

Materials in flow



Content



4 Keeping materials flowing.
With stable and efficient process chains.



10 Smart logistics.
With high-performance software.



20 Tailored fits best.
For logistics with special requirements.



24 At the cutting edge of intralogistics.
Why choose automation solutions from Grenzebach?

- 6 Grenzebach provides a complete solution
For future-proof intralogistics
- 8 Intelligent intralogistics
Automation at its best
- 9 Industry case studies
- 12 Saving time with automation
Optimized goods-to-person order picking
- 13 System components for goods-to-person order picking
- 14 Linking processes with automation
Flexible internal goods transport
- 15 System components for automated goods transport
- 16 Stay one step ahead
For smarter automated goods transport
- 17 Customers who trust in us
 - 17 Swiss Post
 - 18 König + Neurath
 - 19 Audi Neckarsulm
- 22 The Grenzebach service promise
We are a partner to our customers



Keeping materials flowing. With stable and efficient process chains.

Everything is in motion, making its way from A to B. We know that more often than not the journey is the destination. But sometimes what really matters most is getting something to where it needs to be in the most efficient way possible.

That is exactly where Grenzebach comes in. We're passionate about logistics. And we love intralogistics best of all. It's a critical cog in the material flow machine. Smart logistics processes need to be automated and flexible to guarantee smooth operations that meet the increasing demands for dynamics and variability. Automated guided vehicles (AGVs) can be that exact link in a functioning process chain. They intelligently link incoming goods, production, storage, and shipping. In a reliable solution that promises speed and safety.

We work with experts in a number of disciplines who specialize in intelligent intralogistics and are committed to making innovative progress. Today, tomorrow, and beyond. Based on scrupulous study and research, they develop strategies and technologies to make the world of intralogistics a better, faster, and more efficient place, taking huge steps forward again and again. Fueled by enthusiasm and visions for the future, we can work with you to create a smart and automated solution that will allow you to optimize warehouse and production logistics for your business.

With this in mind: Keep moving!

Grenzebach provides a complete solution

For future-proof intralogistics



Grenzebach literally drives your business forward by automating and advancing your systems and processes. For more than ten years, we've been supplying intralogistics solutions as an automation specialist, ensuring an efficient flow of materials and communication in factory and logistics halls. This allows your company to grow and remain competitive in a changing technological and social environment.

Businesses in trade and production need their intralogistics to run smoothly if they want to remain competitive. And automation is the key.

We believe that automating logistics processes with automated guided vehicles offers the best balance between flexibility and efficiency in many applications. Independent automated guided vehicles (AGVs) replace traditional conveyor technology and move goods quickly and reliably to the desired locations. They rely on a universal control system, which is used to coordinate all AGVs.

Our solutions are based on a holistic approach, with hardware, software, and service coming from a single source. Whether you need the full package or just a few components from Grenzebach, we'll be by your side as a reliable partner throughout the entire product life cycle. With everything coming from a single source, you can make the most of the extensive expertise we've gained from working on a wide array of projects across all kinds of sectors.

1

Intralogistics systems

Using automated guided vehicles, control and management software, and suitable technologies and peripherals, we create intelligent intralogistics systems that keep materials flowing as efficiently as possible within and between incoming goods, production, storage, and shipping.

Advice

As your partner, we're on hand to offer our advice on automated intralogistics processes every step of the way – from the moment we receive your initial project request, during the detailed planning stage, and all the way to successful completion of the project. Our experts will work with you to create comprehensive automation concepts that are tailored to your requirements and your budget.

2

Process analysis

As the customer, you're in charge. In other words, we work with you to meet your specific requirements. Your wish is our command. After running a detailed analysis and identifying where there is room for improvement, we'll develop a bespoke solution just for you that covers hardware, software, and service in one package with high quality, innovative technology, and digital integration as standard.

Software solutions

We supply a range of smart software solutions to help you maximize your benefit-cost ratio for intralogistics. Our universal control system coordinates the movements of all automated guided vehicles, ensuring that transportation is as effective as possible and your warehouse is as efficient as possible in conjunction with the Warehouse Control System. With Grenzebach software, you can integrate the solution digitally safe in the knowledge that your transportation will be optimized, reliable, and flexible.

