

Optimise your material flow. With our highly flexible tow trains.

Our tow tractors with load capacities of up to 28,000 kg as well as trailers with directional stability and capacities of up to 1,600 kg.

**JUNGHEINRICH**



Plan your next move.
With us.







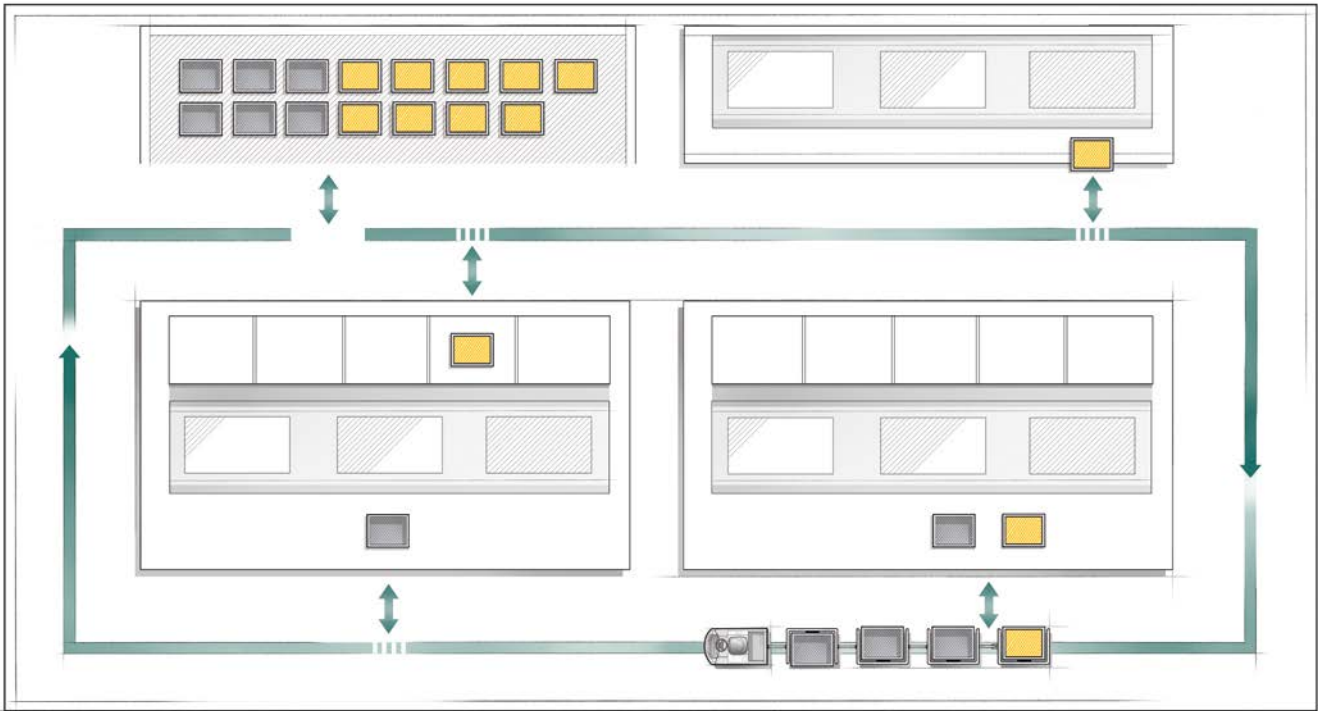
Our alternative solution for your material flow: Tow trains.

When should you change?

Electric forklifts and pallet trucks are primarily used for transport tasks within warehouses and production areas. Where different load carriers and loads are to be transported at the same time, our tow train comes into play. It comprises a tow tractor and at least one – but usually several – trailers. These can be loaded and unloaded at different points of use. The design of the technology and planning of the routes are always based on your requirements.

