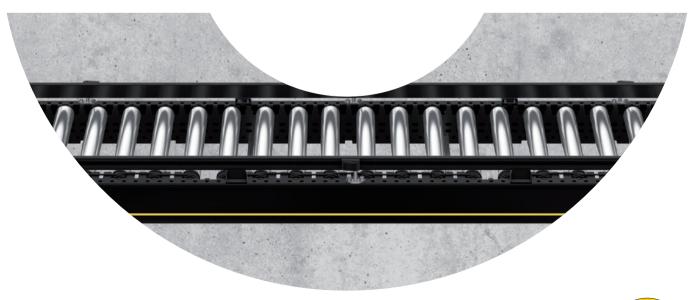
INTERROLL CONVEYOR MODULES

SMART, ECONOMICAL, FLEXIBLE







INDUSTRY 4.0: TALKIN' ABOUT A REVOLUTION

THE FOURTH INDUSTRIAL REVOLUTION HAS RECENTLY BEEN PROCLAIMED BY EXPERTS: IN AN INTERCONNECTED, INTELLIGENT WORLD WITH EVER FASTER DATA CONNECTIONS AND THE AVAILABILITY OF ALL RELEVANT INFORMATION IN REAL TIME, COMPANIES WILL CREATE TRULY SMART PRODUCTS. THE "INTERNET OF THINGS" IS, INCREASINGLY, A DAILY REALITY, AND THE COMPLEXITY OF LOGISTICS IS GROWING EXPONENTIALLY. MODULARITY IS THE NAME OF THE GAME.

Based on the internet, mobile communications and microcomputers, embedded cyber-physical systems (CPS) are being created and grow more intelligent every day. They will be at the heart of the **smart factory** where machines, warehousing systems and operating means are interconnected and exchange information among each other—globally.

In this context, with ever-growing complexity and unpredictable fluctuations in order structures, throughput levels and product mix, highly versatile logistics systems are paramount to continuously adapt to changing conditions.

Internet of services

Industry 4.0 as part of an interconnected, intelligent world is driving logistics and challenging the sector.

Internet of things

INCREASED COMPLEXITY CALLS FOR VERSATILE SYSTEMS

Just a couple of years ago, with the advent of Industry 4.0, we decided to take a different approach to product innovation in order to help our customers better deal with the new challenges.

We undertook an extensive customer survey among system integrators, OEMs, consultants and, ultimately, end users to better understand the benefits you are really looking for when making your project and investment decisions. One of the key findings was that when faced with changing conditions requiring adaptation of business processes, you consider scalability and flexibility as crucial.

These insights from the survey were the foundation for our new, holistic approach to product development with the result being an entirely new platform of conveyor modules that perfectly fit and play together, not unlike LEGO® bricks.

YOUR CHALLENGES

OUR SOLUTIONS

PROFITABLE GROWTH

Gaining market share while remaining profitable

Interroll's new-generation conveyor modules are the most versatile and durable systems available, assuring highest availability and scalability for future growth.



COST AND EFFICIENCY

Striving for shortest payback times and efficient supply chain processes Interroll's new conveyor modules offer cost and energy efficiency and are truly plug-and-play systems, with standardized elements for simple on-site installation and reduced planning effort.



CONTINUITY

Minimizing risk of delivery shortages with supplier

Interroll, as trusted partner of global brands like Procter & Gamble. Amazon, Coca-Cola, Walmart and Red Bull, assures global availability and an open platform as neutral supplier in the industry.



Learn more on pages 10-11

FUNCTIONAL DESIGN AND AESTHETICS:

Interroll's new conveyor platform offers a state-of-the-art industrial design, in terms of both functionality and aesthetics. All elements perfectly fit one another and reconfigurations become truly plug and play.



YOUR KEY SUCCESS FACTORS FOR EFFICIENT MATERIAL HANDLING:

FLEXIBILITY, AVAILABILITY, PERFORMANCE

On the following pages you will read why the modularity and the high performance of Interroll's new conveyor platform will help you be more competitive.

"With their new conveyor platform, Interroll has got it right: modularity and scalability all the way, with plug-and-play modules and standard components. We have been involved in the product development process at an early stage, giving us the possibility to actively contribute ideas and suggest improvements where needed."