3

Automated guided vehicles

State-of-the-art robotics and independent automated guided vehicles with high availability can be used alongside or instead of traditional conveyor technology. Transportation is guaranteed to be flexible, safe, and reliable with vehicle technologies like autonomous detection of goods carriers, 360° personnel safety, and travel area monitoring.

Peripherals

Grenzebach can also supply you with the charging technology, transfer stations, and load carriers you need – either as standard modules or bespoke solutions. We also take care of connections to robot cells, elevators, and area protection.

Service 24/7

We're always happy to help – no matter where you are or when you need us. As your partner for intralogistics solutions, we deliver outstanding customer service throughout the entire life cycle of your system. We make sure that the technology you invest in lasts for as long as you would expect it to.

Intelligent intralogistics

Automation at its best

Flexibility and scalability

Reduce physical effort

Process optimization and production efficiency



Transparency and inventory overview

24/7 operation of the equipment

Optimal route finding

Nahezu alle Player innerhalb der Industrie und des eCommerce verzeichnen Umsatz- und Auftragssteigerungen. Eine reibungslose Intralogistik ist Dreh- und Angelpunkt für Unternehmen in Handel und Produktion, die wettbewerbsfähig bleiben wollen. Nur mit Automatisierung lassen sich Logistikprozesse beschleunigen, flexibilisieren und an die heutigen, gestiegenen Anforderungen anpassen. Daher ist eine intelligente, automatisierte Logistik das Fundament für die optimale Produktivität.

There are so many compelling reasons for automating intralogistics processes:

- » Safe and clear processes you can rely on – Businesses can keep a close eye on the full flow of goods at all times.
- » High availability and flexibility – Automated systems are easy to scale up during peak periods, while goods carriers can be adapted as and when the requirements change.
- » Optimized processes and efficient production – Automation accelerates processes and reduces the resources required, which in turn increases efficiency.
- » Healthier and more pleasant working environment – Ergonomic processes make work less strenuous for employees and help keep staff turnover down.

INDUSTRY CASE STUDIES

AUTOMATION AND ENGINEERING IN THE AUTOMOTIVE INDUSTRY

Automotive – Supermarket

- » Shorter cycle times and high reliability
- » Straightforward to integrate into an existing environment with space-saving benefits
- » Fast and flexible reactions within critical processes
- » Experienced partner to the automotive industry

PROCESS CHAIN

Machine to machine – Plant engineer

- » Combination of process steps to create one overall concept
- » Flexible and space-saving transport solutions with a fixed location
- » Tailoring in line with a specific customer challenge
- » Fast reaction to changes in the production infrastructure

INTERNAL AUTOMATED GOODS TRANSPORT

Internal transportation from A → B

- » Increased efficiency in production
- » Reliable and flexible solution for any production setting
- » Reduced risks associated with plans and processes
- » Intelligent link between incoming goods, production, storage, and shipping

GOODS-TO-PERSON ORDER PICKING

Goods-to-person (GtP) – Returns handling – Multiple mandates – GtP warehouse for 3PL

- » Ease of installation in an existing building
- » Flexibility in system planning with the option to extend
- » Fast reaction to peaks in demand and busy periods
- » Use of goods carriers and storage of items highly flexible

|| Digitalization is not a substitute for people – instead it expands their possibilities. ||

Smart logistics

With high-performance software



Imagine having an intelligent control center for your entire intralogistics for your production or warehouse that is perfectly adapted to your logistics process. From transport orders and vehicle selection to vehicle energy management – everything is clear, integrated, largely automated and, above all, independent of the vehicle manufacturers.

