around the corner**

Belt curves made by Interroll are a true space-saving device for changing directions. They bring unit loads gently around the corner at all times, with angles between 30° and 180°, for the smallest to the bulkiest items.

- **Intelliveyor roller conveyors: Intelligent “localized” conveying**

Perfect operation without complex installation and software integration. Interroll Intelliveyor, the plug & play roller conveyor modules revolutionizes unit load handling for individually controlled zones.



FIT FOR FASHION – THE INTERROLL SORTER AT JEANS CLUB, HUNGARY

The Jeans Club distribution center in Budapest achieved this goal with the help of the tried and trusted Crossbelt Sorter from Interroll. Up to 6,000 dispatches per hour are transported here by the vertical sorter. Everything is represented, from minimum sizes with dimensions of 150 x 100 x 20 mm (5.9 x 3.9 x 0.8 in) all the way through to maximum sizes of 620 x 410 x 100 mm (24 x 16 x 3.9 in). Maximum weight of the stretch wrapped jeans, jackets, pullovers, sweatshirts etc is five kilograms.

Individually designed...

...are both the infeed and discharge zones. The goods arrive on the sorting route via manual pick-up points along the merge belt. One storey higher – after the goods have been identified by means of the barcodes that are placed under the plastic wrapping – they are discharged on both sides to one of the 45 destinations and, from there, are sent directly into plastic containers via chutes. Thus the circulation of goods remains in full flow. Finally, the Interroll Vertical Crossbelt Sorter offers enough space between the upper & lower runs that Interroll set up an Intelliveyor outfeed transport path for the filled containers.



Space saving: a central take-away conveyor for full containers could be installed inside the vertical sorter.

"Our goal is growth within controlled paths. The Interroll Crossbelt Sorter enables us to sort our goods in an economic fashion, both at peak times and during periods of modest throughputs and is flexible to the same degree that our customers require from us."

József Kondor, Logistics Manager, Jeans Club Kft., Budapest



INTERROLL AT ITS BEST

CENTER OF EXCELLENCE FOR MODULES AND SUBSYSTEMS

The Interroll Center of Excellence in **Sinsheim, Germany**, near Heidelberg, concentrates on subsystems and modules implemented at key internal logistics points. These include Crossbelt sorters, belt curves, roller conveyors and belt conveyors. In this product sector, the company is responsible within the global Interroll Group for all technical concerns ranging from development and application engineering to production and support for local Interroll companies and customers.

Opened in 2010, the **15,700 square-meter** (169,000 square feet) center is where the in-house design and manufacture of the entire product range takes place. This vertical integration allows us to control the quality of our products from A to Z and offer custom engineering support for our customers.

Crossbelt sorters, roller conveyor modules and other key products for material flow systems can be seen in the new customer center as demonstration systems. At our Interroll **test center**, customers can experience first-hand the testing of our custom-made destinations for new sorter projects.

Address:

Interroll Automation GmbH
Dietmar-Hopp-Str. 3
74899 Sinsheim
Germany

For the Asian and American markets, constant technology and know-how transfer takes place between the German "hub" and the **Regional Centers of Excellence** in Suzhou (near Shanghai, China) and Atlanta (Georgia, USA) to make sure the know-how gained from applications worldwide can benefit our customers' specific applications locally.

INTERROLL CROSSBELT SORTERS

A TRULY FUTURE-PROOF INVESTMENT

Long-term gain on short-term ROI

- Highly economical, with **efficient operation** even at lower throughputs
- **Low maintenance**, installation and training costs due to simple plug-and-play technology
- **Space and energy savings** thanks to compact design and highly efficient motors

Flexible and scalable for future growth

- High versatility guarantees accurate and safe handling of your **existing and future product mix**
- Adaptable, modular design allows **easy system extensions** or rearrangement of infeeds and destinations to increase system performance for future growth needs
- Pin-point accuracy for wide range of throughput rates assures **highest quality for your customer deliveries** even during demand peaks

Highest availability

- Highest availability and **productivity** due to proven mechanical design with electrical components deliberately kept to a minimum
- **Max uptime guaranteed** as fast installation and intervention are possible thanks to simple plug-and-play technology

Added value through independence

- As the market's only **independent supplier**, Interroll can tailor its offering to the requirements of any system integrator, worldwide
- Our **installation-friendly** sorters can easily be interfaced with and integrated into larger systems