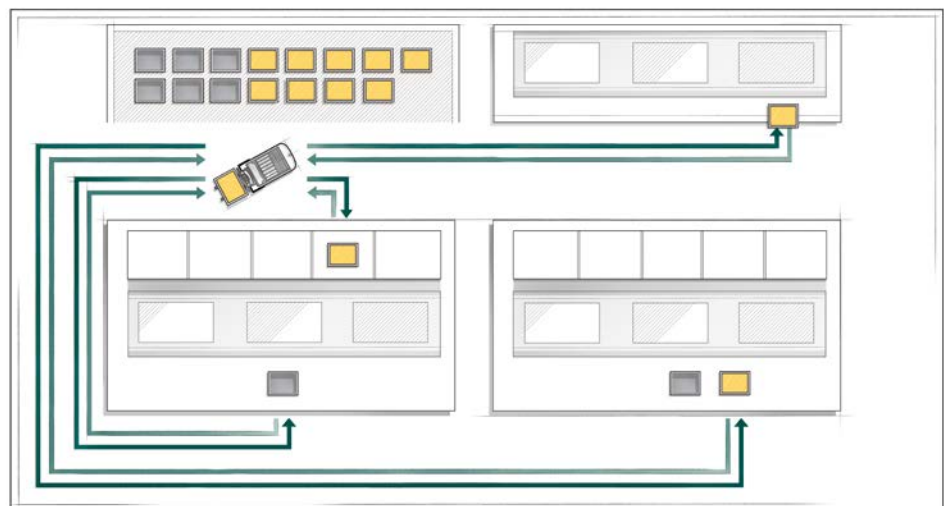
Less traffic, lower costs

In just-in-time production in particular, the precisely timed supply and disposal of materials to the production machinery is crucial. If conventional forklift trucks are used, they quickly reach their limits. Often, several trucks must be used simultaneously. This means greater investment and follow-up costs, a greater risk of accidents due to a heavy flow of traffic. Our tow train system represents a real alternative, as a train is able to serve several pieces of machinery, keeping costs down and calming the traffic situation.



A comparison: Typical factory layout in mechanical engineering with three assembly lines. Comparison of the material flow between tow train (top) and forklift truck (bottom).

Conclusion: A forklift truck needs to travel a total of 4.2 km to supply goods with load carriers, whereas a tow train only travels 1.8 km.



From truck technology to comprehensive solution

Not only do we offer you a graded choice of tow tractors with different drawbar pulls and equipment as well as trailers for a wide range of loads, but also expert consultations on your system. Ranging from route planning, process integration and optimisation through to connection to control systems and other warehouse technology peripherals. Because we are a one-stop shop. With more than 60 years of experience in the industrial truck, warehousing and materials handling sectors.

The challenge: A broad spectrum of parts must be delivered on different load carriers and in small batches efficiently, frequently and regularly to the production area.

The solution: Tow trains. In addition to a broad portfolio of tow tractors and trailers, we also offer you integrated tow train system consulting. We will be happy to help you plan a tow train system.



Our aim:

The synchronisation of your production and logistics processes.

The tow train as “lean factor”

The use of tow trains is characterised by a high degree of flexibility. Simply put, it involves different transport tasks from A to B on various routes. Achieving predefined, cycled processes, for example in the supply and disposal of materials to and from machinery, is a challenging task. Their integration in control systems and management programmes makes for an ideal solution. This is precisely the issue addressed by our system consultants. We will demonstrate the possible ways and means available to you for making your production processes leaner and more effective.

Providing advice requires understanding

Before we focus on the planning of your individual tow train solution, we create an accurate image of your intra-logistics processes. Because when, where, how often and how many tow trains must be operated is dependent on several factors: How broad is your parts spectrum? What parameters are to be considered with respect to time and production technology? What area, personnel and transportation capacities are available? We record and coordinate all the resulting data for you.

Recording processes

- Identification of optimal transportation routes
- Logical allocation of the trucks to the routes
- Resource-saving route development
- Interaction of provisioning and disposal processes
- Analysis of relevant storage and commissioning processes

Designing the control system

- Optimisation of material and information flows
- Timing of the tow train
- Definition of the stops
- Process support through visualisation

Providing the technology

- Selection of the appropriate tow tractor and trailer technology for your respective supply process
- Deciding on the control system
- Equipping your material sources and material requirement locations with racking, storage and commissioning technology
- Taking into account all process-relevant resources
- The EZS 350 is also available as an automated version EZS 350a

Our tow train systems enable you to achieve several goals simultaneously:

