

**OSTROJ**

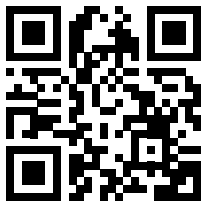
**Industrial  
Technologies  
and Automation**





# Industrial Technologies and Automation

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OSTRAVSKÁ STROJÍRNA  
A SLEVÁRNA

NÁRODNÍ PODNIK







The cornerstone of OSTROJ was laid in August 1948 in Opava. But the history of our company goes back much further. An important milestone for us is the year 1873, when the Elbertzagen & Glassner machine works were founded in Ostrava, as well as the year 1878, when Eduard Tatzel, a native of Bruntál, founded the Opava machine works and foundry. OSTROJ was born as a result of the merger of the two companies.

In the 1950 s and 1960 s, the company continued its rich industrial tradition and became a pivotal centre for the development and production of equipment for underground coal mining. And even after 75 years, we still continue to innovate. Using our traditional know-how and modern technologies, we build conveyor systems that set the trend in production automation.

Thanks to years of experience in mining and underground construction, as well as an experienced team, we deliver technical solutions that withstand even the toughest conditions. OSTROJ mining and industrial technologies are at work every day not only in the Czech Republic, but also in the United States, Mexico, Poland, Turkey, Spain, Colombia, Ukraine or Australia.











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# OSTROJ

OSTROJ is a Czech company with a long tradition of manufacturing and developing mining machines, conveyor lines and other equipment for working above the surface and deep below it. We build on our deep technical knowledge and the ability to adapt to the requirements of specific customers. Our equipment and technologies are developed and manufactured according to the latest technological and manufacturing processes. Development and innovation are one of the key building blocks of our company. We have our own modern production facilities, including efficient robotic workplaces.

More than twenty engineers and designers work on the development and design of new machines and technologies in our design centre. This enables us to respond quickly and modularly to the demands of individual customers as well as the entire market. We are thus able to keep the entire project under one roof and control both the quality of production and the specifications of the products from the first designs to the implementation into live operation.





**800+**

employees

**42 500**

m<sup>2</sup> of production area

**52 332**

pieces of equipment  
delivered

**234 887**

meters of conveyor  
systems







The quality of our equipment is backed by our history in mining, transport and processing of coal, ores and other mining materials.



We have our own production facilities, including modern robotic workplaces.

We build on our deep technical knowledge and the ability to adapt to the requirements of specific customers. In the past, this has included, for example, the mining of steep seams with fully mechanical mining complexes, mining in conditions beyond the Arctic Circle, or a record-breaking contract for a 34-metre-long stop gate for the extensive modernization of the Gabčíkovo Dam, which we carried out for the construction company Metrostav.







We are a key supplier of formwork equipment for the concreting of the D line of the Prague metro. Our mobile steel formwork is also used in Norway, where it is used as a secondary lining of excavated road tunnels.



With the help of virtual reality, we can let the customer see the project up close before the first prototype even enters production. However, the software also offers the possibility of simulating the actual operation of our products - months of automated line operation in a matter of minutes. This enables us to better plan and optimize projects towards maximum efficiency.

# How we work

Our design centre, in-house manufacturing capabilities and experienced engineers have designed and delivered a number of solutions for a variety of projects. See how some of our jobs looked when commissioned and how we handled them.

## 1 Requirements (Brief)

Identification of customer needs and expectations.

## 2 Initial study

Audit of the current state, carried out by a salesperson and a designer. Initial design of a solution.

## 3 Analysis

Digitization of the solution and its subsequent simulation - resulting in a graphical representation of the proposed solution.







## 4 Projection

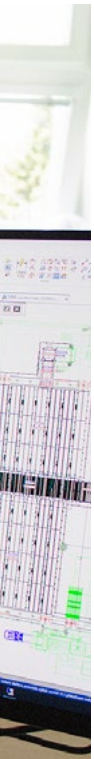
Presentation of the approved design, project and production documentation. Approval of the design in virtual reality.

## 5 Delivery

Test assembly in OSTROJ and subsequent delivery to the customer, including assembly, training and commissioning.

## 6 After sales

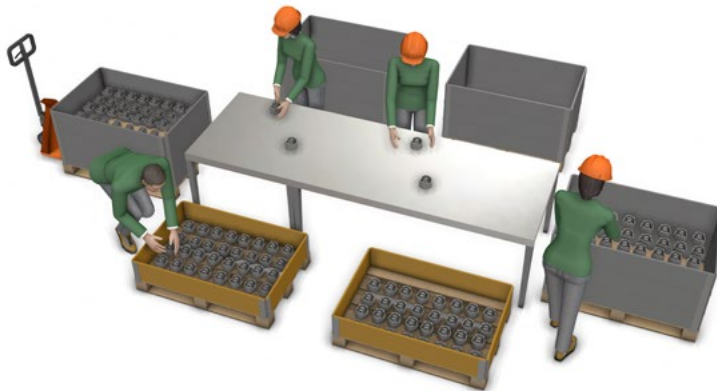
24/7 technical support, after-sales service, including the supply of original spare parts.



# Lean manufacturing

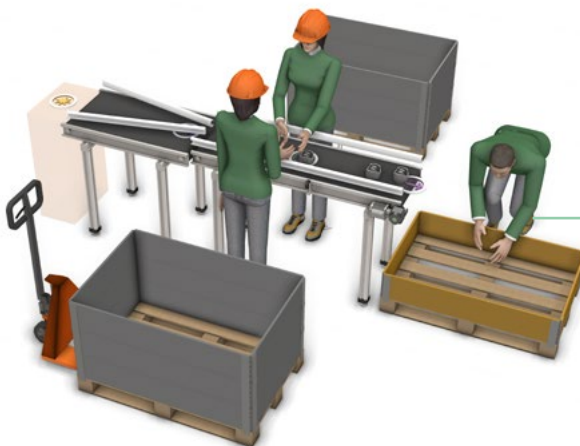
This service includes the development and design of a project to increase production productivity through cutting-edge software. We focus on providing the customer with as much as possible, using as few supplier resources as possible. This is achieved by identifying and eliminating all types of waste, including defects, overproduction, waiting,

unnecessary motion, excess inventory, over-processing and unused talent. Lean manufacturing also emphasizes continuous improvement, involving all employees in the process of identifying and solving problems. By applying lean manufacturing, companies can reduce delivery times, improve quality, increase productivity and reduce costs.



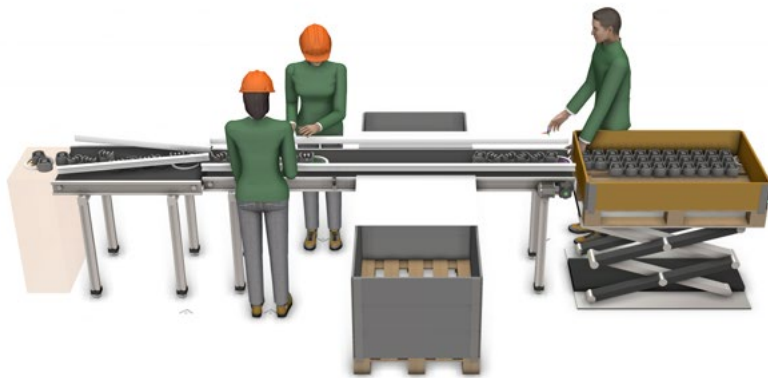
## Original state

Inspection of parts used to be done manually. The four workers who used to operate the workstation were unevenly utilized, resulting in significant downtimes and physically demanding work.



## First proposed solution

We suggested replacing the static table with a conveyor. This solution would result in a better distribution of workload and help reduce the number of workers by one. However, the work would remain physically demanding and unnecessary movements would be created in the whole process.



