



# Connect

02

June 2021



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How modelmakers work ergonomically

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Health and safety from the modular system



## FIGHTING COUNTERFEIT PRODUCTS

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Tracking and tracing solution for the pharmaceutical industry





# Simply move more precisely: **MiniTec linear technology**

## Flexibility from the modular system

We offer a wide range of linear technology products to match our modular profile system. This reaches from single components to adjustment units and sliding guides up to ready-to-install linear axes.

The common feature is the unlimited compatibility with the MiniTec modular profile system. This ensures that the respective linear unit fits seamlessly into your design!

Whether pick & place, gantry robot, measuring device, supply or handling device: We offer you the optimum linear guide and suitable linear unit for every application - and thus a perfectly matched solution that is resilient and works precisely.

Be inspired by the art of simplicity and discover the right solution for your requirements!



Discover more at  
**MiniTec Expo:**  
<https://minitec.expo-ip.com>



DEAR READERS,

For many years, we have helped out customers to equip and organise their production. We offer custom-fit solutions to enable cost-efficient production, especially in the assembly, handling and conveying technology areas.

All our solutions are based on our own experience, because we prescribed ourselves a continuous change and optimisation process. Not only the production processes but also the products are scrutinised permanently with regard to their utility and their functions. True to our motto—"The Art of Simplicity"—the use says

it all. We also invest permanently in production and logistics to make sure that we can deliver high-quality products to you in the shortest possible time. Based on qualified and motivated employees, modern machines and IT.

"From chipping come chips", as the saying goes. The health and safety of people and machinery come first, especially in production environments. We have developed customised solutions for this based on our modular system, which we use ourselves intensively and for many years have installed in numerous production halls of our customers. They range from machine protection to noise control through to hygiene protection. We have dedicated our front-page story in this issue to this important topic and offer you an interesting insight into the challenges, the solutions and our protection system.

In this issue, we also look to the future, because we are entering the booming battery production sector. MiniTec has core skills for this, which enable and simplify efficient as well as cost-effective production of the energy stores. In future, we want to help producers of batteries to set up new production facilities. We have already developed solutions for this that are ready to be put into practice. Our many years of expertise in plant construction, in particular in solar technology, combined with solutions for assembly, handling, conveying and test processes can provide valuable support for this.

Have a good read! We hope you find it interesting and inspiring.

Yours sincerely  
Tobias Doll

Director of Production





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## TITLE STORY SAFETY FIRST

Health and safety come first, especially in production environments. MiniTec offers tailor-made solutions based on its modular system. Regardless of whether it involves machine protection, noise control or hygiene protection, whether individual components or complete solutions.

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### PRACTICE

#### Everything within reach

Specially designed worktables are a major advantage for ergonomic working in modelmaking. The team of "Die Modellwerker" (The Model Workers) designed a versatile worktable for modelmakers using MiniTec's modular system and workplace system.



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### SOLUTIONS

#### Fighting counterfeit medicines

Counterfeit products are on the rise in the pharmaceutical sector. A track & trace system checks products with image processing and networked databases. It enables batch labelling and traceability.



## TURNING AND MILLING IN TOP FORM



When it comes to the machining of shafts and machine components, the MiniTec plant in Waldmohr is the first port of call. Whether steel in all its variations, aluminium or polymer (including POM, PE, PA), anything is possible.

A special area is the machining of surface-hardened precision steel shafts, such as those used in linear technology.

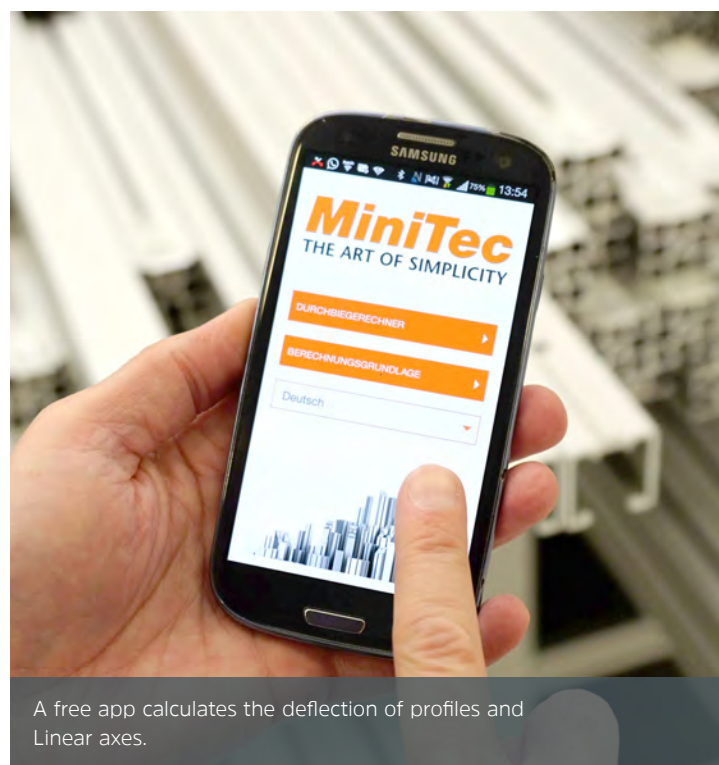
The range of services extends from simple cutting to size through to the completely finished drive axle, including all turning, drilling and milling work. A special plant enables shafts with 5 – 80 mm diameter and a length of up to 6 m to be machined. The workpieces can be clamped centrally within a few seconds, regardless of how thick they are. Aligning is not necessary.

