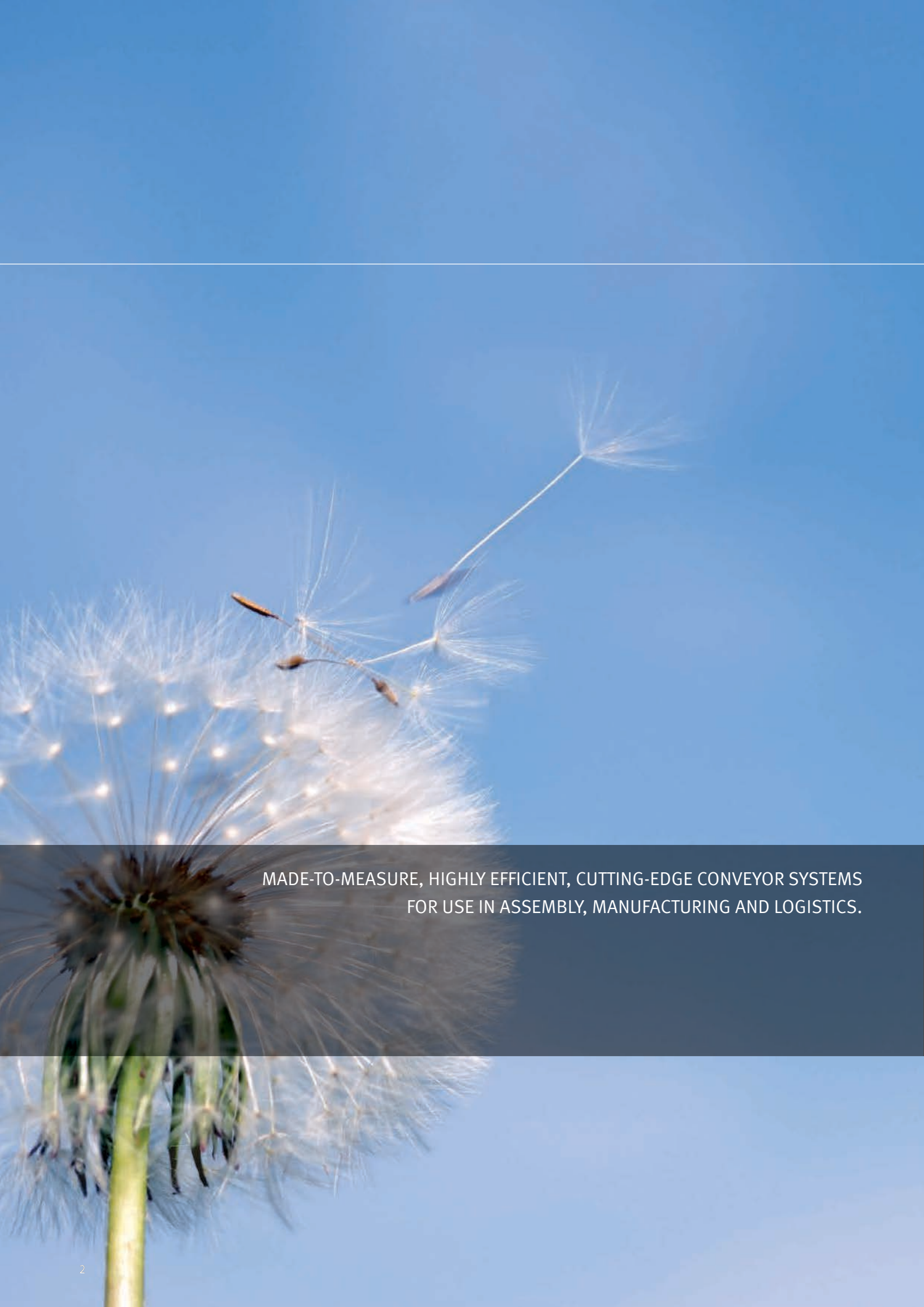
EISENMANN

CONVEYOR SYSTEMS



MADE-TO-MEASURE, HIGHLY EFFICIENT, CUTTING-EDGE CONVEYOR SYSTEMS
FOR USE IN ASSEMBLY, MANUFACTURING AND LOGISTICS.

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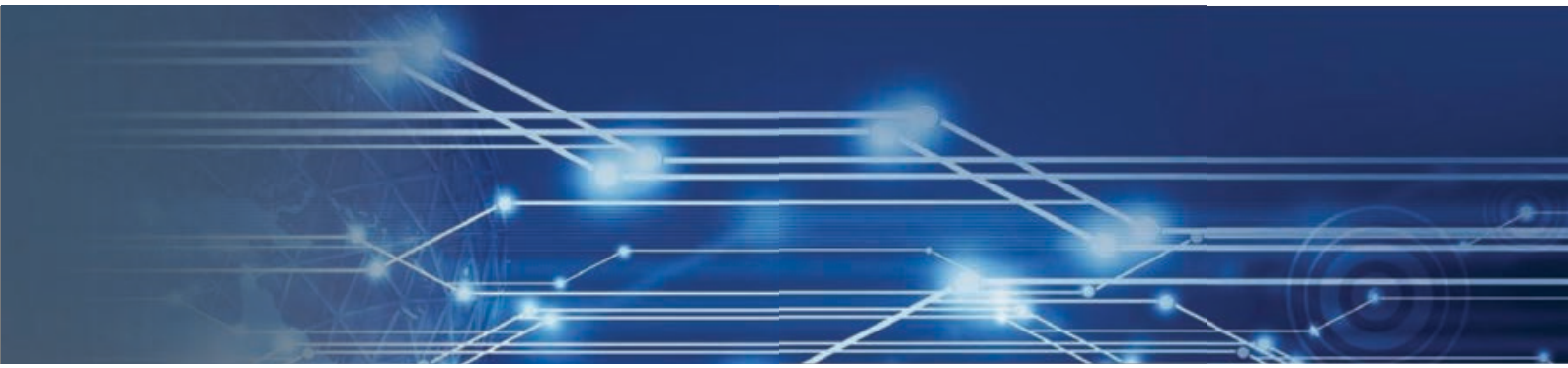