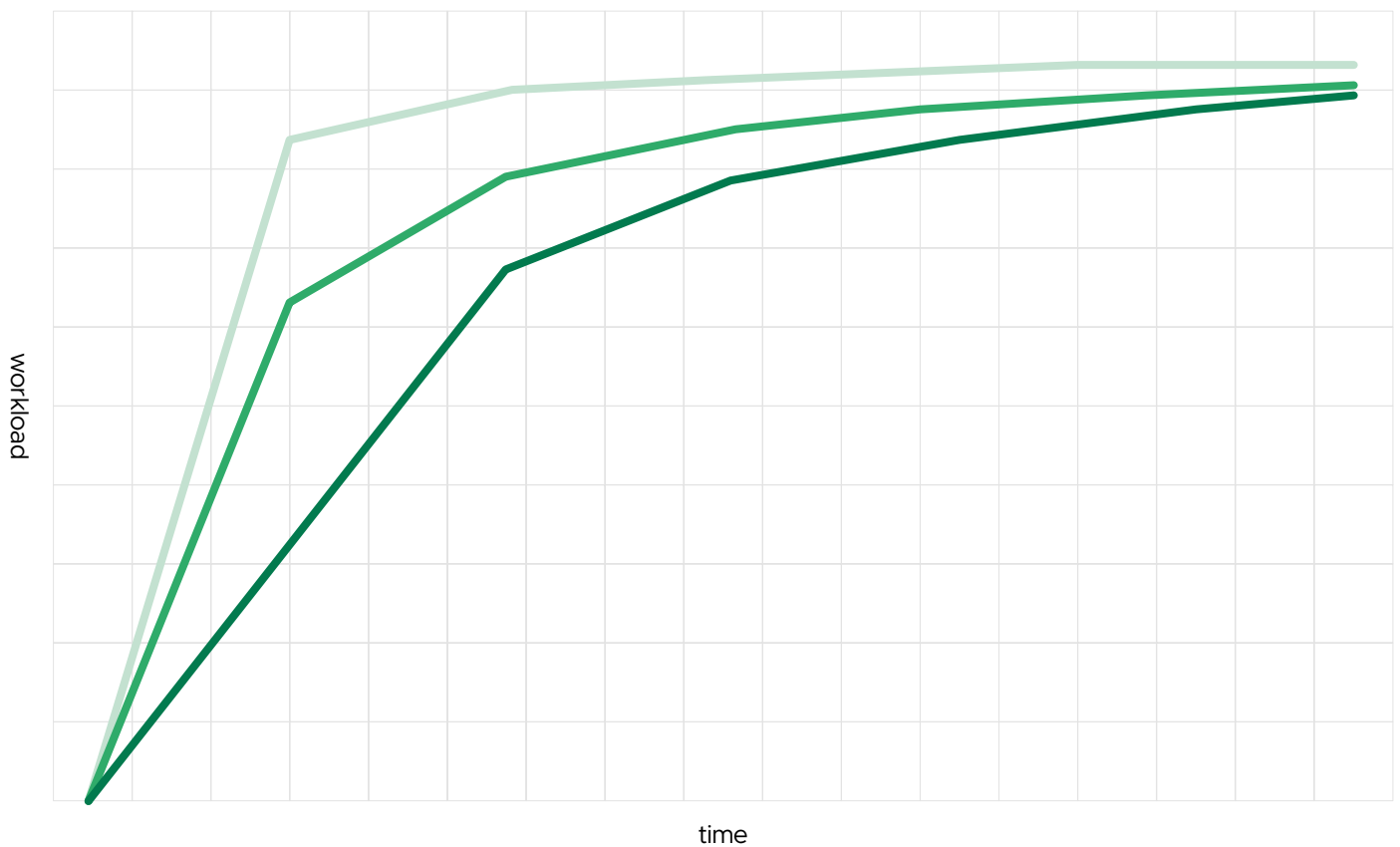
### Final design

The approved solution made use of chutes, which eliminated unnecessary movements and physical strain. In addition, a lift at the end of the conveyor reduced the time needed for stowing the products. Overall, the workload was consolidated to 90% and production was increased by 38%.

### Worker load over time

The result for the customer is a functional simulated solution. The graph shows the worker load over time - it is uneven in the original state, but it quickly consolidates so that there are no more unnecessary downtimes at the end.

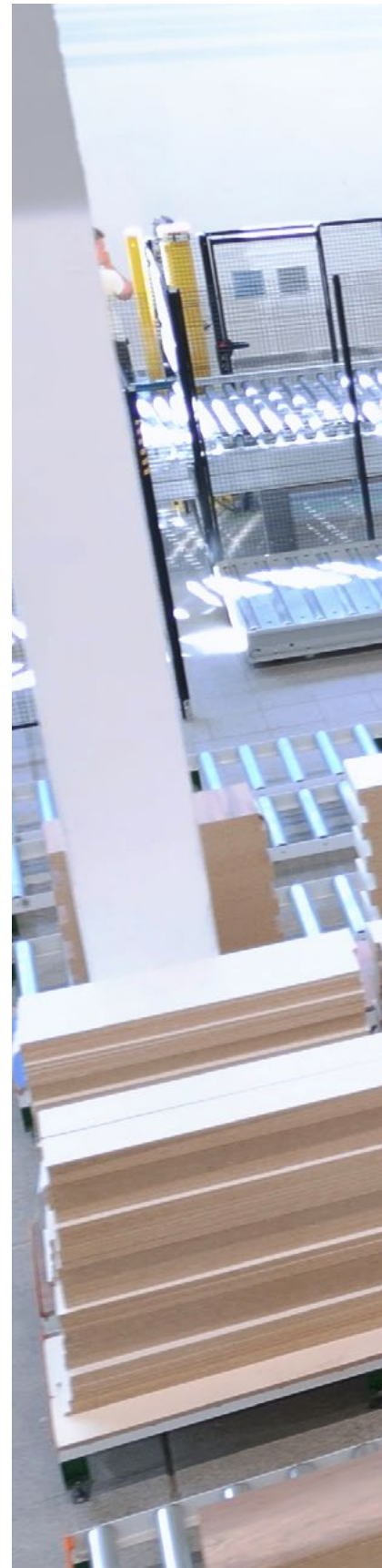
- ▲ Worker 1
- ▲ Worker 2
- ▲ Worker 3



# Case study

## Material flow solution for the furniture industry

A project for one of the largest furniture companies in the Czech Republic demonstrated the versatility of our product range. Although we had no experience with this industry until then, the experience from heavy industry was invaluable to us. We were happy to try out new procedures, which we now consider a natural part of similar projects.







## Brief

The initial contact from the company was only an indicative enquiry with which the customer wanted to map the market in the first place. However, it soon became apparent that the project required a more complex solution than simply supplying functional conveyors. The solution also had to enable the transfer of materials between machines and packaging systems.

## Description

We solved the project to the client's maximum satisfaction, as is our standard. We used and implemented a solution that we know very well. In order to design the solution as a whole, a designer was involved in the project, as well as engineers who broke down the project into individual items and machines. We use standard roller tracks, hydraulic lifts, cross conveyors and transfer carts, which we redesigned for the customer's specific needs. We also addressed the issue of how to make it easier for workers to handle the transported material, how to reduce handling times for machines as much as possible, etc. Together with the customer, we came up with a new layout according to requirements, which arose from personal negotiations. Based on the customer's needs, we designed suitable equipment for each transport node in the hall. The reduction of handling times for machine operation, the simplicity of the conveyor system and, above all, the quality of the equipment were also taken into account.

## Results

We managed to deliver almost 1.5 km of conveyor routes and dozens of hydraulic lifting conveyors and cross conveyors two months earlier than the customer requested, i.e. in less than five months. The project was handed over to the customer on the required date and was stored in our warehouse until then. The equipment was delivered, assembled and handed over, and an operation and service training was provided.

We continue to build on this initial cooperation. For example with a solution for automatic truck loading, a transport system for the removal of waste from production, etc. A technical consultation took place at the customer's site after delivery, during which we reviewed the customer's satisfaction with our solution, the pitfalls of the work and whether there were any malfunctions (no complaints to date). In general, we have surveyed how our equipment is used. We also supplied the customer with free stops to help improve the performance of our equipment. For OSTROJ, this was an experience from a different operation, and now we supply these stops as standard equipment.



458

conveyors

27

hydraulic conveyor lifts

14

cross conveyors

388%

increase in  
production  
output

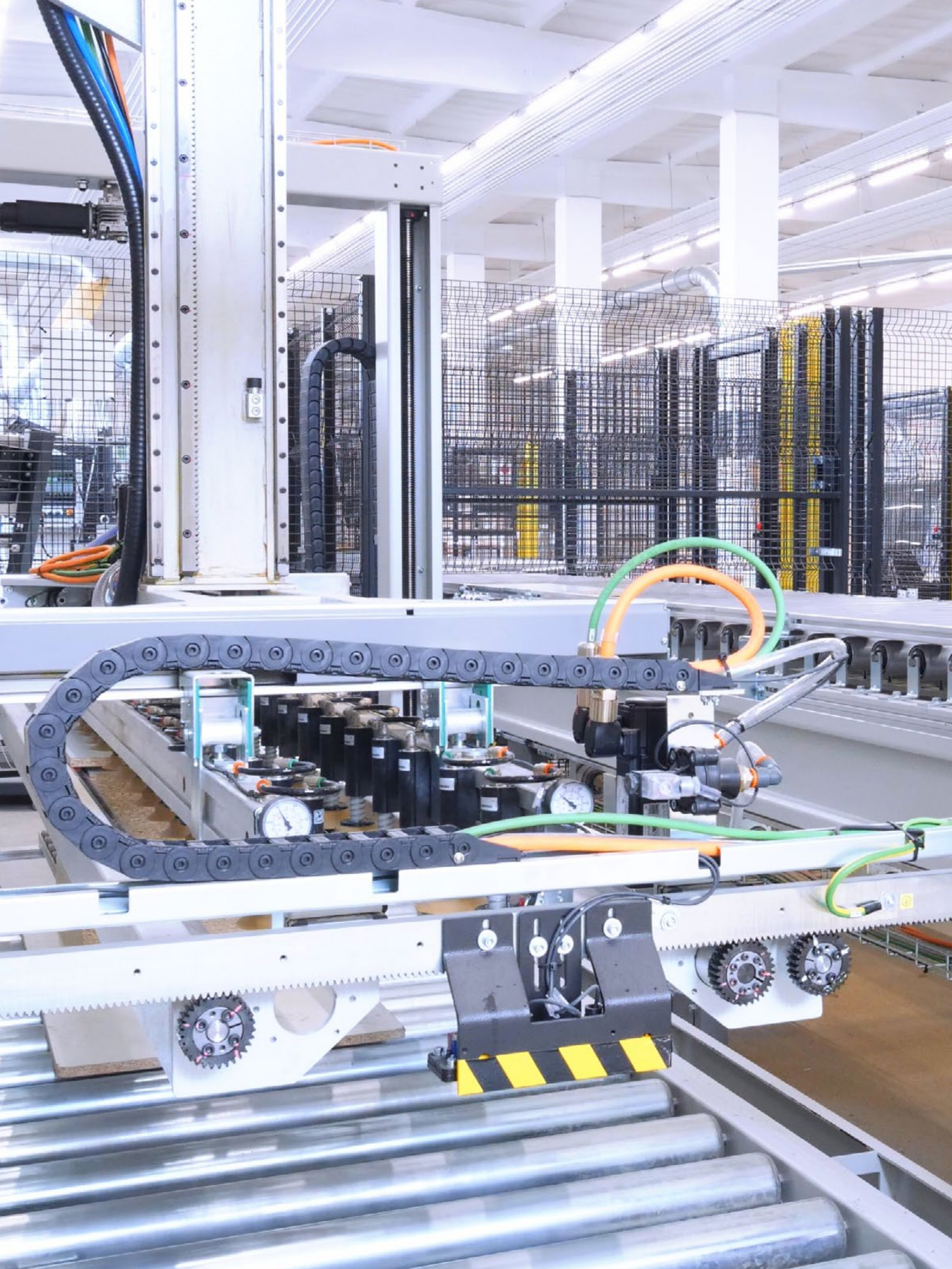
# Automation

OSTROJ's main goal is to provide complete automated lines and equipment that bring many benefits to production processes. These systems allow our clients to significantly increase productivity, ultimately leading to a faster and more efficient production cycle.