Other typical products are shaft supports, linear bearings and traverses. The orders range from a component part to small series through to lot sizes of several thousand parts. Highly modern CNC machinery with eleven units in total (5, 7 and 9-axis machining centres) enables orders to be completed in the shortest possible time.

### Calculating deflection made easy

With a free app from MiniTec and their smartphone, design engineers, equipment builders and production planners can easily calculate load-dependent deflection of the aluminium profiles and linear axes in the MiniTec modular system. They can then quickly determine whether the profiles and axes are correctly dimensioned for the static and point loading in a specific case—or not. If the deflection is above the allowable limits, a stronger component should be chosen from the MiniTec modular system.

The calculation app for all commonly used smartphones not only simplifies the calculations, but also makes a directly implementable contribution to safety in the workplace. It is also a practical alternative to the PC version on the MiniTec website.



A free app calculates the deflection of profiles and linear axes.

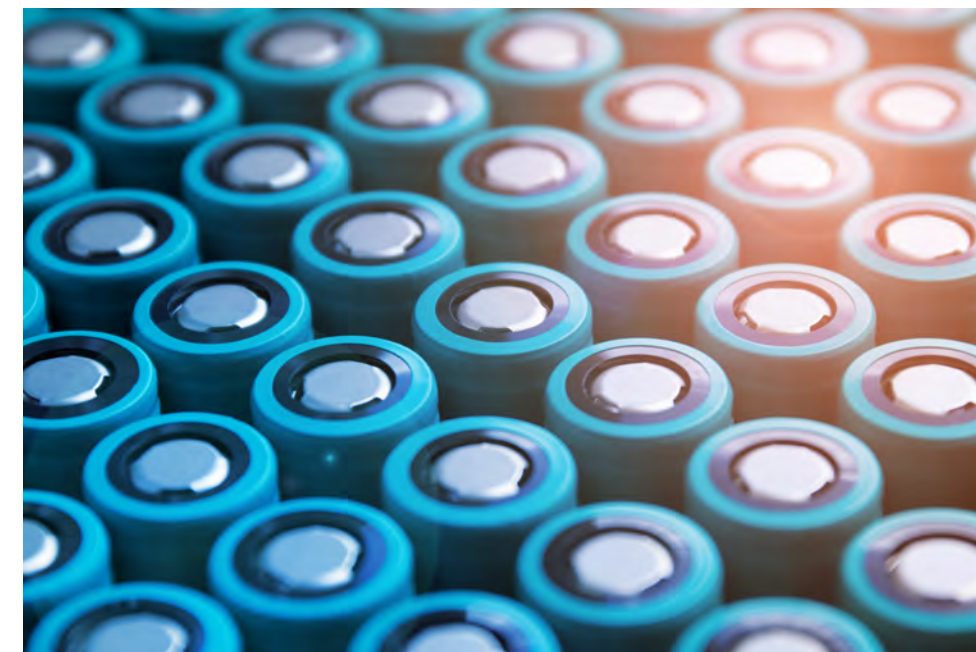
## CLEVER SOLUTIONS FOR BATTERY PRODUCTION

**Energy from batteries plays an increasingly large role in our life. MiniTec has core skills, which enable and simplify efficient as well as cost-effective production of the energy stores.**

The worldwide demand for batteries has been increasing for years. The most important driver of this is electromobility, particularly for passenger cars, utility vehicles and mobile machines such as forklift trucks. E-bikes as well as electrically operated scooters and motorbikes are also enjoying growing popularity. In addition, there are diverse additional areas of application such as gardening equipment. Furthermore, due to the trend towards renewable energy, increasing demand for stationary stores is to be expected in the power supply sector.

This boom leads to the development of new production facilities for batteries. MiniTec can provide valuable support here. Due to years of expertise in plant construction, particularly in solar technology, MiniTec supplies customised solutions for assembly, handling, conveying and test processes.

The lithium-ion battery clearly dominates the storage technology – regardless whether they are cylindrical round cells, prismatic batteries or pouch cells. The cells are assembled into battery modules and then several modules are joined together in battery packs. This involves numerous conveying, handling and testing tasks, which are



solved efficiently with tried and tested MiniTec technology and the know-how of our engineers.