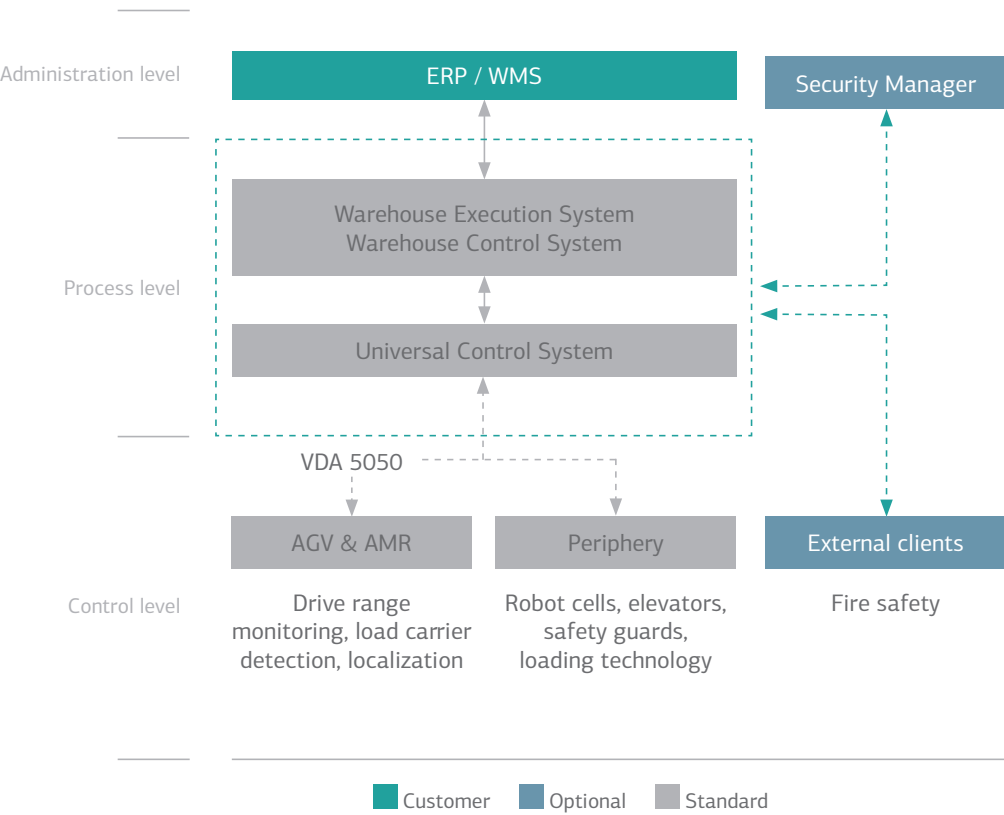
Intelligently organizing complex processes is one of Grenzebach's strengths. Grenzebach has developed the universal control system as the central software for controlling all automated guided vehicles. Based on the VDA 5050 standard for interface communication between control systems and individual vehicles, it controls all autonomous and automated vehicles regardless of their manufacturer and type. And it can easily be integrated into existing software ecosystems to consistently interlink all levels and modules. Interfaces to ERP, WMS, and other logistics control systems, as well as to various machines and systems, are part of the standard portfolio. Alongside the universal control system as the core element, Grenzebach also has a wide range of software solutions to meet different requirements at all stages of the logistics process.

Every manufacturer of automated guided vehicles has its own software. This makes it difficult to operate different vehicle types from different manufacturers in one system. Vehicles often use exclusive areas and routes, which greatly increases space requirements. The integration of different software is time-consuming and costly. Grenzebach solves these problems with its universal control system based on the VDA 5050.

Philipp Marb
Head of R&D and Product Management bei Grenzebach



GRENZEBACH'S SOFTWARE ECOSYSTEM



Warehouse Execution System (WES)

Manages the goods-to-person warehouse and optimizes orders from the WMS, translating them to tasks for the universal control system – with hit rate optimization.

Warehouse Control System (WCS)

Receives tasks from the warehouse management system and controls the logistics processes involved with automated goods transport. Acts as the link between the customer's system and Grenzebach's universal control system.

Universal control system

Coordinates all vehicle movements based on transport orders – even for large and complex fleets with different types of vehicles made by different manufacturers – and ensures that transportation is as smooth as possible, warehouses are as efficient as possible, and energy management is as effective as possible.

Security Manager


Acts as the gatekeeper to your applications, managing authentications and authorizations for all applications and users.

Saving time with automation


Optimized goods-to-person order picking




SYSTEM COMPONENTS FOR GOODS-TO-PERSON ORDER PICKING

- 


Software

The software makes it possible to optimize the system on an ongoing basis. The universal control system coordinates all vehicle movements, ensuring that transportation is as smooth as possible. The Warehouse Execution System keeps the warehouse as efficient as possible, with hit rate optimization to ensure maximum throughput.
- 

Automated guided vehicles

AGVs transport mobile goods carriers designed for order picking to a multi-functional workspace within closed areas without pedestrian traffic. Goods carriers have a high loading capacity up to a maximum weight of between 600 and 1,200 kg.
- 

Goods carriers

Item storage is highly flexible thanks to the use of versatile racks, table trolleys, frames, mobile goods carriers, and custom solutions.
- 

Peripherals

The overall solution includes ergonomic picking stations with a pick gate and put wall using pick-by-light and put-to-light systems as well as a suitable safety concept with hardware.