CONVEYOR SYSTEMS

The Conveyor Systems business unit offers solutions that are tailored to any material flow needs. Our portfolio comprises the latest in conveyor technology, including electrified monorail systems (EMS), inverted EMS, and integrated solutions for manufacturing, assembly, warehousing and shipping.

Our products have been shaped by the knowledge and experience gained in a host of successful projects in diverse industries across the globe. These include all areas of automotive production, food and beverage manufacturing, retail and engineering, in addition to logistics service providers and the printing industry.

We are your one-stop source of integrated logistics solutions. We provide all services, including design, planning, construction and the integration of building systems.

Turning proven technology on its head: the inverted EMS from Eisenmann.

Both the EMS and the inverted EMS are highly intelligent and flexible automated solutions.

EISENMANN – WHAT WE DO

Our product portfolio

- EMS
- Inverted EMS
- Intralogistics solutions
- Pallet conveyors

Our service portfolio

- Consultancy and planning
- Simulation
- Customer-specific product and system development
- Conveyor systems design and manufacture
- Component assembly and system testing
- Assembly and commissioning of all mechanical parts and control components
- User training
- Maintenance and global services

Whatever your material flow requirements, Eisenmann can create a tailor-made solution: our portfolio comprises the latest in conveyor technology and integrated systems for manufacturing, assembly, warehousing and logistics processes.

Electrified monorail systems enable efficient order picking for both man-to-goods and goods-to-man processes.

With pick-to-light systems, we have taken a significant step towards zero-error processes for our customers.

INTRALOGISTICS SOLUTIONS

When it comes to intralogistics, it is crucial to strike the right balance between automation and manual activities. What's more, organization, processes and IT solutions all play a decisive role.

When selecting systems for material flow automation, we do not simply consider our own products: we also integrate other suitable technologies. As part of the planning process, we perform all coordination tasks, presenting a turnkey solution to the customer.

Our systems in operation
Increasingly, Eisenmann is becoming involved in projects in a very early stage of planning. We work hand-in-glove with customers to design tailor-made systems long before a RFT has been announced. In the majority of cases, we provide planning services directly to the end customer, but we can also collaborate with intermediaries. Our focus is material flow automation. Once the project scope and requirements are known or have been defined in consultation with the customer, we can begin analyzing the proposed logistical processes.

Our skillset
Drawing on our extensive intralogistics experience and comprehensive portfolio, we develop made-to-measure solutions that meet our customer's needs at every point. Our reference projects feature intelligent, innovative solutions in a wide range of applications. We would be happy to support you during the planning and analysis of your intralogistics solutions.

EMS-assisted order picking in Europe's largest logistics center.

Simulation as a planning tool
From the very initial project planning phase, we begin simulating our systems, applying increasing levels of detail. Simulation enables us to visualize material flow, and supports the development of sophisticated material-flow solutions and strategies. What's more, they help us to confirm the effectiveness of system layout, for example by identifying bottlenecks. Simulations also generate insights such as potential hourly

System simulations guarantee the best-possible material flow.

throughput, the quantity of trolleys required, the configuration of buffers and holding areas, and the utilization of conveyor components.

Picking with the electrified monorail
Demand for electrified monorail systems (EMS) is on the rise in retail. It is being driven by the need for quick, efficient logistics processes and high-speed order picking. Rapid, reliable conveyors such as Eisenmann's EMS are ideal for these applications. EMS systems operate using pick-to-light technology. In the example shown here, 272 trolleys travel along a total of 3,500 m of EMS track in the largest logistics center in Europe. The EMS controls 384 picking positions in 48 bays, where picked items are transferred directly onto pallets ready for shipping.

Food and beverage industry, warehousing
Efficient intralogistics solutions are key to the food and beverage industry, and warehousing. This is particularly true when sensitive goods need to be in the right place at the right time without a drop in throughput.

For a brewery, Eisenmann created a customer-specific logistics center featuring the EMS. EMS manages material flow between filling systems, storage areas and picking positions, before products are loaded onto trucks for distribution. The system has 78 trolleys, and an hourly throughput of around 400 pallets. Moreover, the entire system is controlled by Eisenmann's material flow control module.

Custom solutions
If off-the-shelf systems do not meet your intralogistics requirements, Eisenmann can help. We have experience of implementing custom systems in a variety of industries. We are motivated by new tasks and challenges, and would be delighted to find a solution to meet your material flow needs.

Our customer references include a number of custom systems that we have successfully completed for customers the world over. In recent years, we have developed an EMS for assembling solar panels in the Californian desert and an in-floor chain conveyor for kitchen furniture with a total length of 4.2 km. We also provided automated systems for use in cash centers worldwide.