**High process accuracy and repeatability**

**PRECISION AND SPEED  
ARE DECISIVE**

Decisive criteria in the battery assembly are precision (the tolerances lie within tight limits) and speed (the cells must be bonded and welded together in a very short time). Accordingly, transport of the module bodies or packing housings requires a technology that ensures high process

accuracy and repeatability. MiniTec conveyor systems such as the FMS or the TSG are used here to transport workpiece carriers with high precision and at the same time, enormous speed.

When assembling (pick & place) the battery modules with the individual cells, handling systems based on MiniTec linear axes are an advantage, thanks to their accuracy and characteristically flexible layout. This also involves the bonding and pressing work processes of the battery cells in the module. It goes without saying that robots can also be integrated into the automation of handling areas by MiniTec.





# SAFETY FIRST

Health and safety come first, especially in production environments. Here, MiniTec offers customised solutions based on its own modular system.

Regardless of whether it involves machine protection, noise control or hygiene protection. Whether individual components or complete solutions. An overview.

Crash—the steel ball hits the Plexiglas pane at full tilt. The pane gives slightly, creaks a little, but does not crack or shatter. The MiniTec crew was satisfied. What initially looks like a strange pastime, is in truth a load test for a lifting door. Not an off-the-shelf door, instead one especially produced for a customer. A robot will do its work later behind this door. And so that no employees are injured should the worst case occur, the said door is subjected to an extensive load test by means of pendulum impact testing.

The customer require an impact resistance of several hundred joules at defined points on the pane, with the lifting door closed. No parts of the pane or frame may penetrate the outside, chip or be ejected. No cracks may form and, of course, the test body must not penetrate the pane. All this was finally achieved due to the tests and accompanying adjustments to the lifting door configuration and was demonstrated accordingly.

It was not the first time that the customer had turned to MiniTec to provide them with customised protection systems, because this is a particular strength of ours. Apart from a wide range of standard safety fences, doors and elements, as a full-service provider, MiniTec also takes care of the complete implementation of individual protection systems.

## MODULAR PROTECTION SYSTEM

### Safety for man and machinery

Hazards lurk in many places in production environments. The aim is to design machines and systems so that work accidents are prevented. Guards must prevent access to the source of danger and at the same protect against ejected parts, moving machine parts or escaping liquids. The equipment must also be designed so that it cannot be removed without tools. The possibilities are diverse and depend on different factors, including the individual hazard rating. If MiniTec also produces the machine, a customised protective enclosure is part of the scope of supply. We also produce protection solutions for customers' existing installations. Here the typical route is that the customer sends us a layout or sketch of the situation and receives a proposal.



Partition walls from the modular system screen off areas and protect them from unauthorised access.

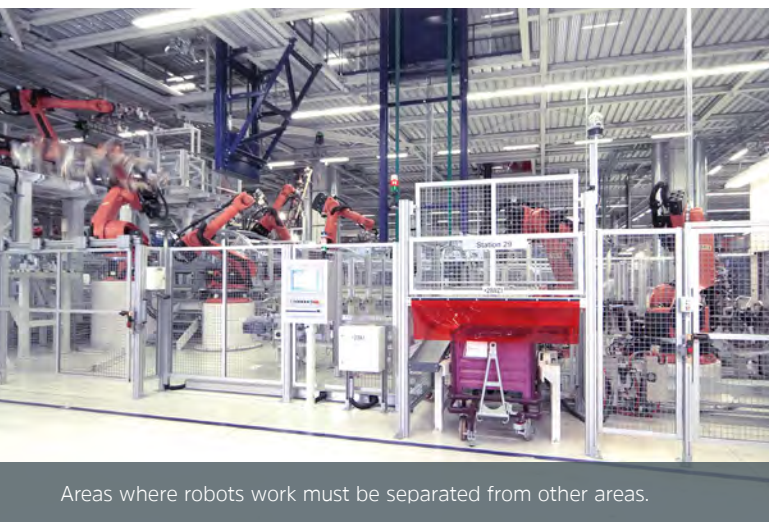
### Risk assessment as a sound foundation

A risk assessment to EN ISO 12100 is produced for each MiniTec system. Identification of the hazards, estimating the risk and the subsequent risk assessment provide the basis for the choice or applicable protective measures. These include, for example, an adequate distance from the danger zone, or safety switches on the access doors, which stop the machine movements on opening or rather do not enable opening until the dangerous movements have stopped. The choice of suitable safety switches must be made in consideration of the required performance level (PLr). The performance level describes the ability of the safety-related component to perform the required safety function.

### From the safety fence to the complete enclosure

The focus is on protecting employees from injuries. These can be caused by the movement of machines, by ejected parts, heat or even optical hazards (e.g. lasers) or noise. MiniTec offers a large number of solutions for optimum protection in modern production facilities. These range from guard panels to vertically traversable protective hoods through to complete protective enclosures and office modules.





Areas where robots work must be separated from other areas.