Work should be productive. And that goes for logistics too. Machine intelligence provided by Grenzebach boosts productivity for order picking.

Online trade is booming. The number of orders and returns is on an upward trajectory. And customers are becoming less and less patient about waiting for orders. This situation presents a number of challenges for order picking processes. They still tend to be largely manual, which means that employees are required to push items on trolleys through the warehouse when picking orders. The time this takes is not being used productively. Businesses that still work in this way are slower, less efficient, and less competitive. All in all, that means they are less profitable. Reason enough to make some changes and start doing things differently.

FULLY AUTOMATED GOODS-TO-PERSON TRANSPORT

Imagine being able to intelligently link incoming goods, storage, and shipping by automating the material flow in its entirety. This is exactly where our goods-to-person solution comes in. Automated guided vehicles transport goods carriers independently to exactly where they need to be within a secured area. The carriers are picked up and transported to a picking station. At that point, employees can remove the products they need outside the warehouse. The entire process is supported by software that controls the automated guided vehicles and ensures maximum efficiency.

Benefits:

- » Optimized warehouse operations and order picking combined with safer, more reliable processes
- » Space-saving storage, with AGVs taking up less space than people
- » Reliable operation 24/7 all year round
- » Fast and intuitive order processing and speedier deliveries
- » Ease of scalability, with the system flexible enough to grow with your business and cope with busy periods
- » High levels of flexibility in terms of dealing with different order sizes and SKUs
- » Increased productivity and minimal errors
- » Safe and ergonomic working environment

Linking processes with automation

Flexible internal goods transport



Production environments are becoming increasingly complex. And yet there is also a growing call for ways to react with flexibility and boost efficiency. Our automation solutions help you turn your production set-up into a smart factory.

Automated goods transport holds huge potential to increase efficiency over manual processes. With Grenzebach, you can make the most of that potential by upgrading your processes with intelligent technology.

AN INTELLIGENT FLEET

Our solution for automated goods transport intelligently links any and all processes along the value chain. State-of-the-art robotics and independent automated guided vehicles with high availability are used alongside or even instead of traditional conveyor technology and forklift trucks. AGVs from Grenzebach are compatible with almost all standard goods carriers – in the form of table trolleys, carts, frames, and racks. This means they can pick them up and transport them to wherever they need to be. They are the perfect solution for production facilities in any industry – regardless of the end product or the size of the company.

SYSTEM COMPONENTS FOR AUTOMATED GOODS TRANSPORT



Software

The Grenzebach universal control system coordinates all vehicle movements. In conjunction with the high-performance Warehouse Control System (complete with warehouse and transport management), it ensures that goods are transported as effectively as possible.



Automated guided vehicles

Grenzebach AGVs intelligently link all workstations – including incoming goods, production, storage, and shipping. Standard load carriers (table trolleys, carts, frames, and racks) can be transported to wherever they need to be.



Goods carriers

Table trolleys are the standard models, but we can also design specific goods carriers tailored to your needs. There's also the option of adapting goods carriers from your suppliers so they are compatible with Grenzebach vehicles.



Peripherals

Our complete solution also includes the relevant charging technology and transfer stations. And we can take care of connections to fire-protection gates and elevators too.