- Greater throughput
- Leaner production processes
- Increasing security of supply
- Optimised resource utilisation
- Reduced risk of accidents
- Avoiding unnecessary journeys

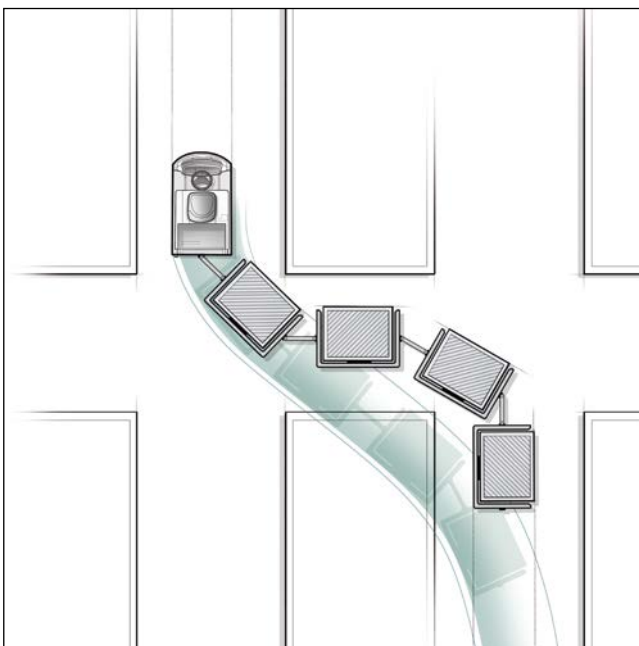
Keep on track with us.

A trailer with a multitude of applications

Use our compact and agile E-frame trailers with a central axis (GTE) to move the largest variety of loads. The trailer can be tailored to your specific needs with various options. Electric trailer connections and direct energy conversion in the trailers ensure clean and efficient operation at the same time.

Excellent directional stability, easy handling

The advantage of directionally stable trailers is obvious: they follow exactly the path the tow tractor has taken. This allows your operators to drive safely inside as well as outside the rack aisle and avoid any obstructions with minimum effort. The coupling and uncoupling can be accomplished in no time at all. The same is true for loading and unloading.



Our trailers – advantages:

- Optimum ergonomics for efficient work
- Robust construction for tough operations
- Reduced costs due to energy-efficient operation
- Electrical connection of trailers, eliminating the possibility of hydraulic fluid leaks
- Simple coupling system
- Excellent directional stability
- Comprehensive accessories for individual adaptations to your application case



Choose our tow tractors

We offer you a graded choice of long-lasting tow tractors for indoor and outdoor use. For light, medium and heavy loads. For particularly smooth surfaces or with a higher ground clearance to compensate for unevenness. Whether for delivery, regular distribution of goods or occasional transport tasks – our tow tractors are distinguished by robust and tested design as well as energy-efficient operation.

Our tow tractors – advantages:

- Up to 28,000 kg drawbar pull
- Robust tow tractors for heavy loads
- More powerful, yet cost-effective 3-phase AC drive
- Comfortable operator workplace promotes efficiency
- Suitable for a wide range of applications from delivery to distribution
- Cabins (optional)



Setting an example. Our tow trains in practice.

Manoeuvrable
small parts transport in
the supplier industry.
EZS 130 with SLC trailers.

The challenge:

A production company in the supply industry needs to transport small parts in small load containers (SLC) to the assembly lines. The containers do not weigh more than 15 kg. Tight spaces mean it is necessary to use slender SLC trailers and correspondingly slender tow tractors.

Our solution:

Our EZS 130 tow tractor is ideal for use with the SLC trailers because it is only 600 mm wide. It allows to create a simple, small and space-saving tow train. Since the containers can be handled manually without any problem, this makes for an extremely lean tow train, also from an economic point of view.