Different types of safety fences are available. Typical examples are corrugated mesh, polycarbonate panes (as in the robot example ) or real glass (against heat). Other types of material such as MDF boards or sheet metal can also be useful. For example, completely opaque surface elements are necessary to protect eyes from laser radiation. Ultimately, the design of the safety fence depends on the moved machine parts and materials, the distances to be maintained and the hazard rating.

Anything is also possible when it comes to the shape of the enclosure. Even curved guards can be realised, since MiniTec can also easily bend its aluminium profiles.

### Enabling safe access

Despite higher protection requirements, access to the respective system must of course be possible at any time, and MiniTec offers suitable solutions for these cases too. They range from normal doors to special lifting doors. Different surface elements can also be used here, depending on the task and standards. Apart from standard lifting doors, we also supply lifting doors with fall protection that prevents the open door from dropping accidentally. The employees open the door either manually or pneumatically by pressing a button.

In addition to classic door systems, light grids can also be a useful measure for access monitoring. All machine movements are stopped immediately if an employee steps through the network of laser beams. Such a solution is used, for example, by MiniTec itself at the saw for aluminium profiles at its headquarters in Schöneberg-Kübelberg.

### Preventing health damage with noise control

Active noise control ensures pleasant workplaces. Employees' health and well-being can also be impaired, depending on the intensity and duration of the noise. Excessively high noise impact and inadequate room acoustics within production halls or workshops also leads to reductions in performance and an increased risk of accidents due to impaired communication, wrong decisions due to misunderstandings and a generally increased defects rate in the production process.

With the MiniTec components and versions for industrial sound insulation, industrial noise can be reduced effectively, not only at the machines and in the production halls themselves, but also in the recreation rooms, offices and other rooms. MiniTec offers a large range of freely configurable cassettes for noise control. The absorption panels are suitable not only for primary but also for secondary sound insulation. Primary sound insulation is achieved by enclosing the noise sources, while secondary sound insulation is achieved by using noise-absorbing boards in recreation rooms, master offices and other rooms. The noise protection bar is recommended for sealing removable walls and door stops. This is attached completely without tools and is easy to replace.

**HIGH NOISE  
IMPACTS  
CAUSE  
REDUCED  
PERFORMANCE**



Soundproof booths enable bearable noise levels in halls.

The office cube enables relaxed and concentrated working.



### Protection for machines too

Apart from occupational safety, machine protection also involves protecting the systems themselves, in particular against environmental effects. For example, depending on the environment, it can be important to protect a machine from dirt caused by dust. Moisture is also a frequent risk, systems must then be protected from splash water. How highly depends on the tightness requirements—which can extend up to “high-pressure cleaner”-tight (which equals a water jet of 100 bar). The measures can range from protective walls to a system roof through to complete enclosures.

### Hygiene protection against infections

Even though it seems that corona is weakening, uncertainties remain: Will future mutations cause the pandemic to flare up again? Will new viruses threaten mankind? With hygiene protection walls from MiniTec, companies effectively reduce the risk of an infectious disease, transferred by droplets on sneezing, coughing or by saliva. The walls can be mounted on a counter or on a workstation or can be used as a mobile version. They are ideally used wherever there is a lot of public access or several persons work together. The MiniTec hygiene station

is a useful addition. Employees and visitors use it to disinfect their hands directly at the entrance to a building or area – in this way, infections are prevented effectively.

### Individual solutions thanks to the modular system

Regardless of whether the customer designs their protection system themselves or engages MiniTec as a full-service provider: All solutions are based on the tried and tested modular profile system and can therefore be designed to be extremely flexible and individual. The system and machine protection can be exactly adapted to the customer's wishes, to high safety standards as well as visual effect standards. Don't leave anything to chance and discover the “Art of Simplicity” for machine and employee protection with MiniTec!



## WELL PROTECTED IN THE CAGE

The fsk industries company in Gummersbach is the developer and manufacturer of the modern Cobot welding system SmartArc, which has convincingly complex properties despite its extremely easy and intuitive operation. Apart from functionality, the manufacturer places great value in the safety and durability of their welding cells. Only a few systems on the market have an enclosure that protects the operator and the environment from the potential hazards of welding. The Machinery Direction and CE conformity standards require that necessary safety measures be taken in case of dangerous processes such as a welding robot system.

Enclosing machines is the easiest and most efficient solution to protecting operators from danger. "We know from experience, how important safety is in the automation of welding processes. That is why we decided in favour of a solution that is as effective as it is cost-efficient", says Nils Kühle, Managing Director of fsk industries – and means the corresponding system components of MiniTec. "The profiles from the modular system offer maximum flexibility, are load-bearing and simply look good", explains Kühle. The compact cell solution SmartCell using the MiniTec



fsk industries is the developer and manufacturer of the compact Cobot SmartArc welding system.

components is a real positive for the customer. The good relationship between the two companies has other advantages: MiniTec linear axes are also installed at SmartArc, to enlarge the Cobot work area significantly. By integrating the axis control in the SmartArc user interface, it is now even easier to set the functions and positions of the high-quality MiniTec linear axes and to implement them suitably for Cobot.