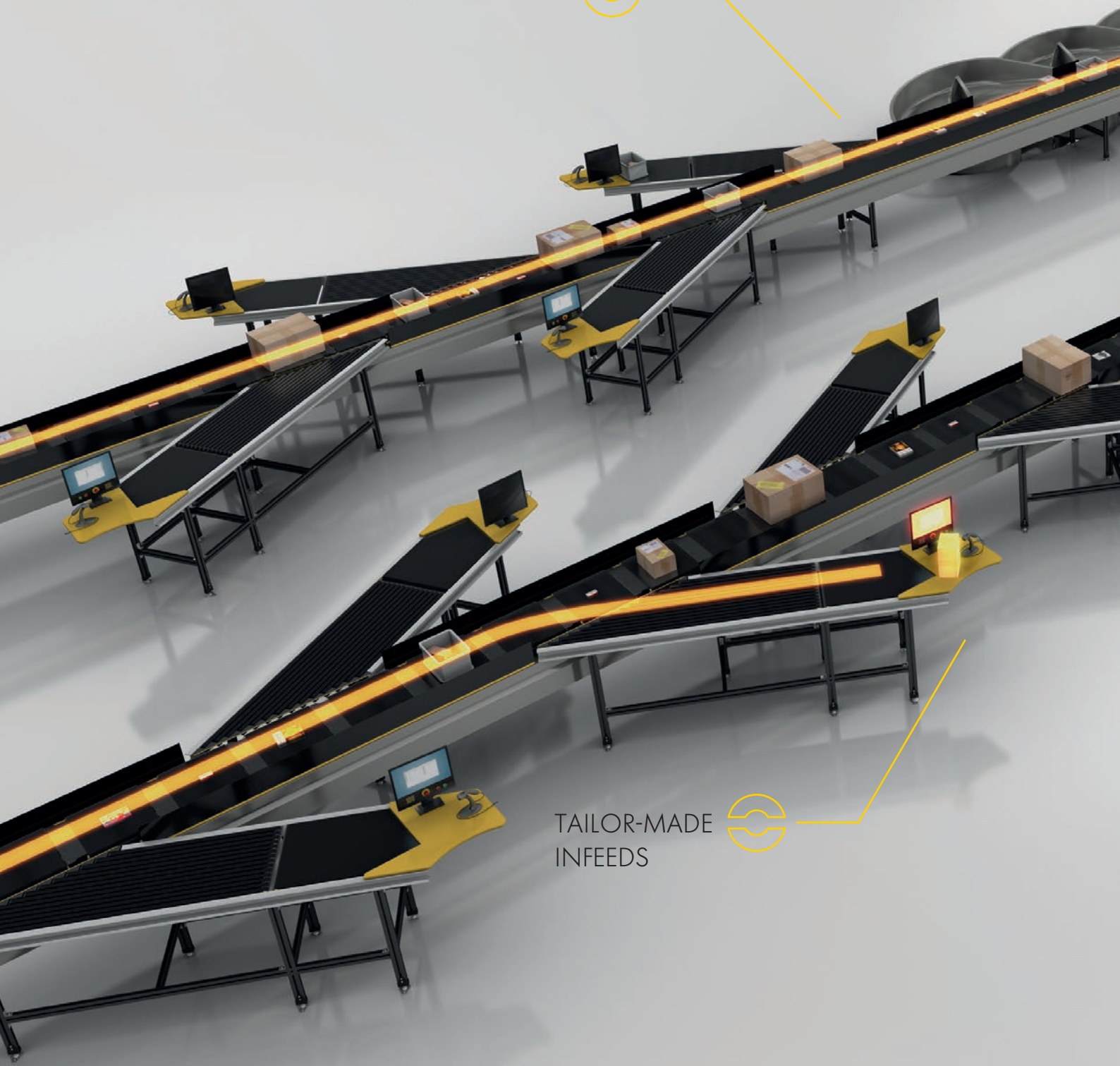
*"At Interroll we understand that sorting operations are often **mission-critical** for your business. Companies like Amazon, DHL, FedEx, Fiege or Zalando and the best postal companies around the globe rely on Interroll Crossbelt Sorters in their daily operations.*

*I am extremely proud of this track record and the way we have positioned ourselves on the market since the beginning. In fact, Interroll is the **only neutral provider** of sorters, a specialist with an open platform, able to interface and work with all types of software and ID systems, which is a true benefit for all end users. We learn from system integrators and our end customers but they also learn from us. In complex projects, the emphasis should always be on **trust!**"*

Paul Zumbühl,
Chief Executive Officer of Interroll Group

WE HELP YOU TAKE YOUR SORTING PROCESSES TO THE NEXT LEVEL

ROBUST CROSSBELT
CARRIERS FOR UNIT LOADS
UP TO 35 KG (77 LBS)