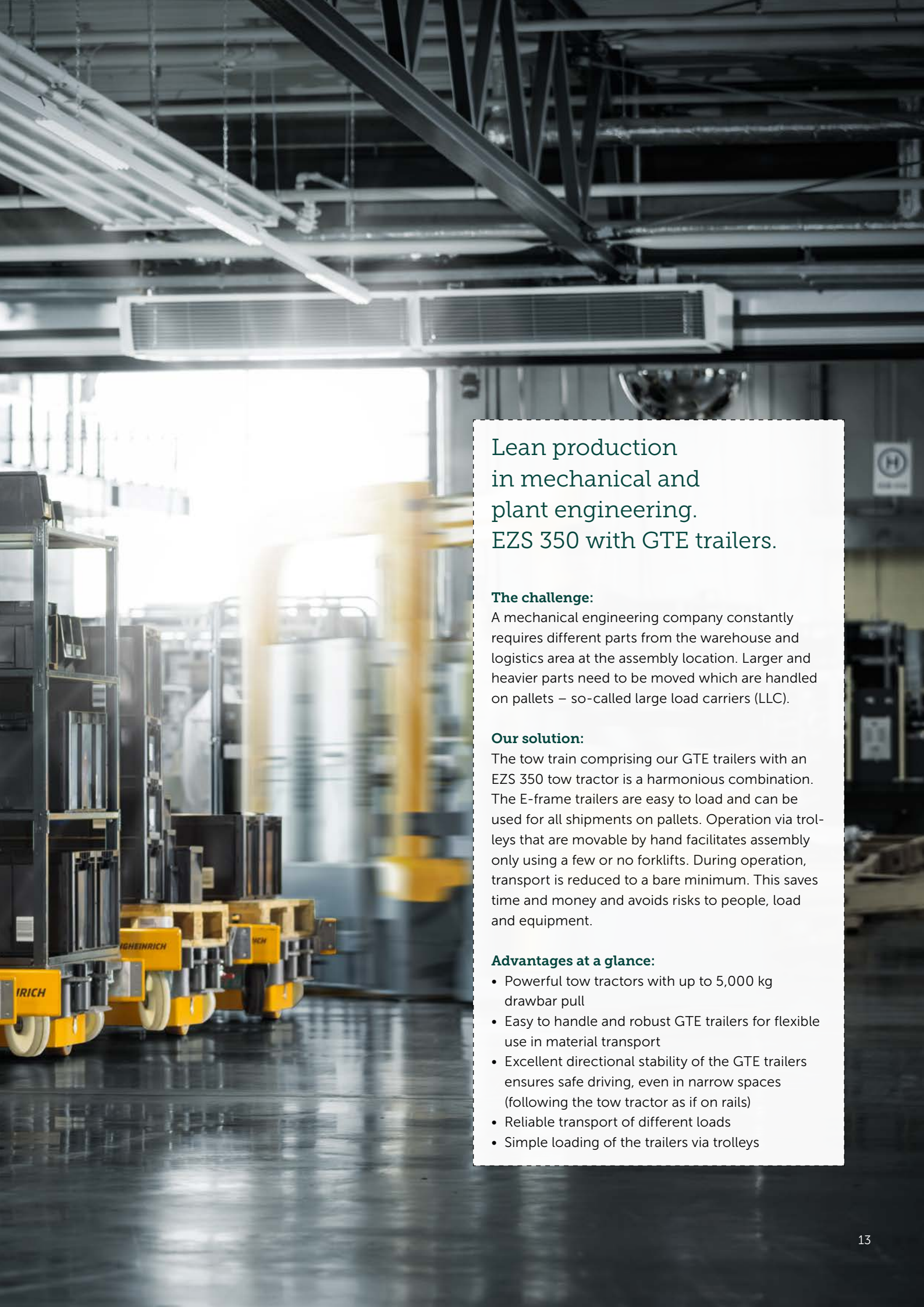
Advantages at a glance:

- Narrow tow tractor – only 600 mm wide
- Universally adaptable to different trailers
- Popular with SLC tow trains
- Fast and ergonomic



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Lean production in mechanical and plant engineering. EZS 350 with GTE trailers.

The challenge:

A mechanical engineering company constantly requires different parts from the warehouse and logistics area at the assembly location. Larger and heavier parts need to be moved which are handled on pallets – so-called large load carriers (LLC).

Our solution:

The tow train comprising our GTE trailers with an EZS 350 tow tractor is a harmonious combination. The E-frame trailers are easy to load and can be used for all shipments on pallets. Operation via trolleys that are movable by hand facilitates assembly only using a few or no forklifts. During operation, transport is reduced to a bare minimum. This saves time and money and avoids risks to people, load and equipment.