## LABEL PRINTING WITH ENCLOSURE



An enclosure for the XPA 934 printing and labelling system offers reliable protection at trade fairs.

Protection for people and machines is not only necessary in production areas; enclosures are also required at trade fairs and in exhibitions. Novexx Solutions, a worldwide leading supplier in the printing and labelling segment engaged MiniTec to supply such protective equipment for different labelling machines: The new XPA 934 printing and labelling system combines compact design with easy handling for a large number of application areas.

MiniTec supplies the baseframe for the system and the protective enclosure, based on the profile modular system. The overall structure was made so that it can be placed on a pallet and transported from trade fair to trade fair.

Protective equipment and a mobile base were also designed for the XLP 504 label printer, a new 3-in-1 solution for the textile industry.

## ENVIRONMENTALLY AWARE FROM THE OUTSET



**Economic efficiency and ecology do not have to be contradictory. The MiniTec profile system meets these objectives through strict specifications for supplier selection, recycling-friendly design of the products and assured processes in production.**

The material aluminium is the third most frequently occurring element in the Earth's crust. Primary aluminium is obtained from bauxite with electrical power. However, this process is very energy-intensive. For this reason, the environmental management of MiniTec regularly reviews the supply chains and preferred suppliers, who mainly produce the primary aluminium with renewable energy.

A significant advantage of aluminium material is its long use period: 75 percent of the aluminium ever produced is still in use. Most of it has already been recycled many times, whereby this percentage increases continuously and in Germany it

accounts for more than 2/3 of the total consumption.

### Good life cycle assessment

Only five percent of the original quantity of energy is required to recover the raw material, which improves the life cycle assessment of this material significantly. An important requirement for recycling without quality loss, however, is recycling-orientated product design and homogeneous collection of the recoverable material.

Protecting the environment begins in the first phase of design. All extruded MiniTec profiles are made from the same alloy in order to avoid mixing of

different alloys. The aluminium chips (swarf) and profile offcuts that occur in production are collected in a closed cycle and are forwarded for recovery as homogeneous material. Each department has specially marked collection containers for this purpose.

### Qualitative separation

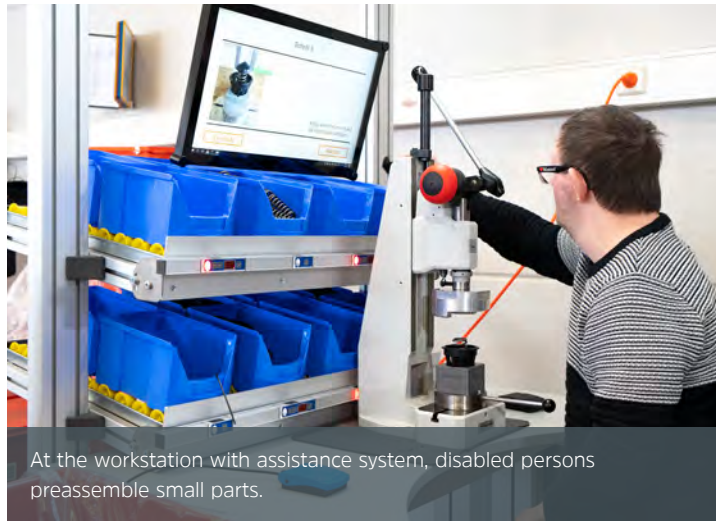
All residual aluminium materials, whose analysis values cannot be determined clearly, are collected separately and are added to a special recycling process. The material recovered in this way is either regenerated by adding primary aluminium or is used for less highly loaded workpieces in so-called downcycling.

The employees are trained with regular instruction given by our environmental management about the importance for the environment and are sensitised for continuous improvements. Compliance with the requirements is monitored by the quality management. Our environmental management system has been certified to EN ISO 14001 since the year 2000.

The best contribution to using resources carefully, however, is the unconditional reusability of our products. Constructions made from the MiniTec system are easy to dismantle and all components are unconditionally reusable.



# WORKER ASSISTANCE TESTING IN PROGRESS



At the workstation with assistance system, disabled persons preassemble small parts.

**A new system in the test phase: MiniTec has been collecting experience in workstation systems for many years. The latest development is a worker assistance system of MiniTec Smart Solutions, which makes an intuitive usable editor the heart of the workstation. With it, the user can easily design and store the workflows for assembling new products themselves. It is now entering the test phase.**

Two prototypes of the new worker assistance system were created, which have been tested thoroughly in two different areas: As part of the ecumenical collaboration of the Palatinate region of Germany, the Westpfalz workshop in Landstuhl is a state-recognised facility for the work and social integration of people with emotional, mental and physical impairments. Disabled people preassemble small parts for different companies at the workstation with assistance system. The table on site in the production was thus used under real conditions: The assembly instructions of the workpiece to be assembled can be stored in the system on site, individually by the carer, and in this way

provides support and assistance for the assembly process. The precise graphic instructions on a monitor and with Pick2Light support makes sure that the fitter experiences success. After a very short time, the preassembly was child's play for him and also constant support if he should ever be uncertain.