Francis Meier, Managing Director Technology Center Swisslog AG, Buchs, Switzerland



Watch the video to learn about the benefits of Interroll's new conveyor platform.



increasingly smaller and more frequent shipments. Instead of full pallets of goods, they're asking for only a few cases, possibly in a "store-ready" format to reduce in-store labor for restocking shelves.

This trend to just-in-time (JIT) practices is further accelerated by the booming e-commerce sector, with constant double-digit growth rates around the world. Companies must deliver large volumes of small orders and cope with major variations in the order flow. In addition, large quantities of returned goods must be handled.

Focus on modular systems

The demand for shorter order cycles times forces manufacturers, distributors and warehouse operators to factor flexibility into their key business processes and, consequently, into their material handling (MH) systems purchases.

Oftentimes traditional MH systems, including conveyor systems, are perceived to be inflexible and unequipped to meet changing market conditions. Modular systems with largely standardized components and sections that can be moved, reconfigured, updated and combined with each other are therefore becoming increasingly appealing.



OUR SOLUTION:

EXTREMELY VERSATILE AND COST-EFFICIENT CONVEYOR TECHNOLOGY

FOR HIGHEST AVAILABILITY AND FAST ADAPTATION WHEN NEEDED

YOUR THREE KEY BENEFITS AT A GLANCE

FLEXIBILITY IN SYSTEM CONFIGURATIONS

Interroll's new generation of conveyor modules offers unprecedented versatility with straights, curves, merges and transfers that perfectly fit together. Depending on your needs, we offer "smart and fast" delivery of standard modules, "layouted solutions" and, in the case of application-engineered systems, "consulted projects". All these elements can be combined in a modular way so that system setup and installation consume minimal on-site intervention time.

SCALABLE, MODULAR DESIGN FOR EASY SYSTEM EXTENSIONS

When order structures, throughput requirements, or product mix suddenly change, the modular design of the entire new conveyor platform comes into play: System extensions or reconfigurations are possible without significant structural changes. Additional modules perfectly dovetail into the existing conveyor line, with minimal application engineering work required on-site. This assures scalability for your future growth and that your investment is truly future-proof.

HIGHEST SYSTEM AVAILABILITY

Mechanically designed through and through, with highly efficient motors and plug-and-play controls, Interroll's new generation of conveyor modules is synonymous with robustness and durability, guaranteeing highest availability in your production lines.



YOUR CHALLENGE: SECURE FAST ROLON YOUR CAPEX PROJECTS WHILE OPTMIZING OPERATING COSTS THROUGH LEAN PROCESSES

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.

Best-in-class Total Cost of Ownership

This is what the new Interroll conveyor platform represents. Based on our market experience and first-hand customer feedback, all our conveyor modules—from straights to curves and from merges to high-speed transfers—are designed to meet performance, cost and ease-of-use requirements.



of our customers confirm that Interroll is quality leader in conveyo modules.

Your benefit: best TCO balance for your next project with Interroll's



OUR SOLUTION:

ECONOMICAL PLUG-AND-PLAY SYSTEMS WITH CONSISTENT PLATFORM DESIGN

FOR REDUCED EFFORTS IN PLANNING AND INSTALLATION

YOUR THREE KEY BENEFITS AT A GLANCE

LONG-TERM GAIN ON SHORT-TERM ROI

We designed our new conveyor platform in a way to keep your TCO as low as possible. The use of standard components, highly efficient drive technology such as our 24VDC RollerDrives, and the lack of pneumatic actuators are only some of the reasons why our systems will provide you with **best-in-class payback times**.

REDUCED COMPLEXITY IN PLANNING PHASE AND FASTER PROJECT COMMISSIONING

Our pre-engineered solutions are based on high-quality components, which makes project planning easier and safer. The modularity of our platform allows us to offer **best-in-class delivery times**, a key factor when overall project commissioning times are squeezed. To trigger lean project planning, Interroll offers an easy-to-use software program, "Layouter", which allows our customers to virtually assemble Interroll modules tailored to the specific requirements of their plant layout.

LOWER OPERATING EXPENSES, THANKS TO HIGHLY EFFICIENT DRIVES

As pioneer in 24V drive technology in intralogistics, our RollerDrive is the most widely used drive for zero-pressure accumulation (ZPA) conveying. It's worth noting that, with a RollerDrive driven conveyor system, about **50 percent energy savings can be achieved** compared to a centrally driven concept. Furthermore, our belt conveyors are powered by compact, space-saving drum motors that offer significantly higher efficiency than conventional drives.