ELECTRIFIED MONORAIL SYSTEMS

The electrified monorail system (EMS) has been tried and tested in a range of industry applications. The EMS is suited to a variety of uses in logistics, for the fast and flexible movement of pallets, mesh boxes and loading units – and is also ideal for assembly and manufacturing tasks.

Eisenmann's EMS is a rail-mounted overhead conveyor featuring individually driven and controllable trolleys that travel independently on a rail. Junctions are made possible by switches on the rail.

Bus bars on the rail are generally employed to deliver power and control signals to the trolleys. Rails are either attached to the building ceiling, or to free-standing or suspended steel structures. The EMS is particularly suited to conveying over large distances or linking a number of buildings. It conveys goods automatically, efficiently and reliably – ensuring that they reach their destination in the shortest-possible time.

The EMS is ideal for complex high-throughput systems such as those in high-bay warehouse staging areas. We develop customer-specific hangers and conveyors to meet customer-specific needs. In suitable cases, we can implement our Twin Shuttle. The Twin Shuttle system carries two pallets per hanger and enables a significant increase in throughput. It also offers enhanced flexibility in layout design – which is particularly useful where space is at a premium.

The Twin Shuttle maximizes throughput, requires minimum space, and offers greater layout flexibility.

Continuous conveying across multiple levels

A climbing EMS is ideal for linking multiple building levels. Loads are conveyed to the next level continuously, meaning that throughput is not affected. This solution boasts lower capital investment, and lower operating and maintenance costs compared with systems with lifting stations.

The EMS is a fast, intelligent conveyor that enables high throughput – making it popular with beverage manufacturers.

Our systems in operation
Electrified monorails can be easily tailored to a customer's unique requirements. As a result, they are employed in a wide variety of industries.

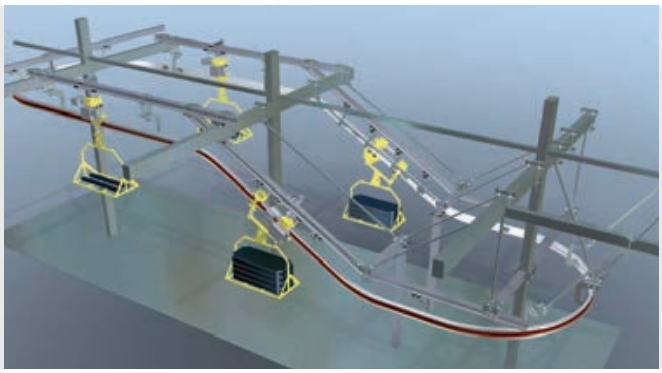
Food and beverage industry
Beside numerous food manufacturers, brewers are increasingly turning to EMS to streamline their intralogistics processes. In particular, this entails moving pallets of empties to high-performance filling systems, and handling pallets of filled bottles, cans, etc. destined for the warehouse, order picking or shipping. These systems are of exceptionally high capacity, and are capable of safely and reliably moving fragile goods.

Warehousing
Increasingly, large warehouses are being established between manufacturing and shipping areas. This enables timely delivery and better utilization of manufacturing capacity. EMS are frequently used to link the various areas as they can span large distances in conjunction with high throughput.

Package and postal
Parcels and packages are often stored and transported in containers. The patented VarioTow combines rolling containers or pallet trucks with a high-tech EMS. This creates fast, efficient and intelligently organized material flows – particularly suitable for rapid conveying, branching and sorting, and for moving items over long distances.

Catering
The catering sector is making increasing use of automation technology. EMS systems can be leveraged to automate many catering tasks. For example, meal carts can be loaded onto EMS hangers; special turning devices provide access from all sides, and the carts can even be washed automatically.

Manufacturing
Manufacturing tasks are becoming increasingly complex and varied. And many processes need to be performed at high speed. Thanks to customizable trolleys and flexible, low-noise operation, the EMS is ideal for these applications. The trolleys and hangers can be tailored to specific types of loads, and easily adapted to special challenges, such as workpiece lifting and turning.



Eisenmann's climbing EMS are highly efficient and operate more cost-effectively than conventional solutions.

Smooth conveying of fragile goods along gradients of up to 45°.

SMART TECHNOLOGY FROM START TO FINISH

Robust and maintenance-friendly
Eisenmann's electrified monorail systems are engineered for robustness, and feature components of ideal dimensions. They are designed in 3D using leading-edge CAD software.

Our continuous improvement process is supported by an in-house test circuit and insights gained from our BOT (Build, Operate, Transfer) and full-service projects. The rail system features integrated diagnostics. This technology continuously monitors wear on the carbon brushes, significantly reducing the need for repairs. The trolleys pass through a monitoring station integrated into the main section. If defects are detected, the trolleys are automatically discharged into the maintenance zone where they can be serviced or repaired without disrupting operations. Should a drive fail, it is decoupled, allowing it to be pushed to the maintenance loop. Thanks to preventive maintenance, system availability typically exceeds 99 percent.