"This system offers a great deal of potential, especially for supporting the work process of disabled people. The easy programming of the assembly instructions enables every carer to prepare the workstation and the intuitive operation also functions great with a disability", said one of the persons responsible on site.

## Learning at the assembly workstation

In the second test facility, the master school for trades in Kaiserslautern, the workstation with assistance system was also used as a learning tool for would-be state-examined technicians specialised in production automation. The project goal, that the group set itself, was to implement the substeps of the assembly of the kit of a "Lego technology car" in the form of flow production (assembly line production) in the equipment software. Ultimately, the assembly instructions defined by the group should enable smooth assembly of the model.

"During extensive tests and programming, we initially tried the tasks without the manual, and didn't use the manual until we couldn't progress any further", explained the person responsible for the project. The aim was to find how intuitively the table can be used. Suggested improvements or other remarks could thus be added for the developers straight away.

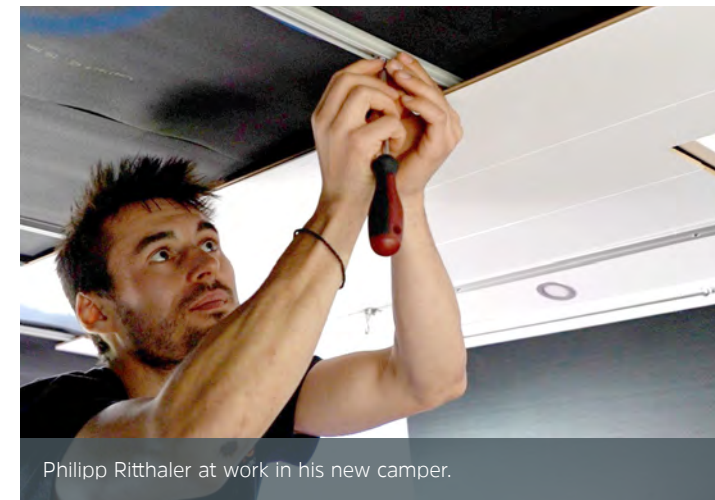
For MiniTec Smart Solutions, the aim now is to further optimise the system with the help of the feedback from the test phase, in order to implement a marketable assistance system in future projects.

# THE TRIP'S GETTING CLOSER

**We talked to Philipp Ritthaler in the last issue of Connect. He is a mechatronics technician at MiniTec and following his first major trip through Europe he is now converting a new van – with the MiniTec profile system. This time he reports on the latest status of his project.**

*The van's interior is apparently progressing well – there's already a bed in it. How has your project developed? Have you already been able to take a short tour in it?*

*Philipp Ritthaler:* Yes, I have already made several short excursions – initially with a temporary bed. Showering and cooking was therefore not yet possible in the van – but it was ok for a 2-day trip. The bed is now finished, as are the runners for the bicycles and euro boxes. Most of the work has already been done, work on the individual modules such as kitchen, bathroom, a hinged table, a false floor and solar panels is next.



Philipp Ritthaler at work in his new camper.



The camper conversion is entering the next round; the runners for the bicycles and euro boxes are already installed.

*You say that most of the work has already been done. What exactly has changed between buying the transporter and the current status of the van?*

I have indeed achieved progress on several fronts: The bed has developed from a temporary solution to the finished bed module – with plenty of storage space under it, which is easy to access with the help of the runners. Yet there were several things to do before the bed could be built: I prepared and painted the roof, as well as the floor. Installed the roof rack, windows and roof hatch, connection sockets for water and electricity, installed a water tank, prepared my wall and ceiling substructure including all the panelling and much more.

## MODULAR BODY FOR PLENTY OF FLEXIBILITY

*Has all the work to date gone to plan? And will you implement everything as you intended at the beginning or have the plans changed during the conversion?*

There have indeed been a few plan changes. For example, I originally intended to build the shower behind the driver's seat. However, I have now installed a swivel driver's seat and instead of the shower, the kitchen will be behind the driver's cab, so that I can also use the swivel seats in the "living area". During the conversion I then had another idea: I am going to install a false floor to make the best use of the height of my transporter. Not only will the pipes, hoses and electrics be laid there, but it will also create additional storage space for the next trip.

Read more about Philipp Ritthaler's project in the next edition of *Connect*.