Ever shorter time windows

Globalization of the world economy, shorter innovation cycles and a high level of market transparency have turned logistics into a decisive success factor. As a result, **delivery times** often become mission-critical in intralogistics projects, and problems in the supply chain can mean lost business opportunities. In this context, reliable partners and suppliers of key products are essential to winning market share and keeping customers happy.

Open platforms vs. proprietary systems

Increased uncertainty around order structures and volumes as well as in the composition of the product mix call for versatile systems that can easily be adapted to changing demand. This often requires product platforms that are based on industry standards, thereby offering a certain level of interoperability. Product specialists and manufacturers with such open platforms are increasingly attractive to firms that need to assure highest system availability and continuity in case of problems.



of our customers confirm that Interroll is technology leader conveyor modules.

This means peace of mind for you in your next intralogistics projects

OUR SOLUTION:

INTERROLL AS STRONG AND NEUTRAL SUPPLIER WITH AN OPEN PLATFORM

FOR GLOBAL AVAILABILITY
AND PEACE OF MIND

YOUR THREE KEY BENEFITS AT A GLANCE

INTEROPERABILITY OF SYSTEMS DUE TO OPEN STANDARDS

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As a neutral supplier of conveyor modules since the very beginning, we have developed this new platform of key products (equipment and controls) for **system integrators and OEMs.** All Interroll products are designed on the basis of open standards, making interfaces with larger systems easy, from both hardware and software perspectives.

RELIABILITY PAIRED WITH GLOBAL AVAILABILITY

Interroll's broad product portfolio is designed and manufactured in a **global network** of Centers of Excellence, where each center concentrates on a specific product area and has worldwide responsibility for product management, R&D, production, as well as providing technical support for local production, assembly and service companies. With these, they guarantee the delivery of precisely pre-assembled, ready-to-install units with **shortest delivery** times as well as local planning support by **experienced application engineers.**

PEACE OF MIND DUE TO INTERROLL'S TRACK RECORD

The Interroll Group is one of the world's leading specialists in the field of internal logistics, with an unrivaled product range. As exchange-listed company, we are proud of our outstanding financial track record that gives our customers the certainty of reliable, high-quality deliveries all the time—for **any size of project**. Among our 23,000 customers, global brands like Amazon, Bosch, Coca-Cola, DHL, Procter & Gamble, Siemens and Walmart have our products in daily use.



AND ALL THAT MAKES IT SO UNIQUE

- **Highest throughput possible:** up to 2.5 m/s (8.2 ft/s) and 3,600 goods/hour (e.g., with High-Performance Divert)
- Best lead times
 for standard and custom systems plus
 local planning support by experienced application engineers
- 24V and 400V drive options for energy efficiency all the way
- Flexible side guides for seamless adaptation to different unit loads
- Roller clips for fast and easy maintenance and top mounting
- Versatile side profiles for simple and flexible installation and system extensions
- Electromechanical actuators instead of pneumatics, for efficient and low-noise operation
- **High-speed field bus**as open platform and future-proof control system

"Over the past years, energy efficiency has become a key aspect in all our intralogistics projects. With Interroll's cutting-edge 24V technology and innovative drive systems, we can provide our customers with tailored solutions that guarantee lowest operating and maintenance costs and exemplary low-noise operation. The modularity of Interroll's new conveyor platform will further enhance our product offering."