TAILOR-MADE
INFEEDES





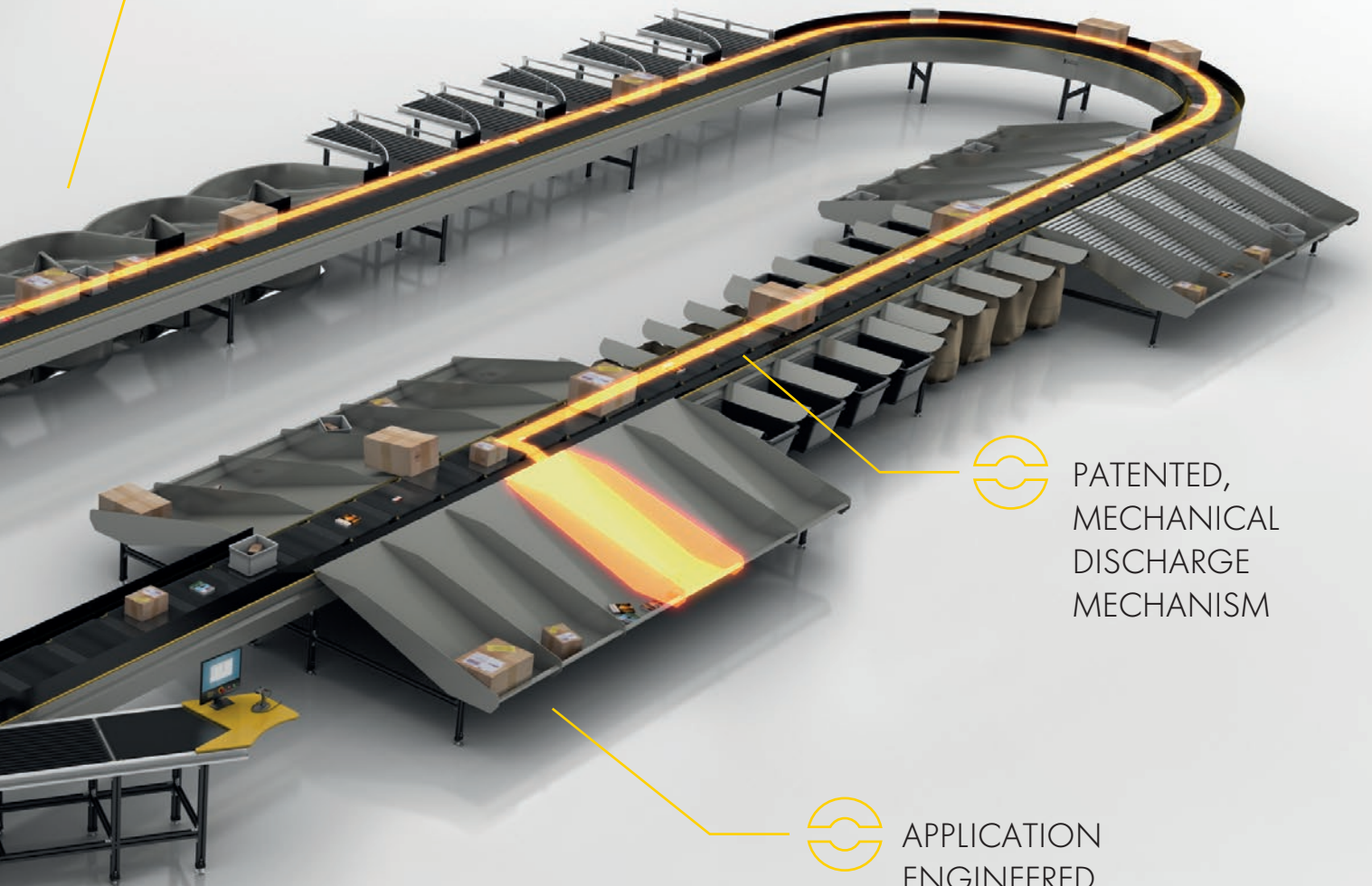
EFFICIENT OPERATION AT
LOW AND HIGH THROUGHPUT



PATENTED,
MECHANICAL
DISCHARGE
MECHANISM



APPLICATION
ENGINEERED
DESTINATIONS
FOR SAFE
HANDLING



Inspired by efficiency

Established in 1959 Interroll has grown to become the world's leading supplier of key products for internal logistics. Whether boxes, pallets or soft goods are to be handled, no other supplier has such a complete product range on offer. That is why worldwide system integrators, OEMs and operators select Interroll as their partner for their internal logistics business. The Interroll global network ensures quick delivery and superior service for every customer. We inspire our customers and provide opportunities for them to increase efficiency.

interroll.com

Interroll reserves the right to modify the technical characteristics of all its products at any time. Technical information, dimensions, data and characteristics are provided for reference only.

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