Suitable for floor mounting
If an overhead conveyor cannot be installed, we can design and build an inverted electrified monorail or floor-track system. The floor-mounted version is constructed using the same elements as an overhead monorail. Two different switching systems are available, depending on the building and throughput requirements:

Trolley controllers
In 2001, Eisenmann introduced company-designed trolley controllers with an open architecture. These have been continuously evolved and refined since then. A digital display with a membrane keyboard on each controller and a special infrared remote control device enable user-friendly diagnostics and manual operation. The entire system is comprised of commercially available components. Modifications to the system – both software and hardware – can be made by customers themselves.

Smart system controller
Eisenmann's smart system controller is capable of handling highly complex material flows. When material flows vary in the course of the day and require sophisticated trolley management strategies, the stationary control system can be assisted by an Eisenmann material flow controller (MFC).

Close-up of Twin Shuttle trolley with Eisenmann controller.

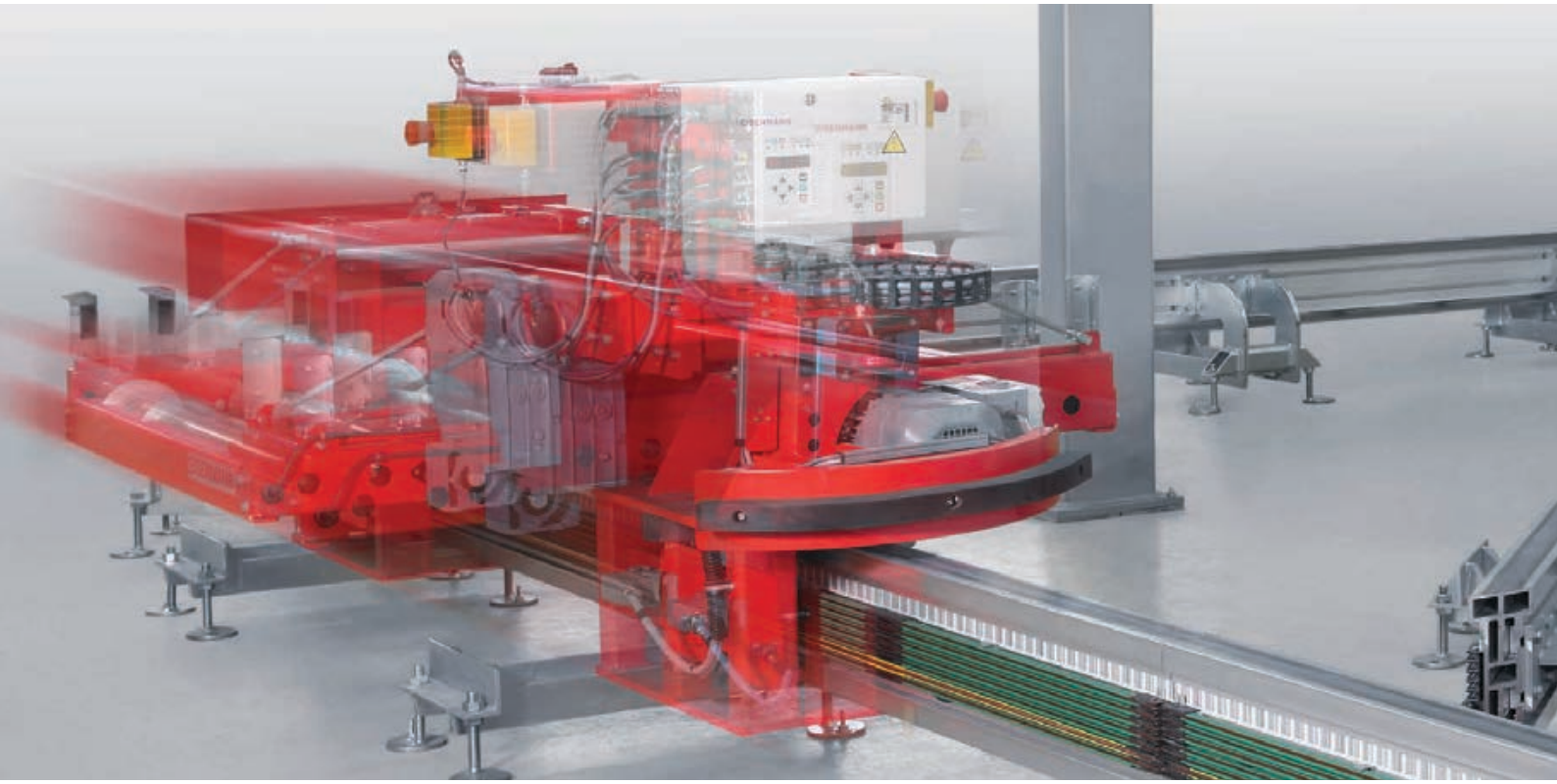
The central material flow control system automatically sets speed reductions when operating under low loads, and parks trolleys that are not required. These operating modes reduce energy consumption and significantly decrease wear on the equipment.

Eisenmann's central EMS controller can be used in place of a PLC and a material flow control unit. An industrial-strength PC installed in an enclosure not only controls material flow but also analyzes digital inputs and sets outputs. This enables powerful functionality to be integrated at the subordinate control level. The software in the stationary controller is compatible with the software in the mobile controller.

Permanent data communications
Thanks to ongoing data communications via a CAN bus, the system is highly responsive. Material flow strategies can be modified on the fly. Bidirectional data communications enable comprehensive trolley diagnostics. Programs and parameters are downloaded from a central point of control via the CAN bus. Absolute position tracking via barcode strips or steel code rails enables the definition of layout-specific speed adjustments, and delivers high positioning accuracy in the trolley's direction of travel at load transfer points.