Hans-Georg Förster, Managing Director Förster & Krause GmbH, Remscheid, Germany

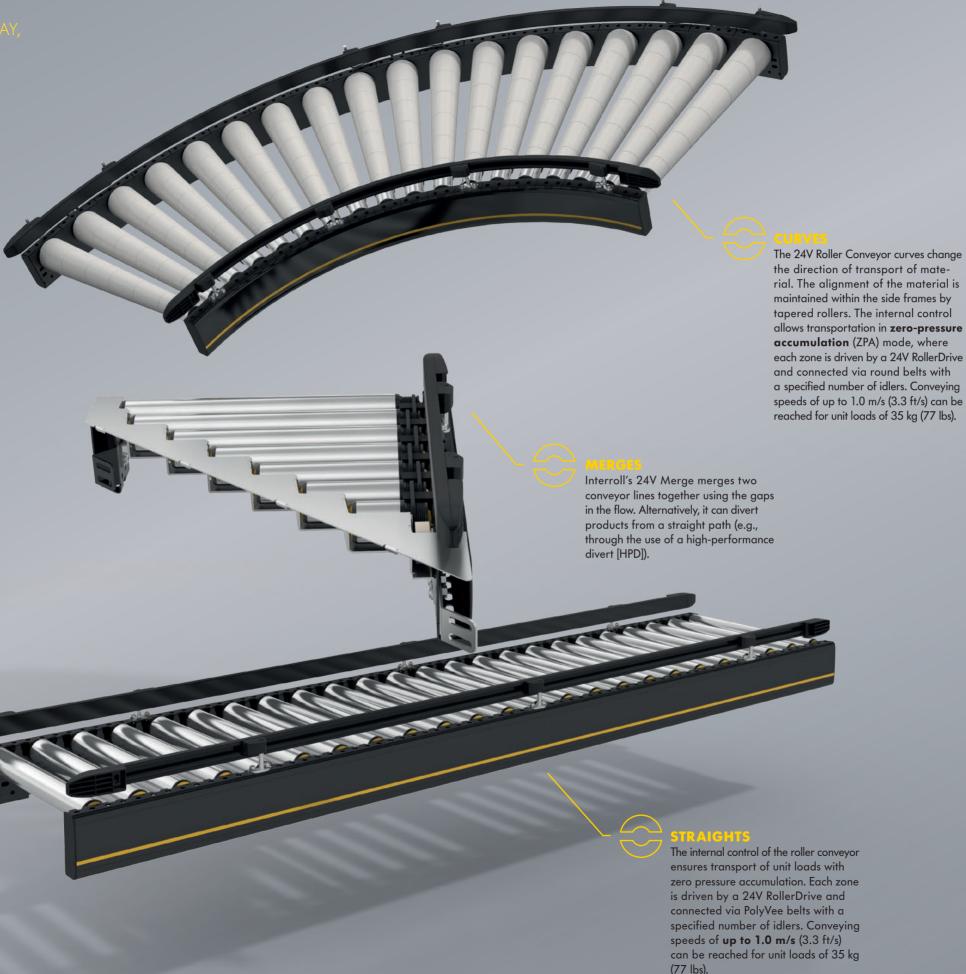
24V ROLLER CONVEYOR:

ENERGY EFFICIENCY ALL THE WAY WITHOUT PNEUMATICS

In a nutshell

The intelligent 24V Roller Conveyor family (straights, curves and merges) offers highest **energy efficiency** for unit-load handling (boxes, totes, crates, etc.). Its exemplary low-noise operation and maximum safety due to low voltage make this technology a key element for an improved working environment for your operators.

Note that all Interroll roller conveyor modules are also available as non-driven conveyors, where unit loads are moved by gravity or manually.



OUR CUSTOMERS CONFIRM:

EIGHTY-EIGHT PERCENT
OF ALL RESPONDENTS IN
OUR SURVEY CONFIRM
THAT ENERGY EFFICIENCY
IS KEY TO STAYING
COMPETITIVE

YOUR BENEFITS AT A GLANCE

Up to 50 percent energy savings

Highest energy-efficiency rates thanks to best-in-class 24V conveyor for ZPA operation.

Higher productivity and reduced operating costs

Instead of using pneumatics, Roller-Drives guarantee lowest operating costs and improved work environment thanks to exemplary low-noise operation (< 60dBA).

Workers' safety due to low voltage

The use of low-voltage drive systems, such as the award-winning 24V Roller-Drive from Interroll, reduces the risk of work-related injuries.

Reduced installation and maintenance time

Operator-friendly top mounting and fast replacement of rollers with simple mounting clip (no special tools needed). Even the RollerDrives can be easily replaced from the top thanks to an innovative fixing structure that comes as an option—a real advantage when conveyor lines are positioned close to each other.

We offer a complete portfolio of **key elements** (lifts, transfers, lift-up gates, etc.) and **accessories** (support stands, blade stops, etc.). Please see all product details on: www.interroll.com/conveyors

400V ROLLER CONVEYOR: HIGH PERFORMANCE IN TRANSPORT AND ZPA MODE

In a nutshell

The 400V Roller Conveyor is driven by a flat belt and delivers highest performance in transportation and ZPA modes. Compared to the 24V version, this conveyor is ideal where **higher throughput** levels are required and/or heavier unit loads are to be conveyed. Its modular design allows easy integration of key elements such as transfers and diverts with the possibility of sorting operations on the fly, (i.e., without stopping the product in the material flow). Straight, curve and divert/merge modules can be combined or used as stand-alone elements.