Advantages at a glance:

- Powerful tow tractors with up to 5,000 kg drawbar pull
- Easy to handle and robust GTE trailers for flexible use in material transport
- Excellent directional stability of the GTE trailers ensures safe driving, even in narrow spaces (following the tow tractor as if on rails)
- Reliable transport of different loads
- Simple loading of the trailers via trolleys





Reliable supply of production for automotive supplier. EZS C40 with special trailers.

The challenge:

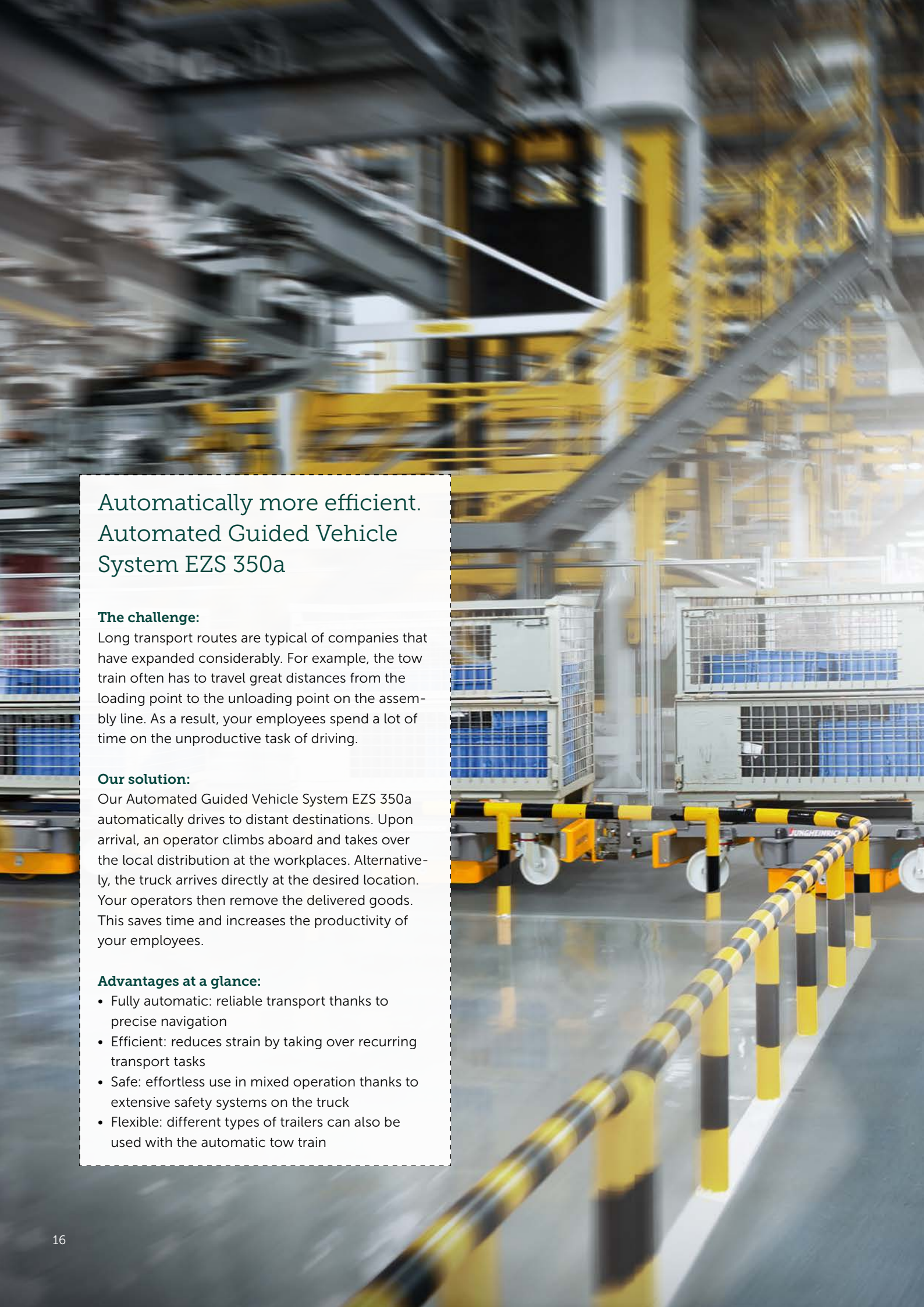
For an automotive supplier, the connection between production and warehouse works in two directions: The required components must be brought to the assembly lines, while completed modules are transported to the warehouse. It should also be noted that electrical components require special protection. Therefore, only special trailers can be used. In addition, the floors are specially sealed and particularly smooth to ensure maximum cleanliness.