Control panel of the EMS for order picking.

INVERTED ELECTRIFIED MONORAIL & ELECTRIFIED FLOOR TRACK SYSTEMS



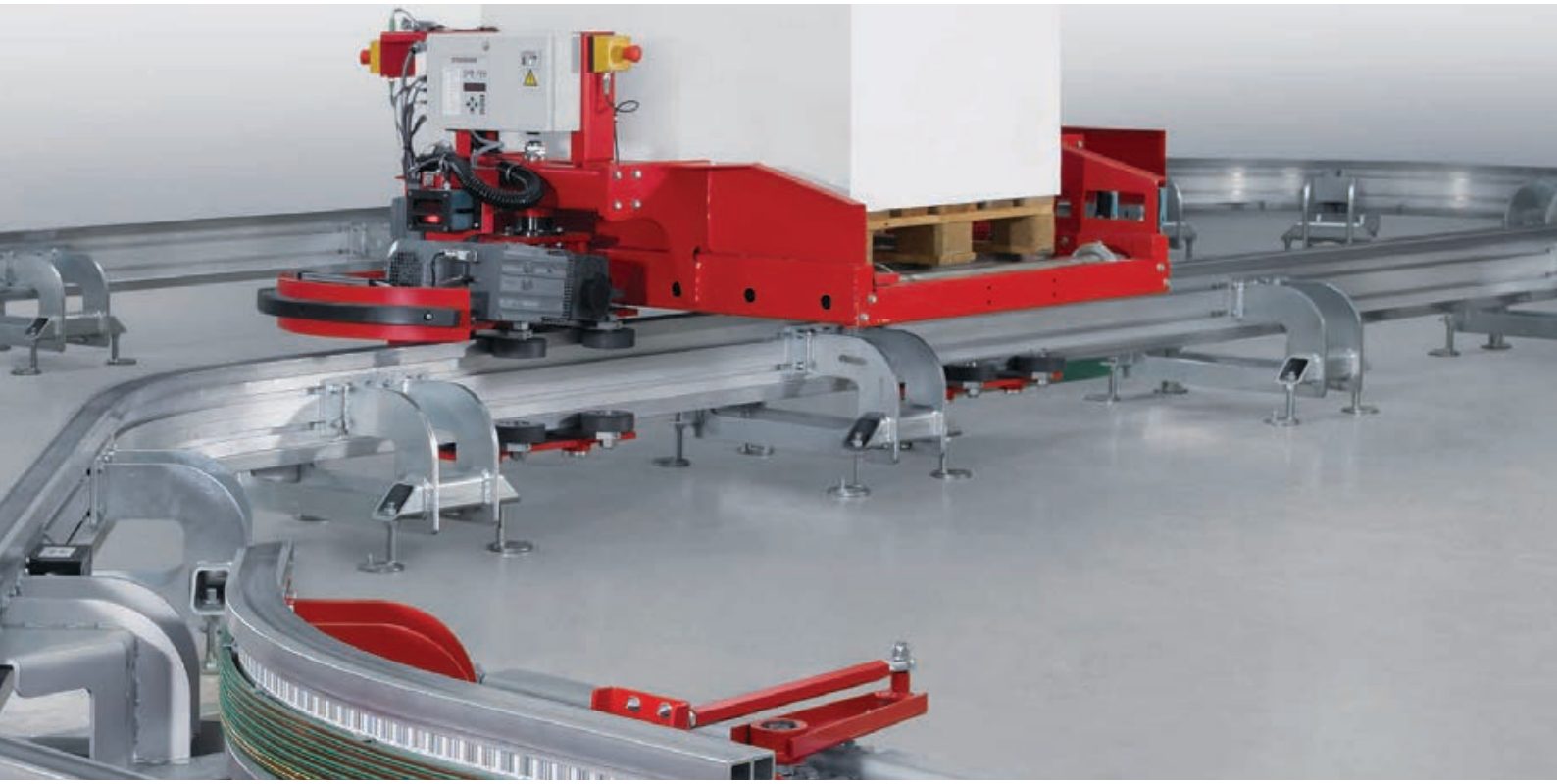
Like the electrified monorail system, the inverted EMS (IEMS) trolleys are fully automated and complete their tasks autonomously. We tailor the floor-mounted systems and load carriers to your specific challenges. Either IEMS or electrified floor track systems can be implemented, depending on available space, loads and throughputs. The electrified floor track systems can convey other load carriers in addition to pallets.

The IEMS is one of the latest additions to our range. Thanks to its intelligent switching system, this new solution enables highly efficient floor based material flow automation, with the same flexibility as the overhead conveyors. At the same time, its low-profile design enables low transfer heights and installation in buildings with low ceilings.

The rail-based inverted electrified conveyor is an ideal alternative to conventional pallet conveyors and can be deployed for any floor-level material handling tasks. Thanks to its sophisticated switching technology, the floor-mounted conveyor system is capable of branching in any direction.

Each trolley has its own drive and its own control unit. This control unit manages all movements.

Our systems in operation
Floor-mounted conveyor systems can be easily tailored to customers' specific needs. As a result, they are suitable for a wide variety of applications.