Our equipment is designed with maximum reliability and security in mind, ensuring that our technologies are a great investment solution for businesses of all sizes and from all industries. Thanks to our many years of experience and innovation, we are able to adapt our solutions to the individual needs of each customer. This allows us to provide not only standard automated lines, but also specially designed equipment that meets the unique requirements of each production.





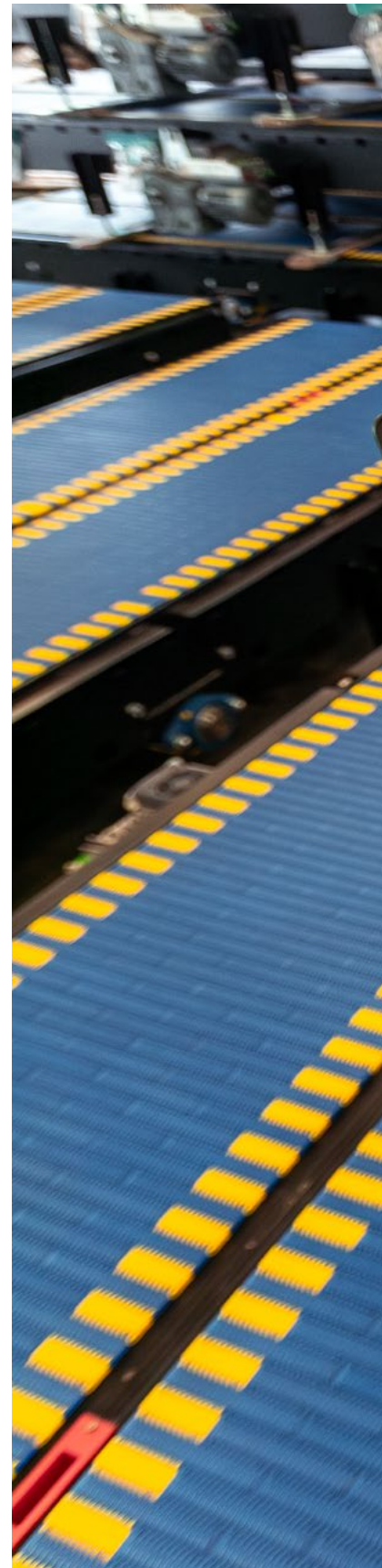


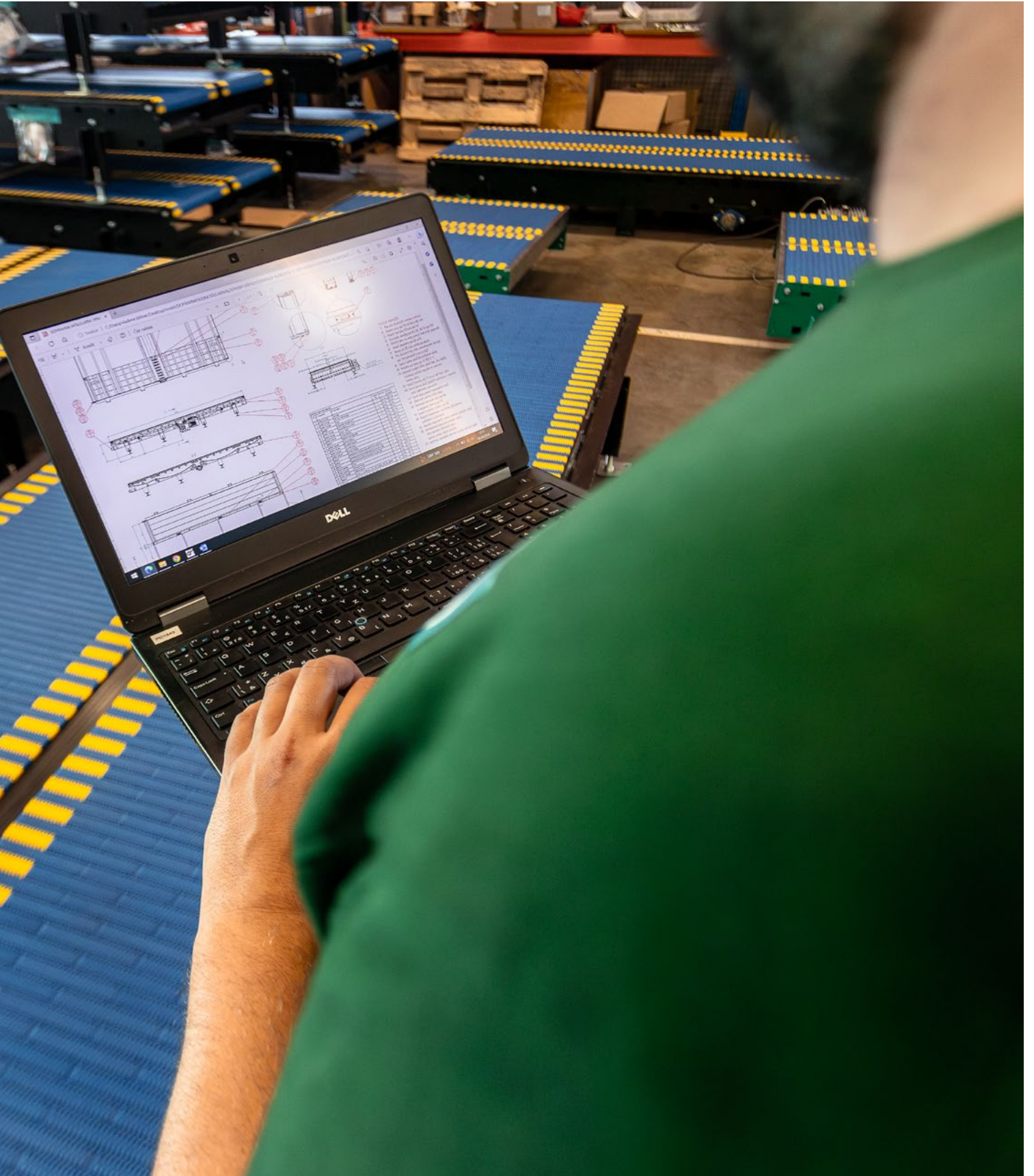


# Case study

## Automation of carton packaging production

The constant movement of forklifts was disrupting production flow and logistics at a customer producing cardboard packaging. During peak times, the customer was unable to package all products efficiently, which led to bottlenecks in the production process. This caused the entire production to slow down or stop completely.





## Brief

The primary goal was to eliminate the bottleneck on the packaging line and ensure that all products could be packaged without unnecessary delays during peak times. At the same time, it was necessary to optimize the production logistics to ensure a smooth operation without excessive use of forklifts, which increased costs and constrained operations.

## Description

Based on an analysis of the customer's needs, we designed a complete logistics solution in the form of a conveyor system. This ensured, for example, automated transport of material in production without the need to deploy the aforementioned forklifts, but also a buffer for production that can accommodate the entire production at peak times and ensure smooth packaging during production.

## Results

Thanks to innovative features such as transverse material transport and special conveyor lining to reduce friction, we have achieved high capacity and reduced energy consumption. The finisher conveyor system is almost 250 metres long and is able to transport 62 pallets per hour. The project was implemented in a very short time frame - only 7 months from signing of the contract to complete delivery. After the implementation of the system, the logistics and smoothness of production improved significantly. At the same time, the customer reduced their dependence on manual material handling, which not only led to greater efficiency but also long-term savings.