Benefits:

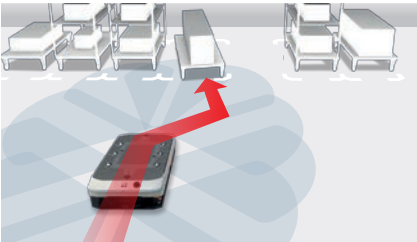
- » Efficient material flow for a shorter cycle time, just-in-time/just-in-sequence delivery
- » Faster reactions within critical processes
- » Straightforward integration into existing environments with safe-saving benefits (e.g., elevators, robot cells, conveyors, and strapping systems)
- » Ease of scalability, meaning the system can grow with your business and adapt to your requirements

Stay one step ahead

For smarter automated goods transport

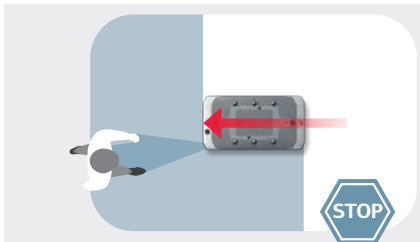
We are clear about our mission: To make the complex processes within automated goods transport more straightforward, efficient, and economical. Drawing on their passion, expertise, and experience, the specialists at Grenzebach develop new technologies and optimize existing functions or adapt them to meet new requirements. So you can rest assured that automated guided vehicles from Grenzebach are equipped with all the technologies and innovative detailed solutions they need to get the job done as effectively as possible.

The technical features listed below are what makes Grenzebach vehicles the number one solution for automated goods transport:



AUTONOMOUS DETECTION OF GOODS CARRIERS

Detects the position of inaccurately placed goods carriers (+/- 250 mm) and makes it possible for these loads to be picked up automatically.



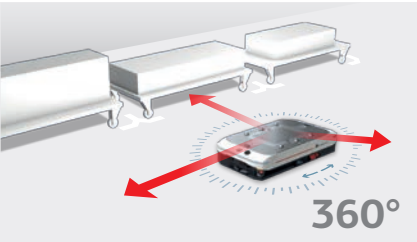
360° PERSONNEL SAFETY

Equipped with blue light and two Lidar laser scanners to combine efficiency and productivity with maximum personnel safety.



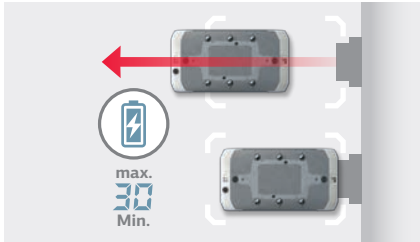
360° DRIVE RANGE MONITORING

Detects disruptive factors with a minimum size of approximately 50 mm using a 3D vision system to avoid collisions (function on OL1200S).



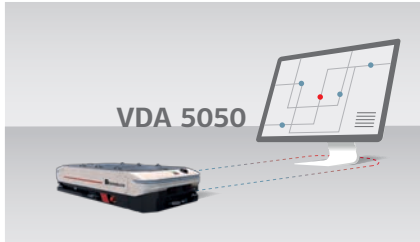
360° MOBILITY

Grenzebach AGVs can move freely in any direction and rotate on their axis while stationary, with narrow pathways, 90° curves, turning maneuvers, and cross-docking of goods carriers not posing a problem either.



24/7 USE

Lithium power, up to 48 V DC, and up to 80 amperes charging current ensure maximum availability during 24/7 operation and at top speeds.



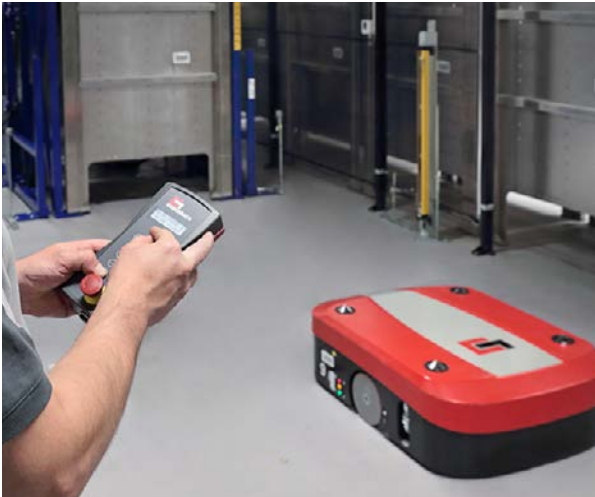
VDA 5050 COMPATIBILITY

The VDA 5050 interface allows for maximum freedom when planning systems with just one software control center for all AGVs – regardless of their manufacturer and brand.

Customers who trust in us



SWISS POST: INTELLIGENT INTRALOGISTICS FOR A LISTED BUILDING



THE GENERAL CHALLENGE

Swiss Post processes more than 30 million international shipments every year – and that includes customs clearance. Our customer Gilgen Logistics was looking for a smart and efficient way of organizing the routes letters and parcels take through a listed building with pillars, shafts, and limited space.