Our solution:

The tow train comprising special taxi trailers is pulled by an EZS C40. This tow tractor is powerful and easy to handle in order to enable the tow train to also be used with ease in narrow production areas. The CSE tyres ensure safe traction on the particularly smooth floors of the production halls.

Advantages at a glance:

- Powerful tow tractors with up to 4,000 kg drawbar pull
- Elastic tyres ensure traction on both smooth and uneven floors and increase comfort
- Universal coupling attachment is designed for different trailers
- Easy entering and exiting of the truck saves time and protects the operator – especially with frequent stops



Automatically more efficient. Automated Guided Vehicle System EZS 350a

The challenge:

Long transport routes are typical of companies that have expanded considerably. For example, the tow train often has to travel great distances from the loading point to the unloading point on the assembly line. As a result, your employees spend a lot of time on the unproductive task of driving.

Our solution:

Our Automated Guided Vehicle System EZS 350a automatically drives to distant destinations. Upon arrival, an operator climbs aboard and takes over the local distribution at the workplaces. Alternatively, the truck arrives directly at the desired location. Your operators then remove the delivered goods. This saves time and increases the productivity of your employees.

Advantages at a glance:

- Fully automatic: reliable transport thanks to precise navigation
- Efficient: reduces strain by taking over recurring transport tasks
- Safe: effortless use in mixed operation thanks to extensive safety systems on the truck
- Flexible: different types of trailers can also be used with the automatic tow train



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The best investment. For every budget and the environment.

BestInvest

Our tow tractors reduce your long-term operating costs by up to 20 per cent. With a wide range of technological and ergonomic advantages that reduce all of the expenses making up the Total Cost of Operations (TCO) to minimum levels, from purchase to disposal. We call this promise BestInvest. So you can turn your costs into profitable capital expenditures and make your best investment decision.

The right rack for the right truck

We can provide you with the complete solution: Integrated warehouse planning, where racking and trucks work “hand in hand” as parts of a single system. From project planning through CAD drafting to handover. From modular racking systems through system platforms to high-bay warehouse. From consultancy through installation to service. We offer a one-stop shop.

Service with the manufacturer's expertise

Benefit from our service. Benefit from the manufacturer's expertise. Whatever your needs – full-service offers or individually coordinated maintenance intervals – our service can be flexibly adapted to your application and offers you long-term investment planning security. In addition, our comprehensive direct sales network and superbly trained engineers ensure rapid response times, minimum downtimes and lower costs.

Flexible use without risk

Unleash the full financial potential of our tow trains by combining them with our rental and financing solutions. Then your credit line will be preserved and no capital will be tied up. We also provide complete support for trucks and ensure problem-free operation. And when the work is done, you can simply return the truck or trade it in.