5

forklifts replaced  
by our solution

30%

increase in  
production  
productivity

100%

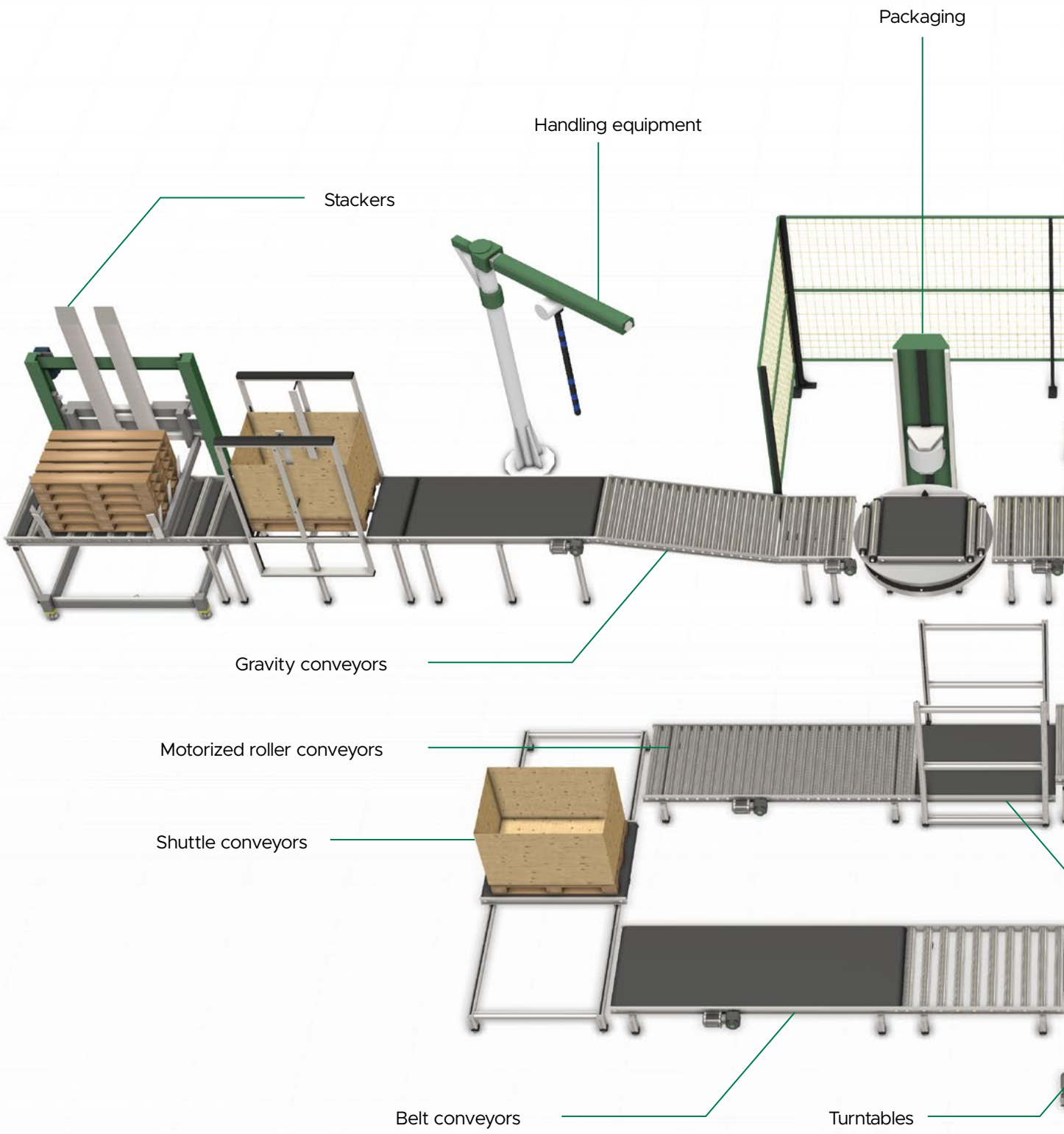
packaging line  
utilization rate

1000

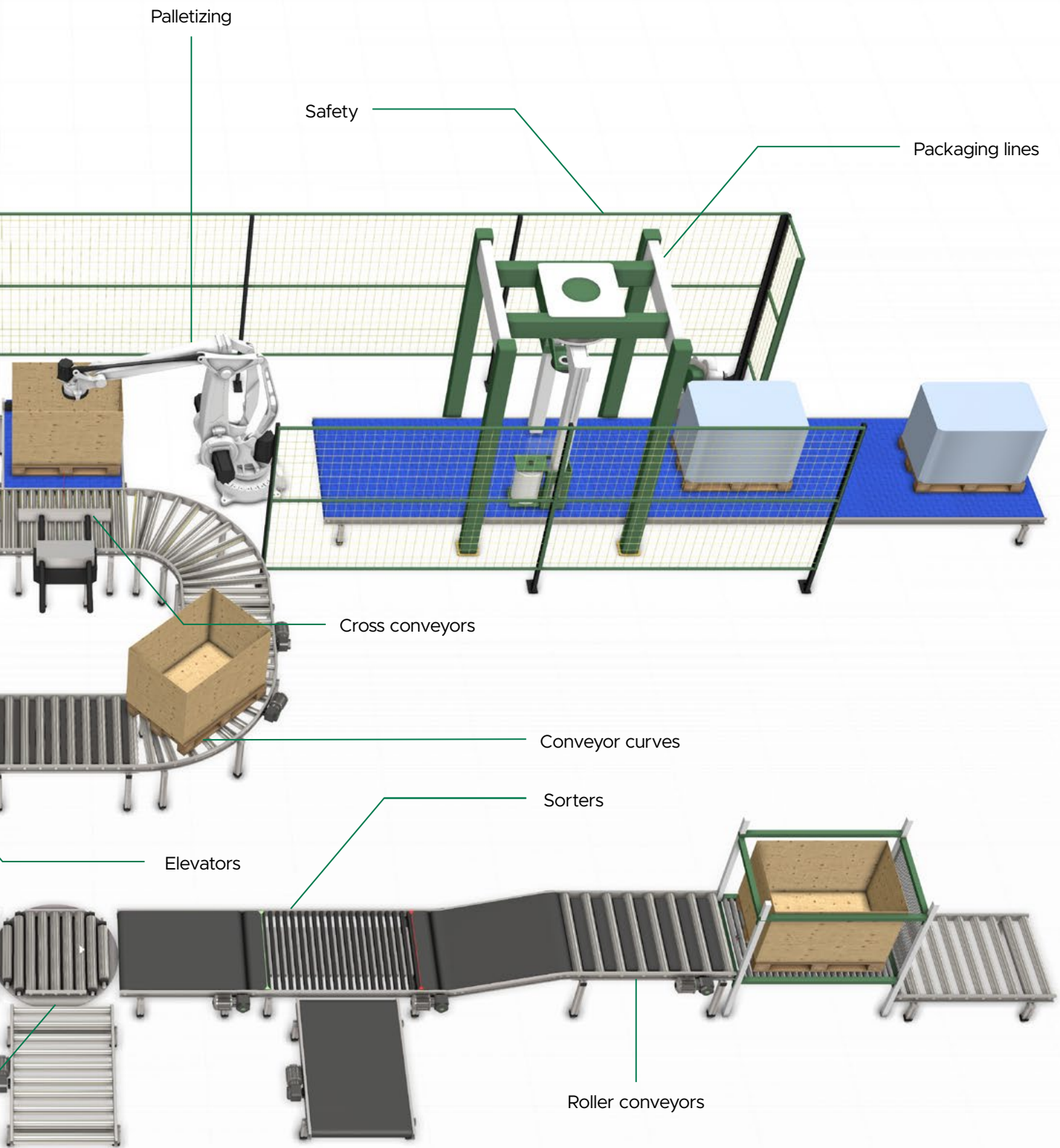
metres of  
conveyor belt



# Equipment overview







# Products







# Furniture industry

**Are you looking for a way to make material handling easier and faster in your furniture production? We offer a transport system that can be assembled into a complete material transport line on the production hall floor - ideal for transporting bulk and individual material.**

All transport systems are modular, so you can easily adapt them to your needs. They are also equipped with enlarged rollers for easier handling of the material and a design adapted to add stoppers to any part of the line.



## Conveyor systems

We equip our complex conveyor systems with a reinforced construction for the longest possible service life and maximum reliability in any industry.



## Hydraulic lifts and conveyor lift systems

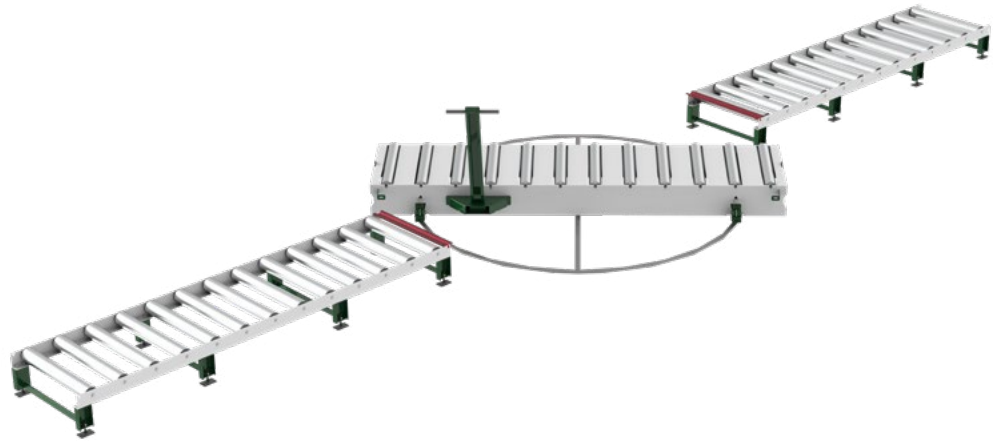
We use lifts to transport individual material and change its flow vertically. This enables us to transport the individual materials on multiple levels, lifting it up or connecting the tracks. At the same time, the lifts can be automated to simplify the process of loading and unloading material.





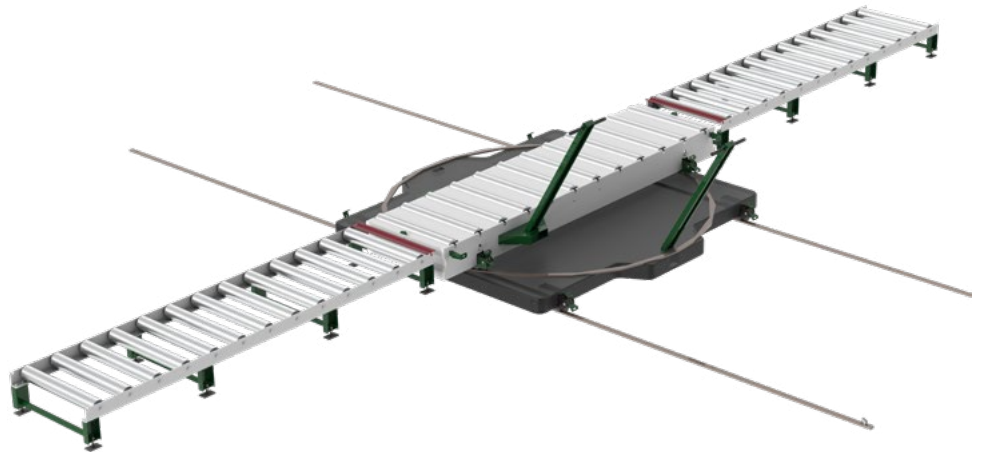
## Manual rotating conveyors

The conveying direction can be controlled manually.