## A WORKTABLE FOR THE MODELMAKER



**Specially designed worktables are a major advantage in modelmaking. Not only ergonomic but also functional aspects are good arguments for such workstations. The team of “Die Modellwerker” (The Model Workers) designed a versatile worktable for modelmakers using MiniTec’s modular and workplace system. The table is also suitable for prototype construction as well as assembly work.**

A lot of work and time is necessary before true-to-detail models fly, swim or run. As the basis for the protracted and high-precision work, modelmakers often use a kitchen table or a door leaf for the time-intensive work. The fact that this is not optimal for objects whose value quickly reaches 5-digits is obvious. Ergonomic aspects are also not fulfilled here. Many modelmakers therefore want professional worktables, which take into account their particular functionality and ergonomics expectations.

The “Die Modellwerker” team in the town of Gersheim in Germany is familiar with these needs from its own experience and therefore designed a versatile worktable that is optimally aimed at the requirements of modelmaking. The central elements are a tabletop that is particularly torsionally stiff as well as MiniTec’s modular aluminium profile system. Based on these, a flexible solution with numerous advantages was created.

### Everything within reach

The model can be turned towards the worker, because the tabletop inclination is continually adjustable through 360°. This enables working that is effortless and relaxed at the same time. The working height is electrically continuously adjustable and can be adjusted to the height of the modelmaker.

Both sides of the tabletop can be used to enable working on different workpieces at the same time. There are also diverse attachment options for tools, lighting, special addition tables and other accessories. The dimensions and functional features depend on the customer’s individual wishes. A video presentation on the [www.modellwerker.de](http://www.modellwerker.de) website provides practical information about all the worktable’s features and advantages.

Thanks to the MiniTec modular philosophy, the worktables can also be used for prototype construction as well as all kinds of different assembly work. For example, when small and medium series of any products have to be assembled or machined manually. But also to carry out flexible joining operations or soldering work, or assembling wire harnesses. The range of uses is enormous.



Everything in its place: The worktable is optimally aimed at the requirements of modelmaking.

## WORKING WITH BREATHING PROTECTION

**Flexibility and reliability are needed when it comes to converting special vehicles and workshops for fire services. The requirements in these areas could hardly be more different. Here the MiniTec modular system provides the perfect base for constructions and fitout solutions.**

If the units of the voluntary fire service of the Weißenthurm association of municipalities are alerted of a fire, in general, breathing equipment is used. High requirements exist for the hygiene, premises and personnel for the cleaning and testing of equipment and masks. Special breathing equipment workshops are therefore provided. The breathing apparatus workshop in Weißenthurm is responsible for 37 RPDs (respiratory protection devices) as well as 65 facemasks of the Weißenthurm and Kettig firefighting units. When Weißenthurm fire station was built in 1984, the association set up one of the first dedicated equipment centres in the rural district of Mayen-Koblenz. Today, 37 years later, the requirements have developed further; the technology and premises have therefore been adapted to current requirements. The upgrade was based on the MiniTec modular profile system. MiniTec also provided the fire station with intensive support and advice during the project.



The equipment is stored in the white zone of the breathing apparatus workshop.

### Custom-fit for fire stations

The workshop has two separate spatial compartments. The so-called black (contaminated) zone and the white (contamination-free) zone. Used RPDs and the corresponding masks are brought into the black zone for cleaning and disinfection through a separate building entrance. Here the cylinders are filled with fresh breathable air in the fill station. The white zone is where the apparatus is managed administratively and stored. Among other things, the fire service personnel now have a computer-assisted test system and digital inventory management.

### FLEXIBLE DUE TO MODULAR DESIGN

Fire chief Norbert Fachbach was extremely satisfied with how the project went and working with MiniTec: “The planning and execution were implemented to my full satisfaction from the outset. The site meetings were very constructive. Ideas and wishes, down to the smallest detail, were taken into consideration technically and implemented on-schedule.” Niklas Lemler, equipment manager, was also pleased about the high practicability of the new facility: “The quality and functionality of the furniture is absolutely satisfactory. Especially with the flexible trolleys in different sizes, we are able to the workshop to different needs, even in a confined space.” With MiniTec, Weißenthurm is also well equipped for the future.





## BIRTHDAY FOR THE MINIBEES

It is a buzzing cooperation:

Together with the beekeeper “BeeGreat”, MiniTec is making an active effort to stop the decline in insects. Around a year ago, busy bees together with their hives moved onto the MiniTec company site and collect nectar for the MiniBee honey.

“April does what it will” – as the well-known saying goes. And this year, it didn’t want to do anything ... Especially after the first “normal” cold winter in years, in which the honey bees had to expend lots of energy in the form of honey to rear the young bees, a warm, sunny spring start would have been a blessing to the insects. The cool phase was by no way beneficial for the bees’ development, especially not when you consider that a bee colony maintains a constant 35° C for rearing its offspring in the heart of the brood nest. This time is therefore definitely the most critical during the course of the year of a bee colony: Its food is slowly running out, the population has grown sharply and is hungry. It wants to feast itself on the richly covered table of the spring attired meadow orchards and pastures. However, if the daily high temperatures no longer climb above 15°, nectar secretion does not begin and the honeypots remain empty for the time being.