THE JOINT SOLUTION

We worked with Swiss company Gilgen Logistics to create an intralogistics solution that incorporates a new mezzanine floor. Gilgen Logistics was responsible for implementing the infrastructure, while Grenzebach supplied the AGVs for the warehouse. As a result, two separate areas were brought together.

THE GRENZEBACH SOLUTION SET

- » Universal control system connected to the customer’s warehouse management system
- » L600 automated guided vehicles for transporting goods in the warehouse
- » Safety concept with safety radio communications

SOME OF THE BENEFITS FOR OUR CUSTOMER

- » A highly efficient complete solution that works around all the columns and shafts in the listed building
- » An efficient navigation solution with safety radio communications
- » Flexible adjustments in line with additional requests during operation
- » Straightforward integration of Grenzebach’s universal control system into the existing software ecosystem
- » Customer-focused benefits introduced by improving innovation and efficiency in the city center building

Optimizing logistics in existing buildings in city center locations comes with a long list of benefits that’s only going to get longer. Businesses are getting closer and closer to their customers to keep that last mile of delivery as short as possible. Intralogistics systems like this one at Swiss Post are making this possible. It’s the result of a successful collaboration with Grenzebach. We see this as a milestone in the future of intralogistics.

Rudolf Steffen
Head of Project Management at Gilgen Logistics

KÖNIG + NEURATH: HIGHLY FLEXIBLE AND SCALABLE INTRALOGISTICS SYSTEM



THE GENERAL CHALLENGE

When the office furniture manufacturer decided to introduce a high-bay warehouse, they wanted to automate their intralogistics processes at the same time. König + Neurath were looking for a bespoke system that would have plenty of flexibility for adjustments and that they would be able to control themselves for the most part.

THE JOINT SOLUTION

Almost all transports in the company should be automated. In partnership, a complete automation of the logistics processes in metal production has been created, which König + Neurath can flexibly adapt to changing processes. With the help of training courses, the office furniture manufacturer can commission the vehicles itself.

THE GRENZEBACH SOLUTION SET

- » Universal control system from Grenzebach for AGV control
- » L1200S automated guided vehicles
- » WiFi boxes for sensor connection
- » Charging stations and peripherals
- » Training package to enable our customer to commission the entire system

SOME OF THE BENEFITS FOR OUR CUSTOMER

- » A flexible system that the customer can adapt in response to changes in circumstances
- » Training and close contact resulting in commissioning by the customer
- » A full logistics concept that can gradually be extended and upgraded

It was important to us that we would have enough control over the system to be able to change a route or start using a vehicle ourselves. And it was only possible for us to get so involved in this project and to act with such independence because we received training from Grenzebach and were able to communicate closely with them every step of the way.

David Schuch
Industrial Engineering König + Neurath

AUDI NECKARSULM: NO TWO CAR ORDERS ARE EXACTLY THE SAME. NO PROBLEM FOR US.



THE GENERAL CHALLENGE

The complexity of car manufacturing is increasing because cars today are highly individualized, rather than standardized models. Consequently, manufacturing requires in-time delivery of custom-fit components to workers and assembly robots at flexible manufacturing islands.

THE JOINT SOLUTION

Together with the car manufacturer Audi Neckarsulm we increased the reliability of just-in-sequence manufacturing of their new flagship model by implementing a Grenzebach Automated Goods Transport solution.

THE GRENZEBACH SOLUTION SET

- » 30 L1200S Automated Guided Vehicles that can even communicate with elevators (production on three levels)
- » The Universal Control System from Grenzebach acts as control center
- » Safety concept in accordance with the customer's employee safety requirements
- » Customer-individual service agreement

SOME OF THE BENEFITS FOR OUR CUSTOMER

- » Ramp-up during current model change on double shift operation
- » Smooth integration into the customer's software ecosystem, e.g. ERP system
- » Up to 99.5% availability, making it more reliable and ergonomic
- » Optimal transport routes across three floors, coordinated by the Grenzebach Universal Control System



Tailored fits best. For logistics with special requirements.

Can't find a standard solution to suit you and your production or warehouse set-up? No problem! We are always happy to develop and deliver solutions with bespoke automated guided vehicles to suit specific requirements.