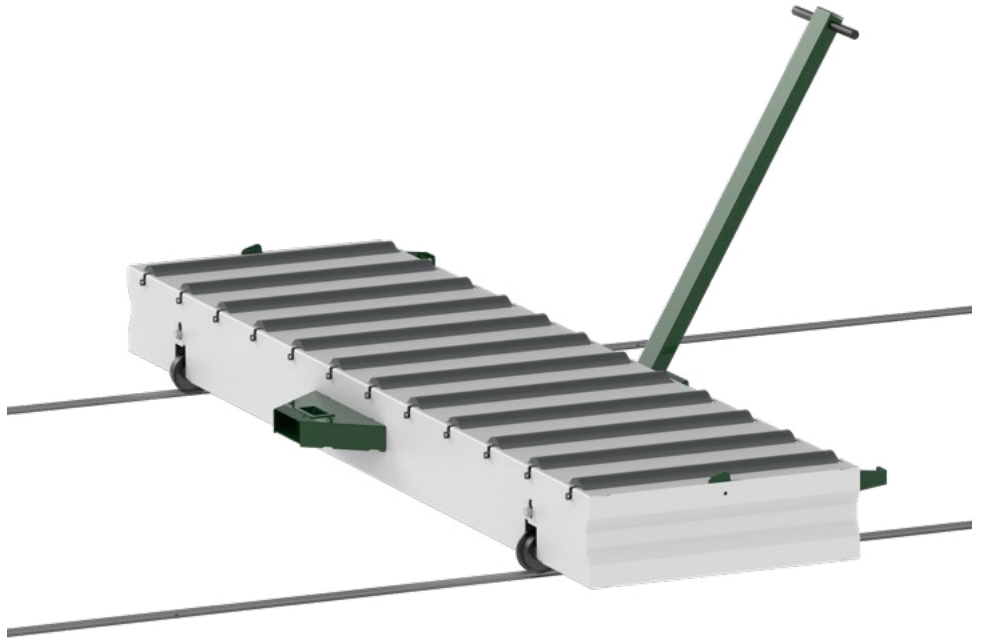
## Cross conveyors with a turntable

For changing the material flow without changing the direction of the material itself.



## Manual cross conveyors

For changing the transport direction of individual material in a perpendicular direction.



## Hand carts

For manual transport of material.





# Automatic loading of CNC cutting centre

For reliable loading of the  
cutting centre for large-  
-scale furniture production.









# Paper industry

**Need to automate and simplify material handling in your paper mill? We offer autonomous or automated transport systems.**

These are mainly used for transporting bulk and individual material in the paper industry, etc., automating transport, increasing efficiency, storing material between operation, loading and unloading of machines, etc.

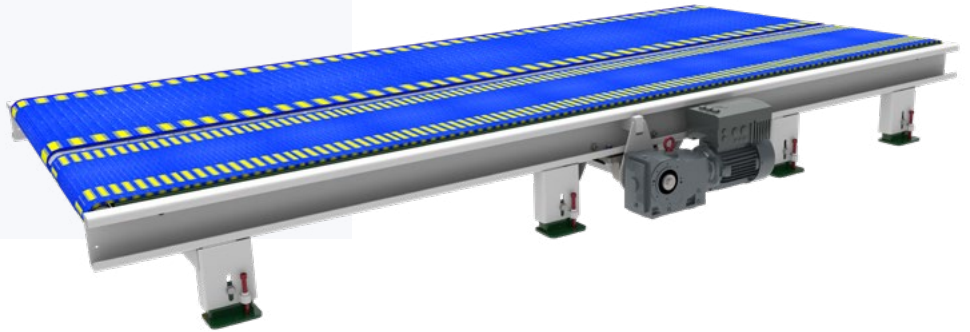
All conveyor systems are modular, incorporating a modular belt, sensors, drives and frequency converters. The conveyors are designed in such a way so as to be able to be added to any part of the line. Conveyor parts have a reinforced construction for long service life.





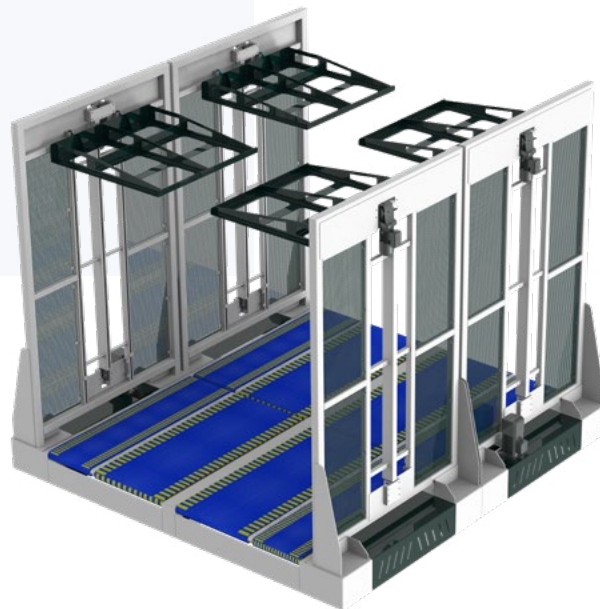
## Conveyor systems

Modular belt conveyors are used to transport material in a wide range of operations. They enable the transportation of non-standard materials, shapes and more.



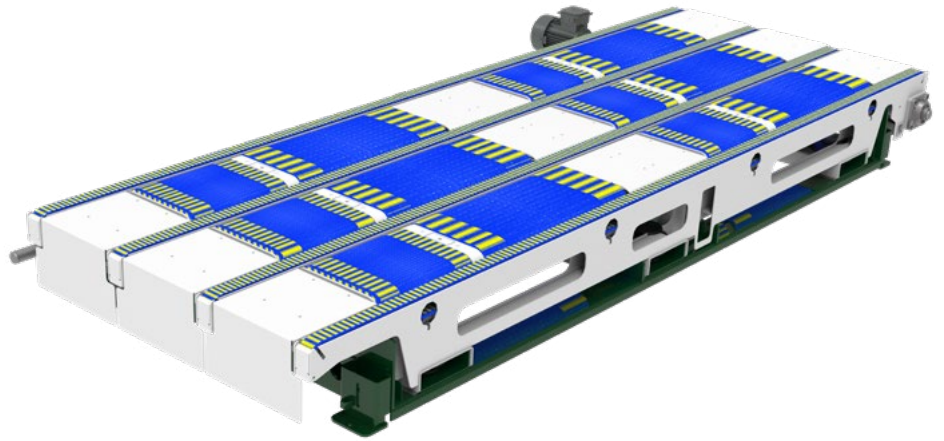
## Autonomous transport cars

For complex material shapes, we most often use autonomous transport carts, called shuttle cars, in our projects. They enable the transport of individual materials across transport routes.



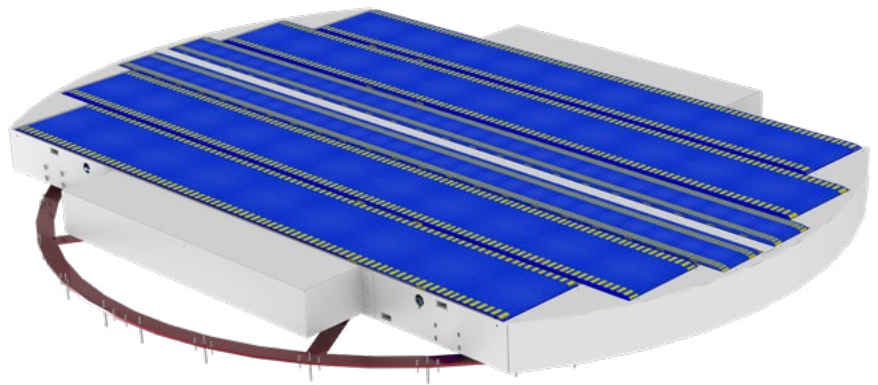
## Cross conveyors

For changing the direction of transport of individual materials in a perpendicular direction.



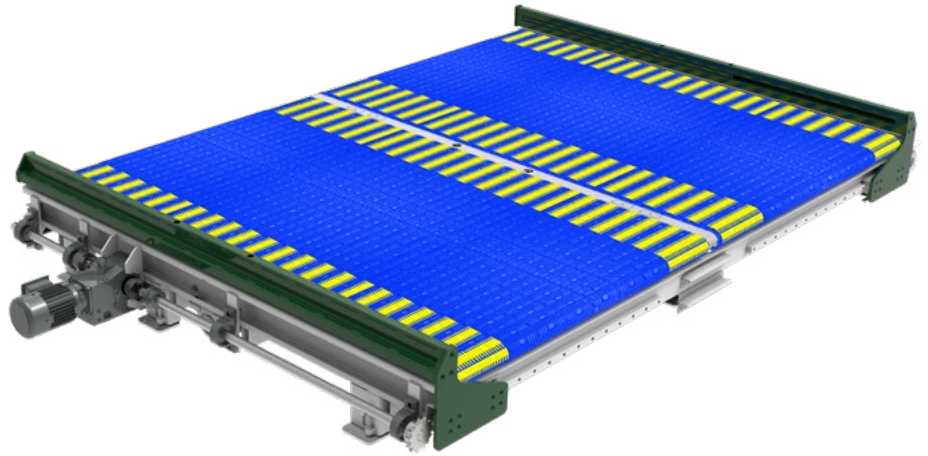
## Turntables

For changing the material flow without changing the direction of the material itself.