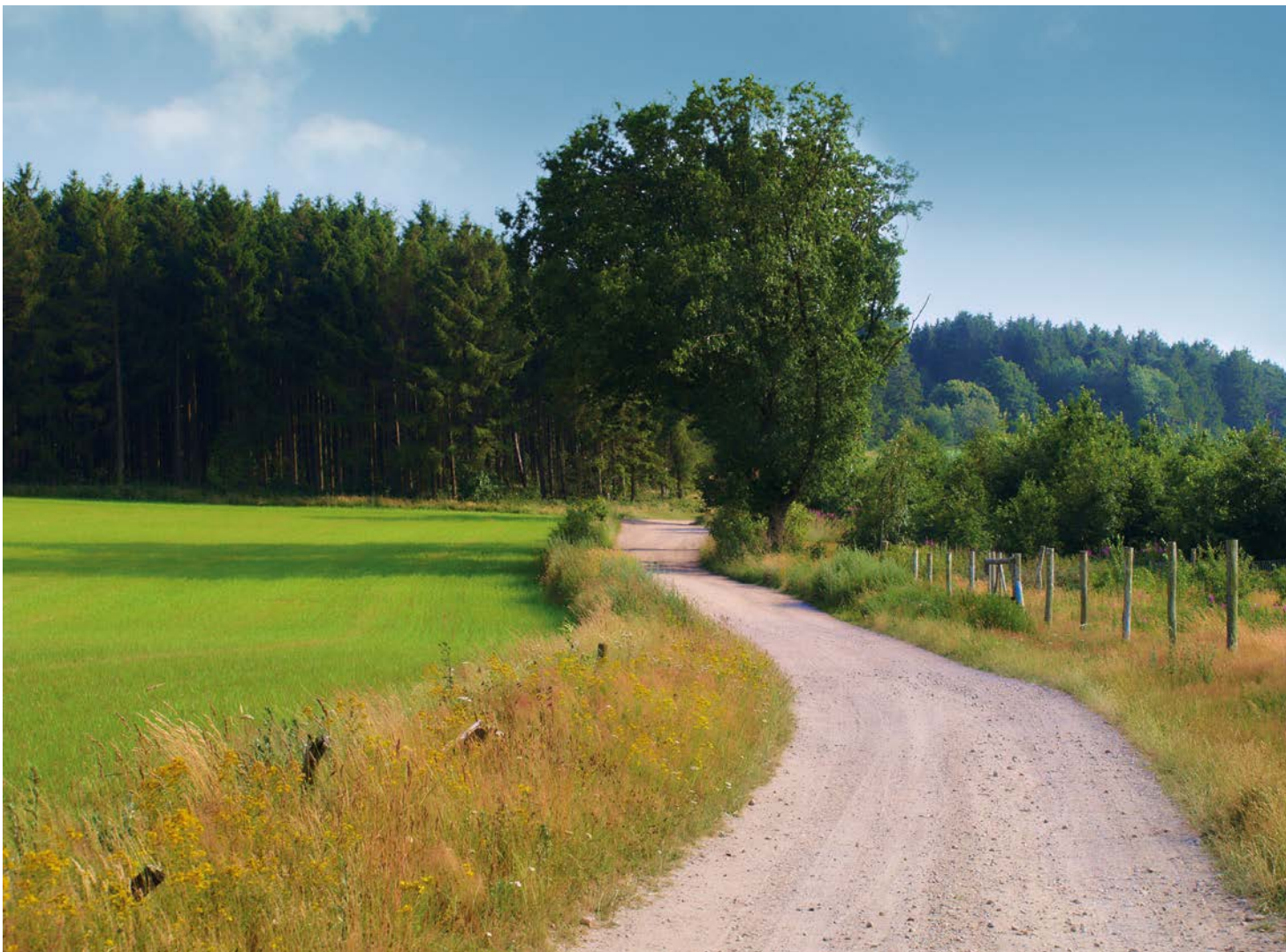
The first TÜV-certified product life-cycle assessment in the industry

TÜV-Nord has systematically analysed the life-cycle assessment of our manufacturing steps relevant to environmental protection and certified it in accordance with DIN EN ISO 14040. This means that Jungheinrich is the first forklift truck manufacturer to hold the environmental rating "Geprüfte Produkt-Ökobilanz" [Certified Product Life-cycle Assessment].



Lower emissions – lower energy costs

Our trucks have become up to 30 per cent more efficient in the last ten years. Technological innovations and advanced development have drastically reduced the CO₂ emissions of our entire truck portfolio since 2000. The entire Jungheinrich product cycle now features these innovations, from manufacturing through usage to refurbishing. And our high-tech solutions are really setting standards in the usage phase, which is where 80 to 90 per cent of all emissions occur. You can easily use this Jungheinrich advantage to your benefit, immediately reducing your energy costs considerably while simultaneously boosting your throughput rates noticeably.



ISO 9001 The German production facilities
ISO 14001 in Norderstedt, Moosburg
and Landsberg are certified.

 Jungheinrich trucks
conform to the European
Safety Requirements.

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