Every Grenzebach AGV you order from us will be designed to meet your exact needs. Even if your production environment is unconventional, complex, or even dangerous due to the hazardous substances in use there.

PROFESSIONALS YOU CAN TRUST

With our highly qualified and specialized engineers on hand to help, we're a development partner you can rely on to stand by your side and work closely with you. All you need to do is tell us about the challenges you're facing and we'll provide the exact equipment you need. No environment is too complex for us and there are no logistical challenges we can't overcome.

We'll consult closely with you on the design and technical development. That way, you know you'll be getting the perfect solution for your business. Prepare to say hello to a bespoke fleet of automated guided vehicles that is guaranteed to boost your productivity.

|| We are committed to delivering complete solutions that meet our customers' exact requirements. After running a detailed analysis, we'll develop a bespoke solution just for you that covers hardware, software, and service in one package. ||

Robert Luxenhofer
Sales Director Intralogistics



The Grenzebach service promise

We are a partner to our customers



We live Service. Around the clock. Around the world. And we call it ... WeService.

If every minute matters to you, know that you'll be in safe hands with Grenzebach. We know that time is money when it comes to intralogistics, so downtime is expensive. That's why we don't just provide our service when you have a problem, but from the moment you choose Grenzebach as your partner.

With the extensive expertise we've built up over the years, we're here to support and advise you every step of the way from start to finish. We work with you to optimize your intralogistics processes so that you can maximize your productivity. Once your bespoke intralogistics solution has been installed, you can focus your attention fully on your core business. We're flexible with our service packages, going all the way up to an all-inclusive offer that leaves you with nothing to worry about. And that applies throughout the entire life cycle of your system in line with your specific requirements.

You have access to staff with specialist training whenever you need them. They will stop at nothing to achieve maximum availability for your system – with fast response times guaranteed. We talk your language, are located in your time zone, and are there to help, either on-site or remotely. That's the promise we make to you.

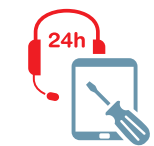


|| The support we offer our customers goes beyond planning out their logistics. We also help with the technical plans for existing factories and new systems. And we make sure our customers' employees are briefed and trained so they are familiar with the system and in a position to work with it themselves later down the line. ||

Ralf König
Senior Vice President Intralogistics



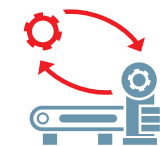
GRENZEBACH SERVICE MODULES FOR INTRALOGISTICS



EXCELLENT SERVICES

Ensure reliability of the solution, keep uptime constantly high, make usage sustainable:

- » 24/7 Hotline
- » Tele-remote-support
- » Process optimization
- » Health checks
- » Preventative maintenance
- » Training for customers
- » On-site service
- » Flexible service agreements
- » Extended warranty



ORIGINAL PARTS

Ensure top performance, value due to durability, cut downtime:

- » Excellent quality
- » A one-stop shop
- » Consistent production
- » High levels of availability
- » Quick lead times for spare parts
- » Professional customer support
- » Long service lives
- » Supplied worldwide



FUTURE SERVICES

Use Grenzebach's digitalization solution and benefit from smart, robust processes:

- » AR/VR support during maintenance
- » Predictive maintenance
- » Electronic parts catalog
- » Online documentation
- » Detailed statistics
- » Advanced analyses



ROLLING UPGRADES

Stay flexible, optimize efficiency, extend service life:

- » Hardware and software modifications
- » System-specific automated retrofits
- » System checks and reassessment of safety concept
- » Layout adjustments and system extensions



Because you also prefer
to receive your packages
just-in-time

AT THE CUTTING EDGE OF INTRALOGISTICS WHY CHOOSE AUTOMATION SOLUTIONS FROM GRENZEBACH?

When you choose Grenzebach, you gain a dependable partner you know you can rely on to be by your side throughout the entire life cycle of your intralogistics solution. We're a knowledgeable sounding board standing by with all the advice you need when you're planning and rolling out your system.

Our service team is on hand to tackle your specific challenges by tailoring our flexible services and products to you. And our after sales team is ready to help you get the most use out of your system once it's in place and can advise on ways to upgrade your system to accommodate new requirements.