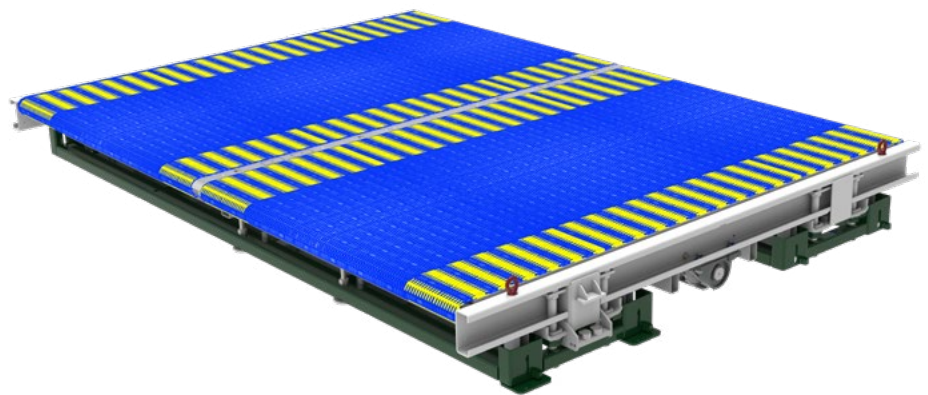
## Alignment

Our conveyors are designed for simple alignment of the conveyed material.



## Elevators

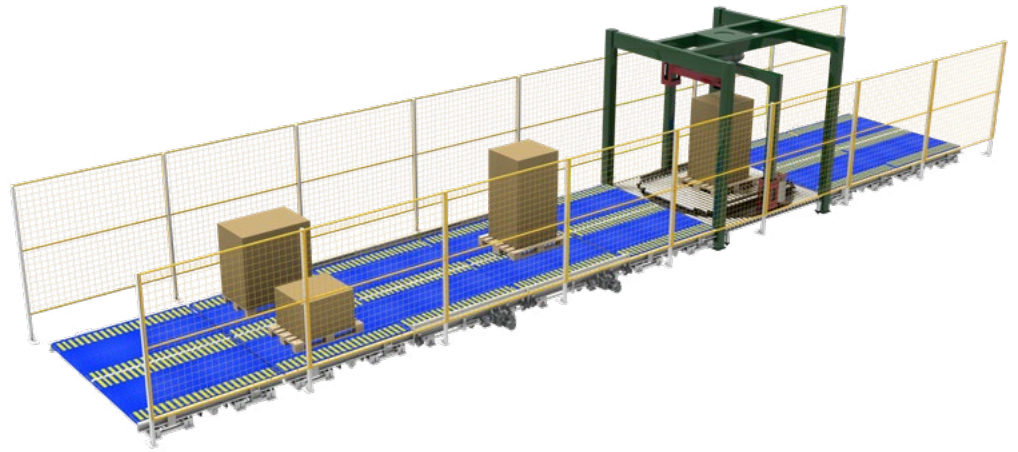
For vertical transport of material between different levels of the lines.





# Packaging lines

Technology and equipment for the assembly of packaging lines for pallet packaging and dispatching of the final products.





# Light industry

**Our company offers cutting-edge conveyor systems and equipment for light industry, where every step is designed for maximum flexibility, speed and efficiency. With our innovative technologies, we transform your manufacturing processes and ensure your operations are efficient and seamless.**

Our transport systems are modular, which means they can be easily adapted to your They can be expanded or modified depending on how your production will develop. They are also automated, meaning they can operate without human intervention. This allows you to increase production efficiency and reduce labour costs.





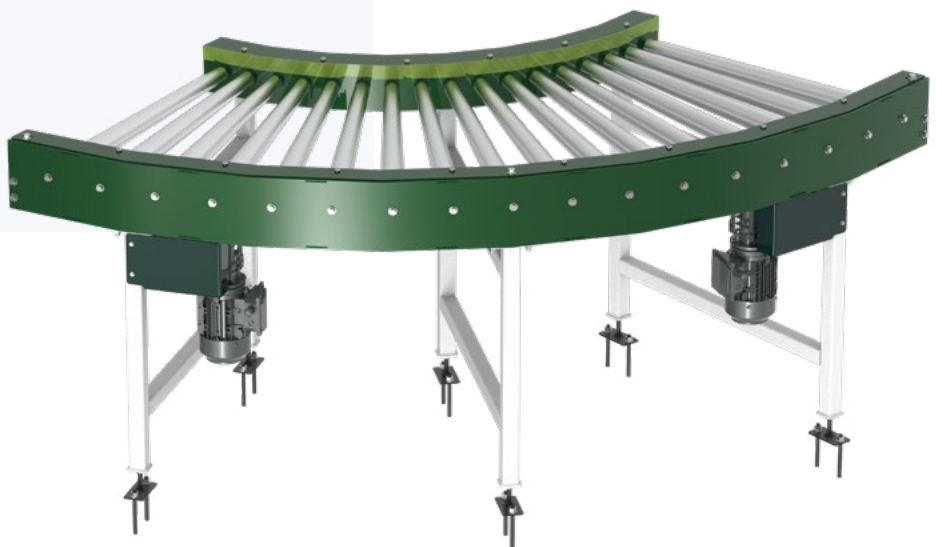
## Belt conveyors

We use belt conveyors where fast material transport is needed in light and heavy-duty applications. The technology enables the transport of individual and bulk material up to an incline of 50°.



## Roller conveyors

Roller conveyors are used to transport materials in light and heavy-duty applications. They enable the transport of individual and complex shaped material.



## Elevators

For vertical transport of material between different levels of the lines.



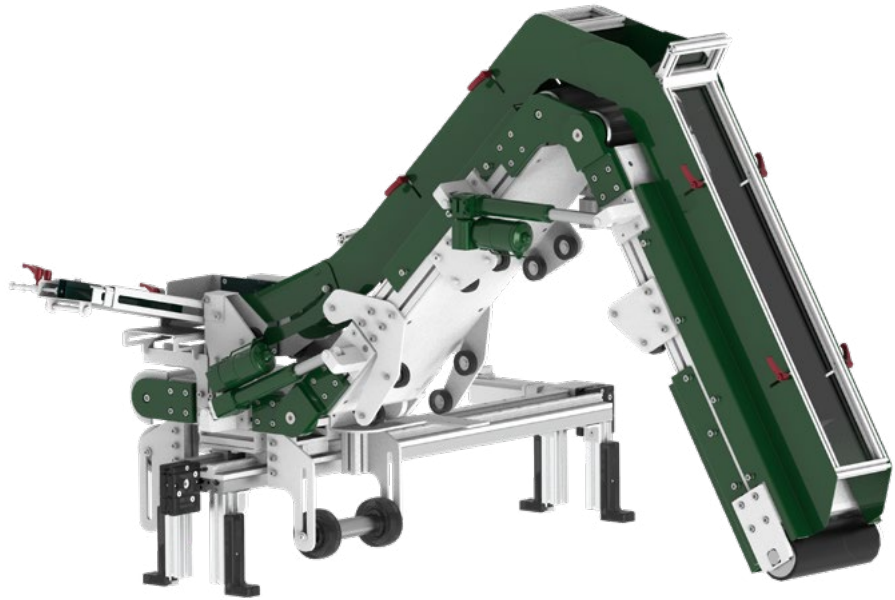
## Timing belt conveyors

For transporting light and large individual materials or plates.



## Special applications

We are able to tailor the equipment to specific requirements.



## Conveyor systems for the food and pharmaceutical industry

Our stainless steel conveyors are designed for use in the pharmaceutical industry, where they are able to meet all the strict requirements for increased cleanliness and sanitation.













# Heavy industry

**In heavy industry, where demands for durability, performance and safety are paramount, our company provides transport systems and equipment that allow you to achieve maximum performance and efficiency.**

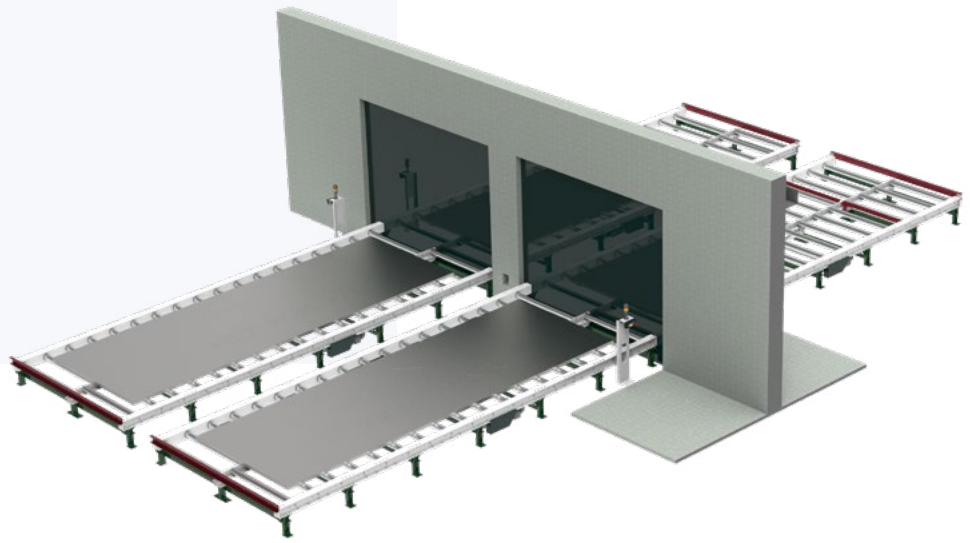
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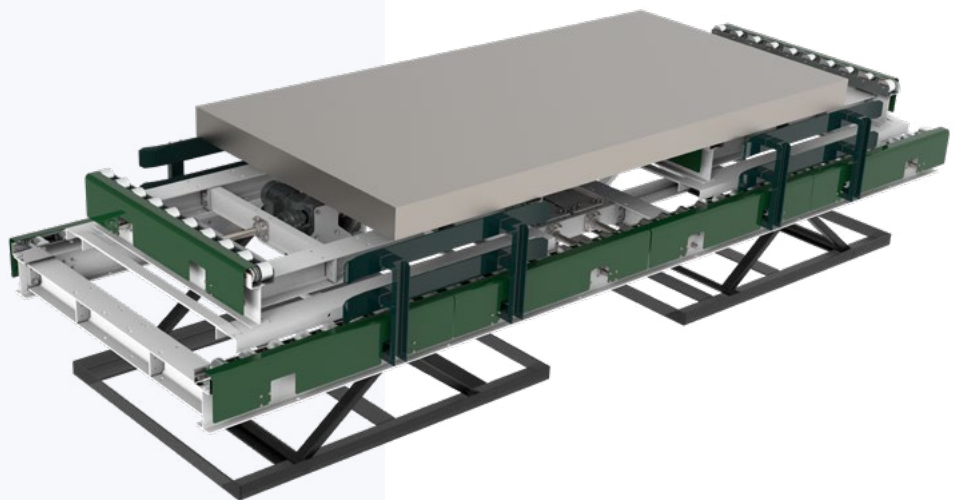
## Heavy-duty conveyors