Note that all Interroll roller conveyor modules are also available as non-driven conveyors, where unit loads are moved by gravity or manually.





(e.g., through the High-Performance

Divert) or **infeeding** unit loads.

CURVES

The 400V Roller Conveyor curves change the direction of transport of material. Alignment of the material is maintained within the side frames by tapered rollers, driven by a **flat belt**. Curve elements of flat belt roller conveyors are always driven by the adjacent straight module.

OUR CUSTOMERS CONFIRM:

FUTURE TRANSPORT WEIGHTS
WILL INCREASINGLY LIE
WITHIN A RANGE OF
35 KG/M (3,038 LBS/IN) TO
50 KG/M (4,340 LBS/IN) AND
THROUGHPUTS GREATER
THAN 2,400 GOODS PER
HOUR ARE RELEVANT

YOUR BENEFITS AT A GLANCE

- High system flexibility
 Possibility to adapt from transportation
 mode to ZPA conveying through easy
 system retrofit.
- Shorter cycle time thanks to highest throughput
 Product conveying speeds of 2 m/s (6.6 ft/s) can be reached in transportation mode and sorting on the fly is possible to maximize system throughput.
- Time savings for installation and maintenance

Operator-friendly, top-mounting, fast and extremely easy replacement of rollers with simple mounting clip (no special tools needed).

We offer a complete portfolio of **key elements** (lifts, transfers, lift-up gates, etc.) and **accessories** (support stands, blade stops, etc.). Please see all product details on: www.interroll.com/conveyors

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BELT CONVEYORS:

In a nutshell

conveying of goods that are not suitable for roller conveyors and all kinds of unit loads where inclines and declines (up to 16°) need to be conquered. Powered by highly efficient, compact drum motors or, alternatively, by gear motors, this new family of belt conveyors is available in three standard widths and also comes as "light" versions, equipped with 24V drive technology, for transport and ZPA operation of unit loads with low weight.

The belt conveyor is used for horizontal

The Interroll Belt Curves feature a safe. positive drive concept and have been designed specifically for mixed materials with a wide variety of compositions. Their top-of-belt height is only 160 mm (5.9 in), with a noise emission of **less** than 64 dBA, making them one of the quietest belt curves on the market. The Belt Curve has an automatic belt tensioning device, a robust belt guide concept, and an especially light and rapidly replaced belt without removal of the motor.

The Interroll Belt Merge is a belt conveyor with angled connecting edge of 30° or 45°. It enables the merging of two conveyor lines according to a specific angle. With the use of supplementary sorting elements, belt merges also enable the separation of conveyor flows. The conveyor belts are available in widths of 90 mm (3.5 in) and 40 mm (1.6 in) for very small unit loads.

Available in different models-horizontal. inclines and declines ("nose-over" and "power feeder") —these belt conveyors feature an extremely low top-of-belt height, a real benefit where multi-level conveyor systems are installed. Designed for load capacities of up to 550 kg (1'213 lbs) per module, the new Interroll Belt Conveyor guarantees efficient operation for speeds of up to 2.5 m/s (8.2 ft/s), for unit loads of 50 kg (110 lbs).

OUR CUSTOMERS CONFIRM:

SIXTY-ONE PERCENT OF ALL RESPONDENTS IN OUR SURVEY CONFIRM INTERROLL'S SUPERIOR COMPETENCE IN BELT CONVEYOR AND **BELT CURVE TECHNOLOGY**

YOUR BENEFITS AT A GLANCE

- Reduced cycle time thanks to highest throughput Product throughput levels of up to 2.5 m/s (8.2 ft/s) can be reached in straights, inclines and curves.
- Highest availability Easy and fast replacement of belt from the top—no need to open the side profiles or dismantle support stands—ensures maximum uptime in day-to-day operation.
- Highest energy efficiency with 24V drive options Depending on to the conveying task,

the best combination of 400V and 24V belt conveyors can be chosen, thereby optimizing your operating costs. With Interroll Drum Motors and RollerDrives, you always have cutting-edge drive technology inside.