You are on the safe side with Grenzebach:

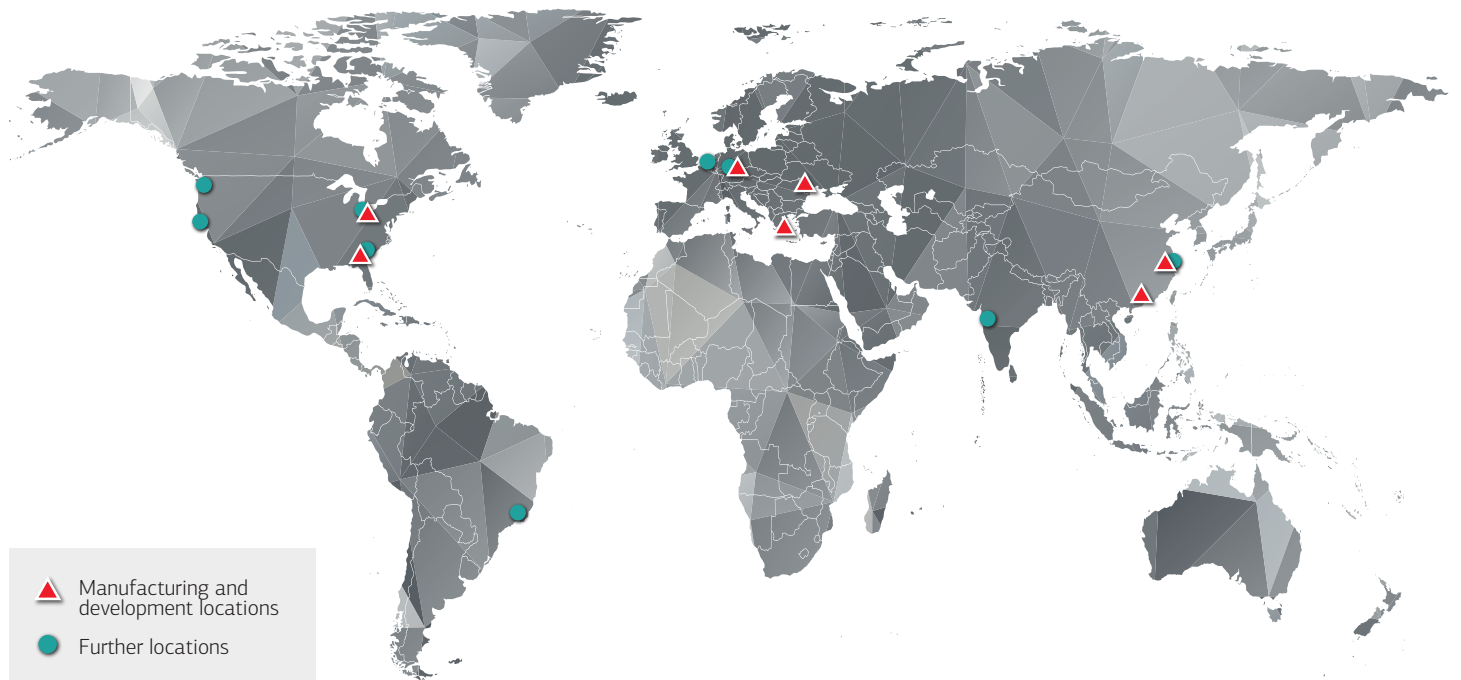
- » Independent, family-owned company with strong financial standing
- » Provider of complete solutions
- » Access to the expertise of around 650 engineers and software developers
- » Commitment to innovation, with fast prototyping and updates
- » Worldwide production and service, with local points of contact
- » 24/7 support and excellent customer service around the world
- » Certified partner (TISAX, ISO9001 and more)
- » Long-lasting systems and vehicles

Trust in over 60 years of experience in the automation of industrial processes. Grenzebach's expertise, collected in projects with numerous well-known customers from all over the world, is used to find suitable solutions for every customer – with speed, reliability, and high quality guaranteed.

|| We have a great working relationship with Grenzebach. Whenever new projects are coming up, we have new ideas, or Grenzebach is releasing new features, communication between us is always effective. We're delighted to have such a strong ongoing partnership. ||

Felix Delbrouck
AGV Programmer König + Neurath

WORLDWIDE



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