Heavy loads are transported by conveyors with a reinforced construction, suitable for further expansion depending on the requirements of a specific production.



## Chain conveyors

Flexible solutions for the automotive industry or logistics. Chain conveyors for heavy industry are robust devices designed to transport heavy loads and bulky materials. They are highly reliable, have a long service life and are suitable for heavy-duty applications. Their solid steel construction and high load capacity (up to 2,500 kg per metre) make them ideal for handling pallets, large boxes and other individual items.



# Steel belt conveyors

For applications that require reliability and durability.



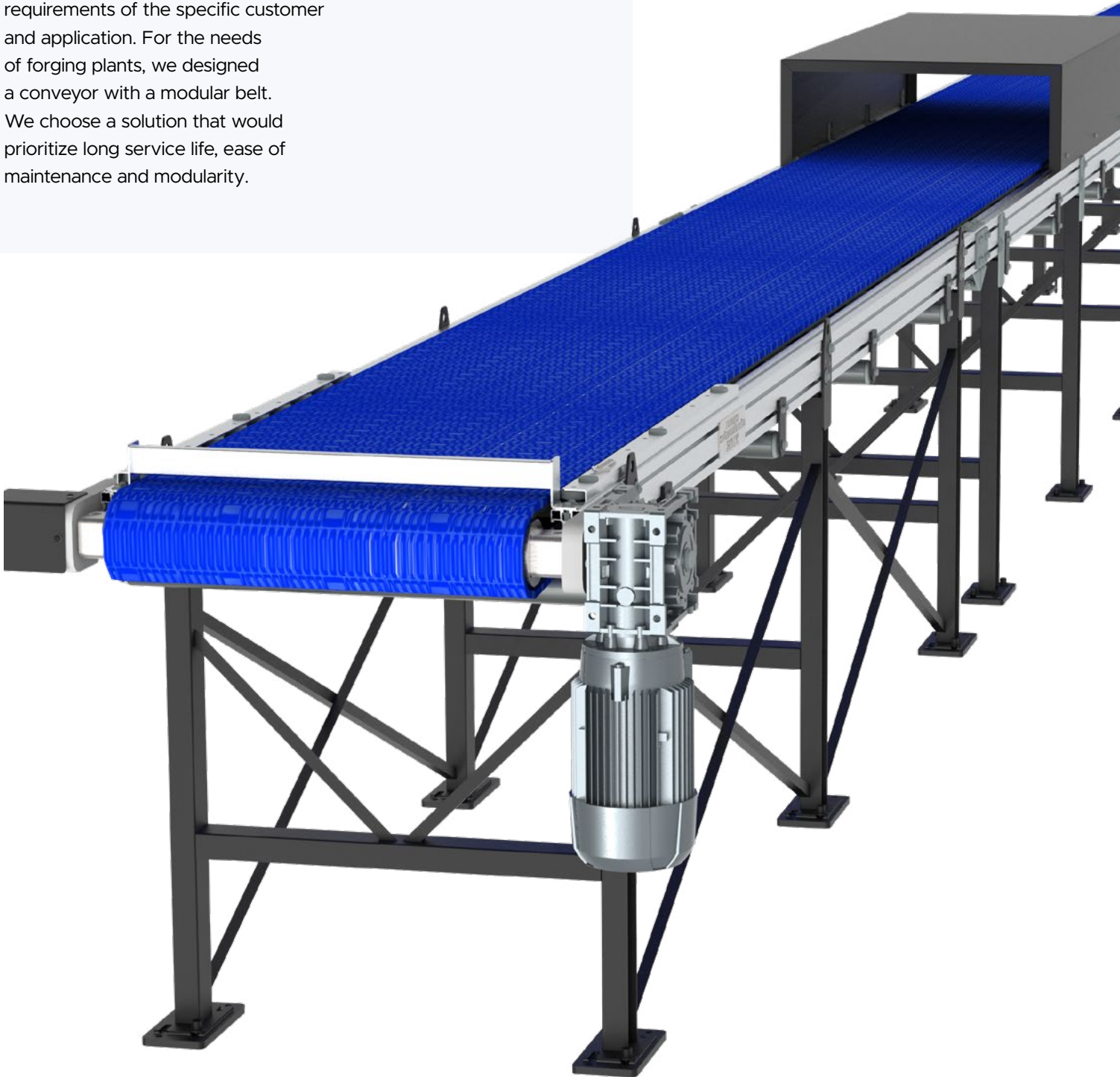
# Turntables

For changing the material flow without changing the direction of the material itself.

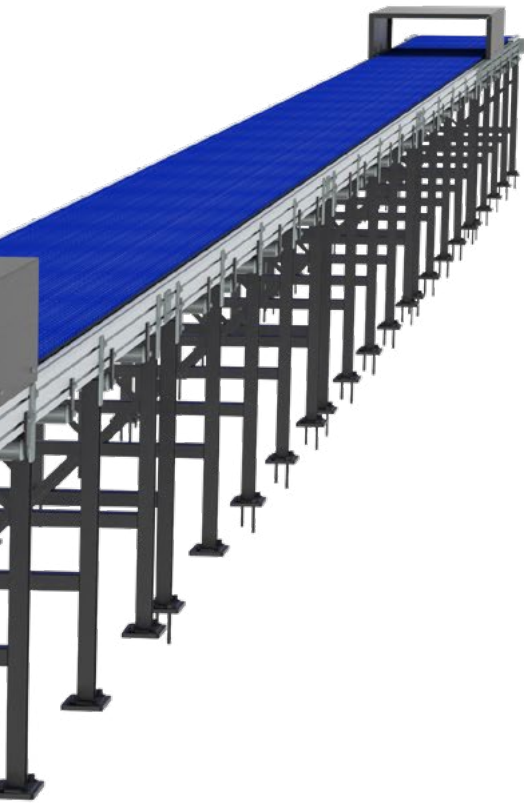


## Modular conveyor for the transport of forgings

We tailor our equipment to the requirements of the specific customer and application. For the needs of forging plants, we designed a conveyor with a modular belt. We choose a solution that would prioritize long service life, ease of maintenance and modularity.

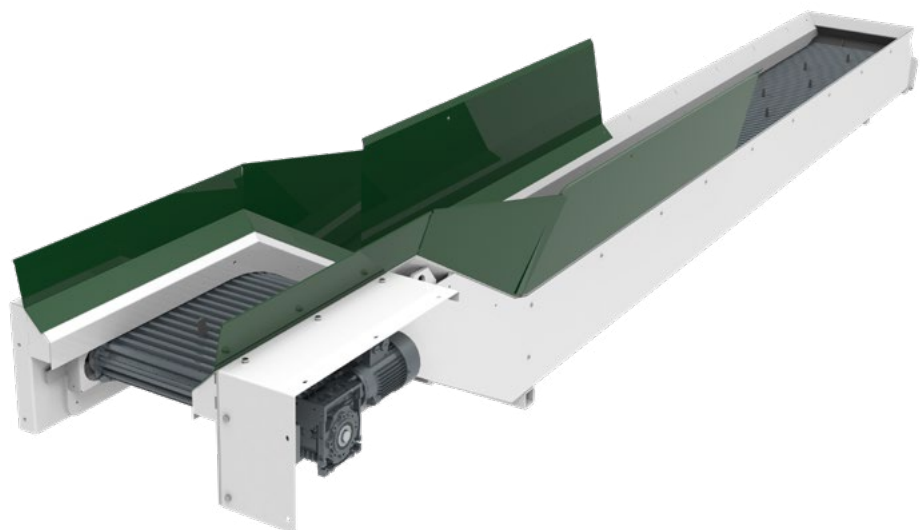






## Swarf removal conveyor for CNC machining

In order to remove chips from the CNC machining process, we have designed a conveyor with a reinforced belt for maximum durability and low maintenance. The conveyor is equipped with manual override and always discharges into two steel boxes - while one box is being filled, the other can be discharged.







SNOST 1000 kg

SNOST 15000 kg  
11

KEMPPIL

KEMPPIL

# Handling equipment

**This equipment helps make work easier and saves time. All equipment that is used to handle cargo (loads, goods) can be considered handling equipment. With the right handling equipment, it is possible to move large, heavy or numerous materials very efficiently.**





## Automatic material handlers

Automatic material handlers facilitate the movement of heavy materials. This reduces both effort and costs by reducing handling times.