Beverage industry logistics
IEMS are becoming increasingly popular in the beverage industry. Beverage logistics essentially involves conveying empty pallets to the high-performance filling machines, and moving the pallets loaded with full bottles and cans to the warehouse, to order picking and shipping areas. The floor-mounted conveyor system ensures smooth and safe transport of fragile goods at high throughput.

Warehousing
Large warehouses are key to ensuring timely delivery and full utilization of production capacity. They require efficient and intelligent warehouse logistics, and IEMS are the ideal solution.

Manufacturing
Manufacturing tasks are both varied and complex. To perform these tasks at high speed calls for sophisticated assembly platforms. Eisenmann IEMS trolleys are extremely flexible, making them perfect for these applications.

MADE-TO-MEASURE SOLUTIONS.

PALLET CONVEYOR SYSTEMS

Pallet conveyor systems
Our pallet conveyor systems ensure the efficient handling of goods. All load carriers, whether a mesh box or a pallet, are conveyed smoothly to the correct destination.

Our product portfolio
- Roller conveyors
- Chain conveyors
- Skid conveyors
- Turntables
- Transfer shuttles
- Elevators
- Lifting tables and lifting units

Custom solutions
In addition to systems for pallets, we offer custom solutions for special load carriers. These support automated handling of
- containers, mesh boxes, trays
- automatic stretch wrap machines
- gantry robots
- and much more.

Eisenmann robotic palletizer.

Stretch wrapper with feed roller conveyor.

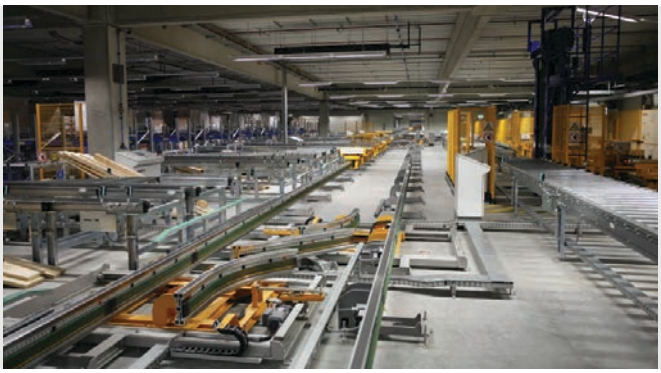
Automated handling of roller containers with our floor-based conveyor system.

IEMS & EMS – PFENNING LOGISTICS, GERMANY

Technical data	
Construction year	2013
Type	Inverted EMS (IEMS) and order-picking EMS
Equipment supplied	EMS for order picking, 700 m, 25 hangers; IEMS, 1,100 m, 50 hangers; Pallet conveyor, 1,300 m, Material flow control system
Throughput	850 pallets/h (total)
Load	1,000 kg

In addition to pallets, the EMS trolley also has space for cardboard boxes, plastic wrapping and empty pallets.

Smart solution: the IEMS conserves resources and reduces costs as there is no need for a steel structure.



High-bay warehouse staging area with “fast lane”.

EMS TWIN SHUTTLE – SPENDRUPS, SWEDEN

Technical data	
Construction year	2012
Type	Electrified monorail system Twin Shuttle
Equipment supplied	EMS 700 m, 9 switches, 35 trolleys
Throughput	835 pallets/h (total)
Load	2 x 1,000 kg

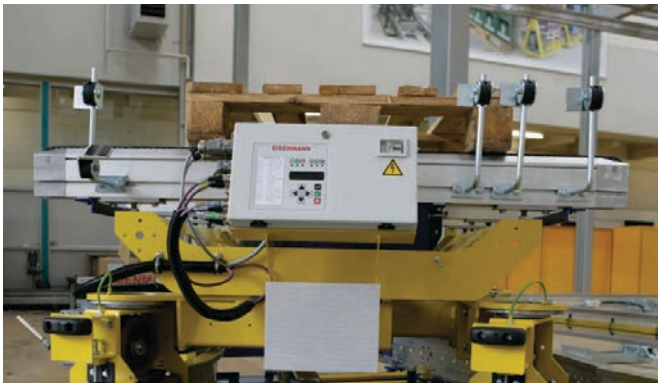
High throughput thanks to parallel pallet transfer.

Improving efficiency at the double.

EFTS – PASTA ZARA, ITALY

Technical data	
Construction year	2012
Type	Electrified floor track system (EFTS)
Equipment supplied	EFTS 400 m, 4 switches, 26 trolleys
Throughput	320 pallets/h (total)
Load	1,250 kg

Sophisticated switching technology allows trolleys to be directed to branches without braking or stopping.



All key trolley components are easily accessible.

Compact trolley dimensions allow high throughput even in confined spaces.