We offer a complete portfolio of **key** elements (lifts, transfers, lift-up gates, etc.) and accessories (support stands, blade stops, etc.). Please see all product details on: www.interroll.com/conveyors

KEY ELEMENTS FOR SORTING:

TRULY PLUG AND PLAY FOR SORTATION ON THE FLY

In a nutshell

Key sorting elements such as transfers, diverts, lifts, stops, etc., are designed for the modular expansion and connection of conveyor lines. All elements can be combined with belt and roller conveyors and realize basic conveying functions such as stopping, distributing, lifting and lowering unit loads. They are often critical in system layout planning as their sorting performance can have a significant impact on the overall system throughput.





HIGH-PERFORMANCE DIVERT

The new High-Performance Divert (HPD) is used for discharge of unit loads preferably having a smooth surface at different angles, to the right or the left in a lateral conveyor line. When discharging at a 90° angle, the product maintains its orientation depending on the operating mode or can be turned by 90°. HPD does not interrupt the material flow and therefore is suitable for high throughput.

The HPD is a **stand-alone cassette** which always has a length of 120 mm (4.7 in) (2 roller rows) and the width of the conveyor into which it is installed. Several cassettes can be sequentially arranged, according to the requirements of the respective conveying task.

The HPD is available in **three drive variants**: HPD 24V Master (with 24V drives), HPD 400V Master (a combined 400V and 24V drive system) and HPD Slave, without proper drive unit.

Fast system reconfigurations possible HPD cassettes and belt transfer

HPD cassettes and belt transfer modules can be added or repositioned inside the conveyor lines in an extremely simple and fast way, with minimal downtime.

OUR CUSTOMERS CONFIRM:

FLEXIBLE SOLUTIONS FOR PLANNING, DESIGN AND INSTALLATION ARE AMONG THE MOST IMPORTANT PURCHASE DECISION CRITERIA.

YOUR BENEFITS AT A GLANCE

Maximum system throughput

Throughput levels of up to 3,600 pieces

per hour in on-the-fly mode ensures

that transfer and divert points don't

become significant bottlenecks in your

thanks to highest sorting

performance on the fly

conveying line.

Best energy efficiency due to master-slave concept

Multiple HPD cassettes without proper drive unit (slave version) can be driven by one single drive thereby reducing investment and operating costs.

Highest availability

Mechanically designed as true plug-and-play elements, maintenance and on-site interventions require significantly less time than alternative systems, your guarantee for highest system availability.

24V TRANSFERS

The 24V Transfer performs sorting operations (i.e., infeeding into and discharging of unit loads from a roller conveyor at an angle of 90°). Direction and orientation of the flow of goods are changed, meaning that long-way transportation becomes cross-way or the other way around. **Toothed belts** are raised by Interroll RollerDrives and the transfer itself can be incorporated at any position of the conveyor line and subsequently easily repositioned.

We offer a complete portfolio of **accessories** (support stands, blade stops, etc.). Please see all product details on:
www.interroll.com/conveyors



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 roller conveyors and belt conveyors, belt curves and Crossbelt sorters. 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.

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.

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.

Conveyor modules, Crossbelt sorters 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 firsthand the testing of our custommade configurations for new projects.

"With their new conveyor platform, Interroll has got it right: modularity and scalability all the way, with plug-and-play modules and standard components. We have been involved in the product development process at an early stage, giving us the possibility to actively contribute ideas and suggest improvements where needed.

At Swisslog, we really appreciate this new product development approach, where Interroll reaches out to customers for insights, ready to accept suggestions and alternative ideas. We are certain that we can reap the benefits of this new conveyor platform in our upcoming intralogistics projects."

Francis Meier, **Managing Director Technology Center** Swisslog AG, Buchs, Switzerland

INTERROLL CONVEYOR MODULES:

A TRULY FUTURE-PROOF INVESTMENT

Modular and scalable for future growth

- Flexibility in system configurations guarantees accurate and safe handling of your existing and future product mix.
- Modular design allows easy system extensions or rearrangements of conveyors to increase system performance for future growth needs.
- Best-in-class lead times guarantee fast commissioning in tight project schedules.

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
- · Local support in project planning by experienced application engineers

Highest system availability

- Highest performance due to proven, high-quality components
- Best productivity due to improved working environment and operator safety due to exemplary low-noise operation and low voltage 24V drives
- Maximum uptime guaranteed as fast installation and intervention are possible thanks to simple plug-and-play technology

Added value through independence and stability

- Interoperability of systems due to open standards
- As a truly **independent supplier**, Interroll can tailor its offering to the requirements of any system integrator, worldwide.
- Peace of mind due to Interroll's proven track record and global availability

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