## Material handlers

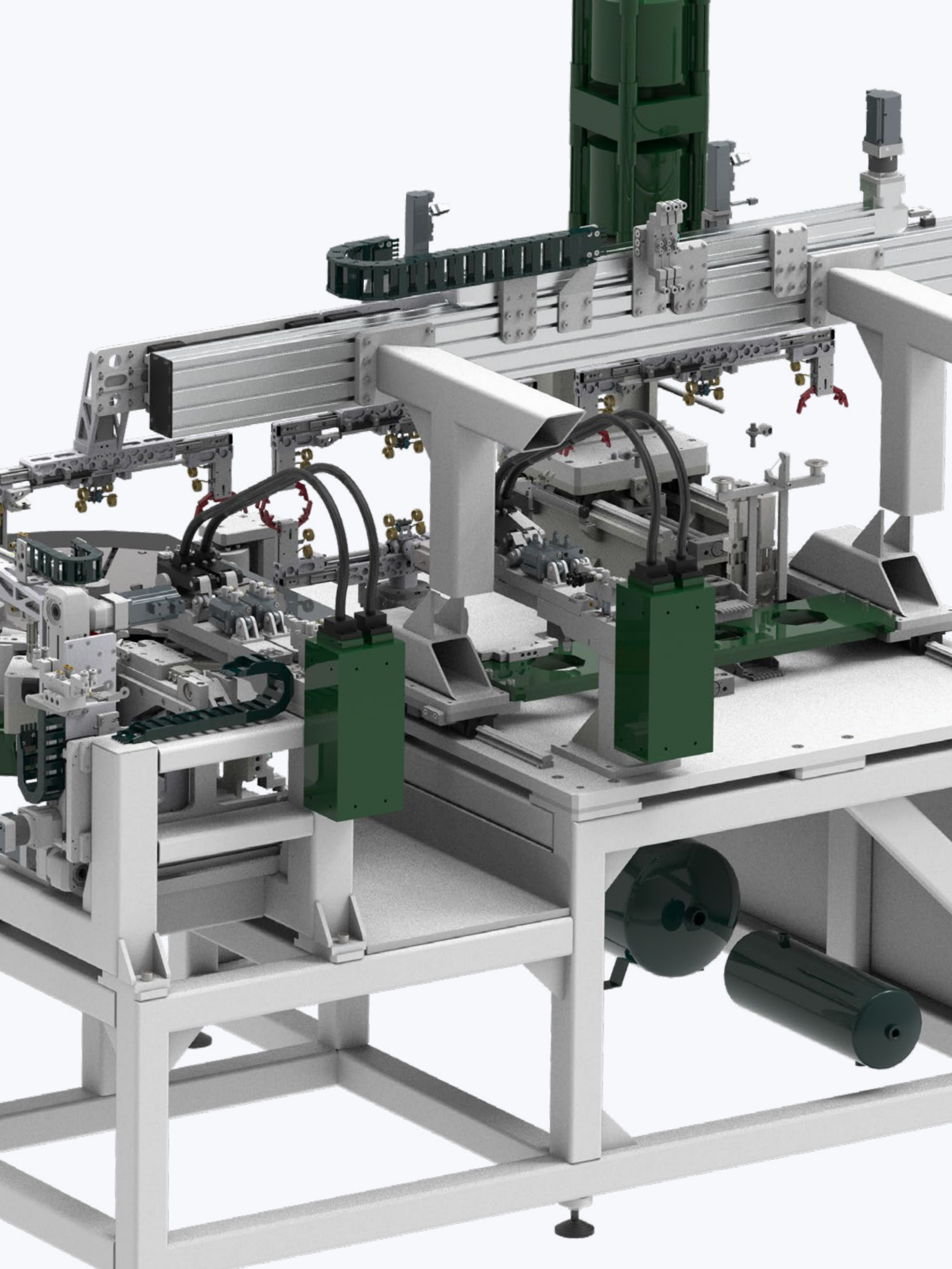
For moving material in cooperation with human power.



# Cranes

For lifting and moving heavy material.

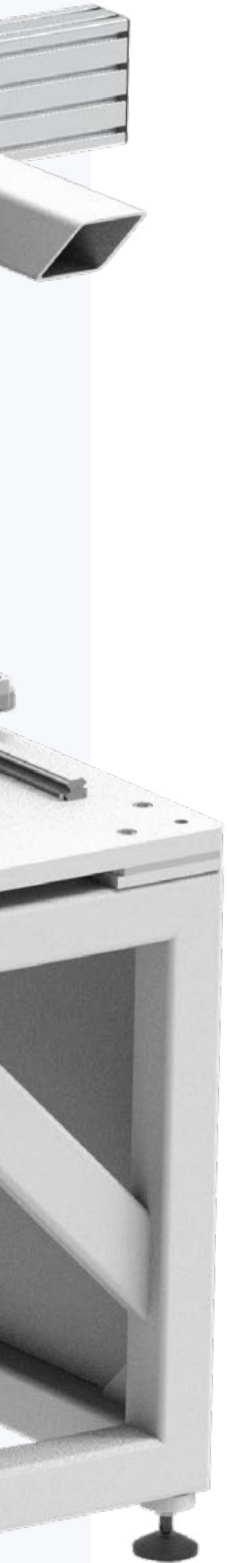


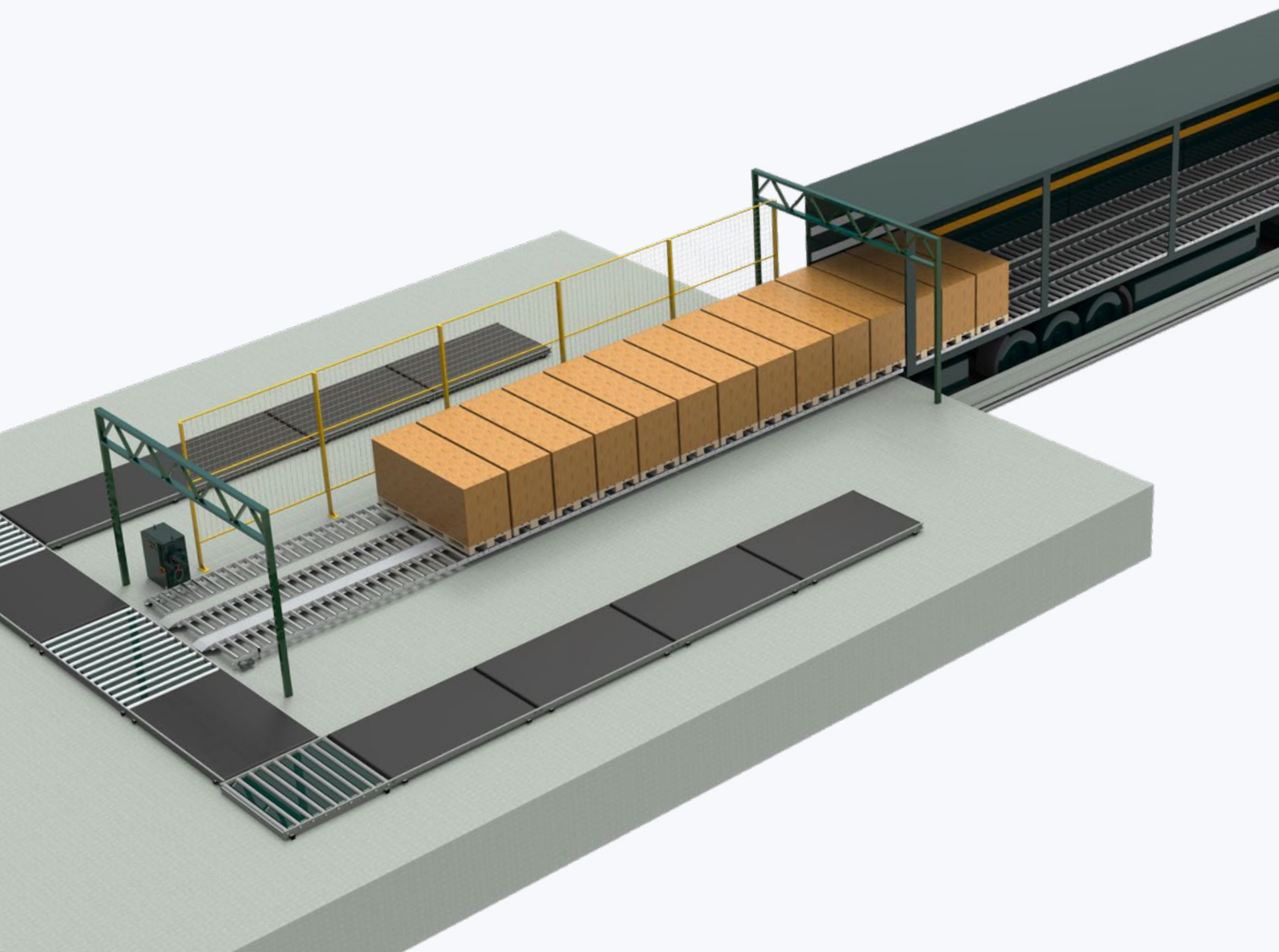




# Single-purpose and special machines

Individual solutions and specific production often require single-purpose machines, which we are happy to design for you. We design single-purpose machines for customers who need a machine for production, assembly, etc. We combine them with conveyors, robotic machines or single-purpose lines.





# Automatic loading

**Automatic truck loading is designed to speed up the standard process that takes place in every production and storage hall. The process of loading a full trailer with a forklift takes approximately 30-45 minutes. By using automatic loaders, you can do it in less than 5 minutes.**

The solution is always designed with the customer's operation in mind. There are many systems that can be used to load a truck as efficiently as possible and at the best possible price. On the opposite page, you can check out one of the possible loading methods.





# Notes





# Industrial Technologies and Automation

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