EMS FOR CATERING – NDIA, QATAR

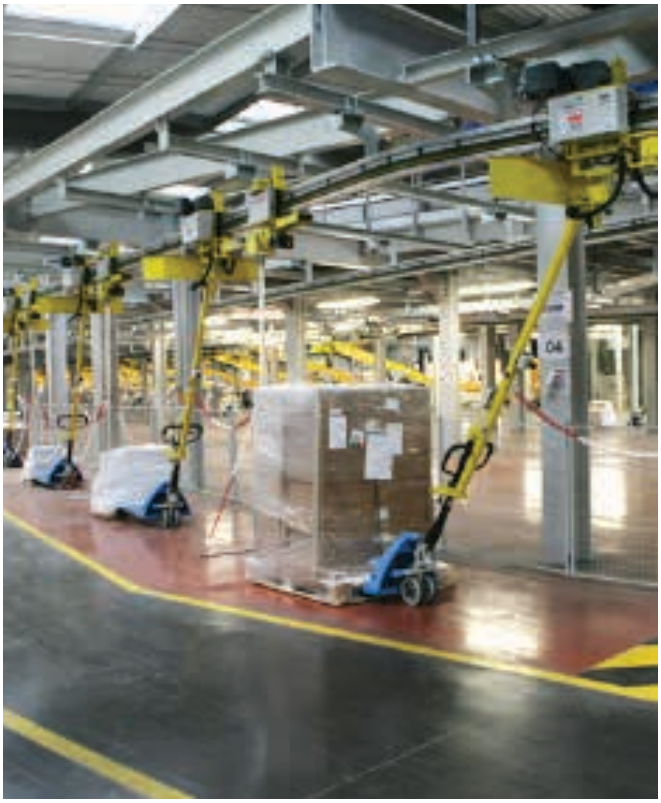
Technical data	
Construction year	2012
Type	Electrified monorail system (EMS)
Equipment supplied	Total length 1,400 m, 130 EMS trolleys with stainless steel hangers, 80 2-way switches, 11 lifting stations, 9 rotary switches, 8 short lifting stations
Throughput	270 trolleys/h
Load	500 kg

Turning stations at workstations enable direct access on both sides of the hanger.

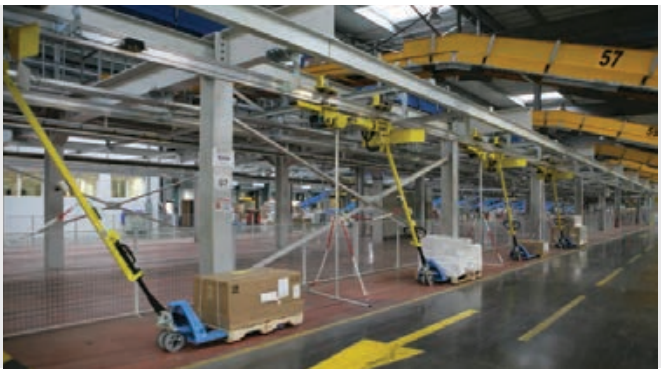
Plug-in trolley components are easy to replace.

VARIOTOW EMS – GEODIS, FRANCE

Technical data	
Construction year	2008
Type	VarioTow electrified monorail system (Vario Tow EMS)
Equipment supplied	120 trolleys for towing pallet trucks, 2,400 m total length, 57 switches
Throughput	970 pallets/h (total)



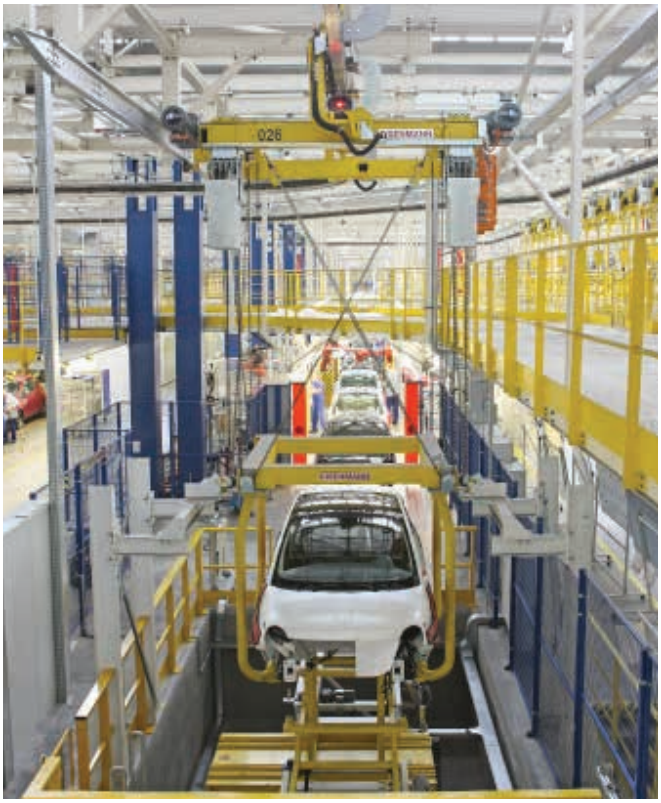
The VarioTow EMS combines the high performance EMS system with conventional pallet trucks.



Safety devices protect passenger and pallet truck traffic within the bounds of the EMS.

EMS – FIAT, POLAND

Technical data	
Construction year	2009
Type	Electrified monorail systems (3 types)
Type 1	**EMS for car bodies**
Equipment supplied	with 3 switches and 765 m total length, 80 trolleys with chain lift hangers
Throughput	62 car bodies/h
Load	1,100 kg
Type 2	**EMS for seats**
Equipment supplied	using 3 switches and 350 m total length, 25 trolleys with fixture for seats (in pairs)
Throughput	62 seats/h
Load	80 kg
Type 3	**EMS for engines**
Equipment supplied	using 1 switch and 28 m total length, 105 trolleys with fixture for engines, transport to marriage station
Throughput	62 engines/h
Load	150 kg



The chain lift provides flexibility in lifting and lowering of car bodies at workstations.

Thanks to its compact design, the chain lift is the ideal choice where ceilings are low.

Seats en route to the final assembly line.

EMS – TESCO TEESSIDE, UNITED KINGDOM

Technical data	
Construction year	2011
Type	Electrified monorail system (EMS)
Equipment supplied	2,000 m electrified monorail, 95 trolleys with 2-strand chain conveyor
Throughput	752 pallets/h (total)
Load	1,250 kg

Uptime of 7 days a week thanks to sophisticated smart technology.

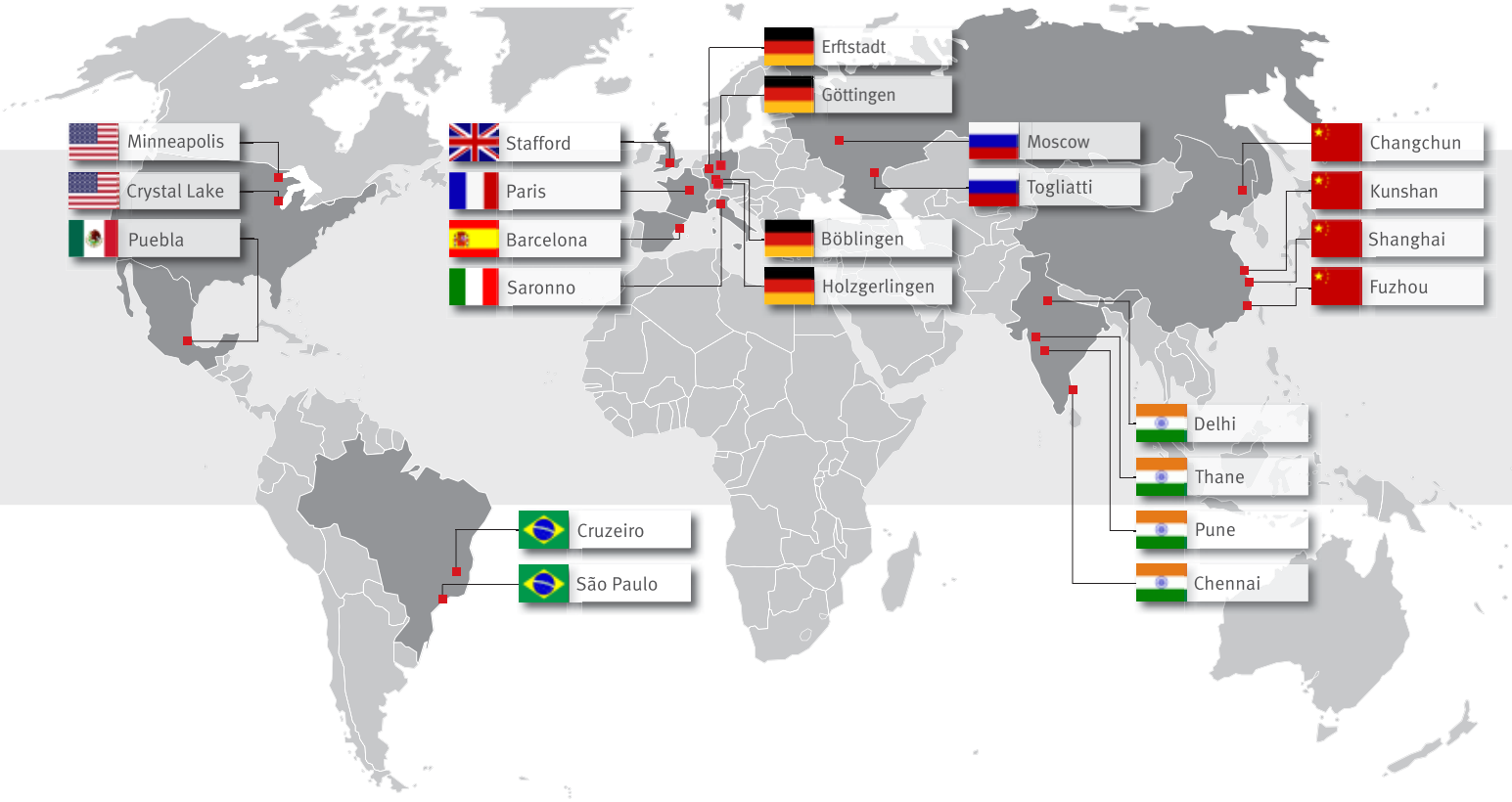
THIS IS EISENMANN

Eisenmann is a leading global industrial solutions provider for surface finishing, material flow automation, environmental engineering and thermal process technology. The company develops and builds custom manufacturing, assembly and logistics plants that are highly flexible, energy- and resource-efficient. The family-run enterprise is headquartered in southern Germany and has been advising customers across the globe for over 60 years. Today, Eisenmann has a workforce of approximately 3,800 worldwide, with subsidiaries in Europe, the Americas and the BRIC countries.

Specialist engineers and technical staff comprise around half of the workforce. Thanks to their in-depth understanding of process engineering, they are able to develop plant configurations precisely tailored to each application. Prior to shipping, the systems are fully assembled and thoroughly tested at our dedicated Technology Center, ensuring problem-free installation and rapid commissioning at the customer site.

Ground-breaking technology, high customer satisfaction and outstanding cost-effectiveness underscore the stand-out quality delivered by Eisenmann.

Technology Center in Holzgerlingen, Germany.



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