Due to the cold low weather situation, May was also a month full of starting difficulties for all insects and therefore for honey bees. Nonetheless, even on rainy days, work continues at full stretch inside the hive. The merry month of May is usually a month of abundance for our bees, in which even the areas with generally sparse food availability are full of pollen and nectar during this time (“honey flow”).

### The young are coming

During this heyday a bee colony also reaches its development pinnacle: Up to 60,000 bees then bustle around in a single beehive. And with the hatching of the drones – the male bees – the bee creatures are fully developed

and are “sexually mature”. As the zenith of the year is passed by the summer solstice on 21 June, the bee colony now uses this “surplus” energy of the late spring to reproduce.

At this time, the large growth causes the number of bees ready to provide brood care exceeds the number of breeding cells to be cared for, there is literally a lack of employment and the so-called swarming of the bees awakes. At the start of this fascinating process the workers create special honeycomb cells, so-called queen “cups”, in which the queen bee (technical term “gyne”) finally places a fertilised egg. This egg does not differ genetically from any other worker egg in the hive; however, due to the addition of food enriched with special ingredients, the royal jelly, and particularly intensive care, young new queens grow to maturity in these cells.

### A new queen takes over

After several such cells have been created and after eight days of feeding, are “capped” with a wax cap, the actual time of reproduction has arrived: The swarming is pre-



Hard at work: Spring is an important time for the bees.

pared on a warm, sunny day. The queen bee to date has now stopped laying eggs and an increasing number of scout bees encourage the swarm to depart. When the starting signal is given and the old queen leaves with the “surplus” bees to form a new colony in a new home, the young queen is already there to guide the colony through the summer.

**UP TO  
60,000  
BEES IN  
ONE HIVE**

It is truly a wonderful spectacle of nature when thousands of bees rise together in the air and initially gather on a nearby branch to cluster together and then leave together in a coordinated way.

Good to know: A swarm of bees is absolutely placid, it does not have any guardian bees, as there are no combs, stocks or brood to defend – anyone who is lucky to be there on such a “bee birthday” can confidently and

unabashedly allow themselves to be overcome by their sensory stimuli and fully enjoy the moment. During this process, the scout bees mentioned above continue their search for suitable accommodation nearby, so that under natural conditions the swarm moves on by itself within the next 2–3 days.

### Searching for a dwelling

If the bees do not find a suitable place, they sometimes return to their original colony or, nowadays they are often caught by beekeepers and are passed on to the beginners. In the days after the swarm has departed, in the original hive with the bees that have stayed behind the first young, not yet mated queens slip out of their queen cells. These queens would also be capable of moving out with the further part of the colony if the colony still has a sufficient number of bees – a so-called afterswarm is however mostly significantly smaller than the first swarm and has much lower chances of surviving and also weakens the “old colony”. This is when the beekeeper intercedes, at the latest, so that the bees do not “overexert” themselves. “Accompanying the swarming is however one of the best and most interesting activities in the beekeeping year, for which plenty of instinct and tact is needed and, apart from the weather, is also dependent on the “mood” of the respective bee colony. One thing even the young beekeeper learns very quickly: Honey bees rarely read the relevant specialist literature, especially in this context.





## FIGHTING THE COUNTERFEITING OF MEDICINES

**Counterfeit products are on the rise in the pharmaceutical sector. Continuous traceability along the entire supply chain protects against plagiarism. ISW has developed a track & trace system, which checks the products by means of image processing and networked databases. MiniTec supplements this with individually configurable systems for batch labelling and traceability.**

Medicines help and protect people. The pharmaceutical industry is a market that is worth billions and some medicines have breathtaking price ranges. Product pirates have therefore long since discovered this profitable branch of industry. They attempt to do business worldwide with deceptively real rip-offs. To the detriment of patients, the manufacturers and trade. Apart from the considerable economic damage, above all, the high risks for patients are a major problem. To put a stop to the counterfeiters, governments as well as the affected companies are

making major efforts to curb product piracy. This includes the Falsified Medicines Directive of the EU (2011/62/EU), which has required mandatory product labelling and traceability of pharmaceuticals since. The aim is to clearly label the products so that their origin, production date and other information through to the production batch can be continuously traced. This information can also be used for targeted recalls.

Against this background, several years ago, ISW GmbH in Kölln-Reisiek near Hamburg, together with MiniTec, developed the image processing assisted Track & Trace system PALC unit. PALC stands for Package Aggregation Line Controller. This is a flexibly configurable solution that can be integrated in any production system for serialisation of already packed pharmaceutical products. The PALC unit is optimal for pharmacists, packers and contract manufacturers. The PALC needs little space, is flexible and is soundly built from MiniTec profiles.

### Printing and control in one system

Installed within a production line, the PALC is supplied with packed pharmaceutical products by the feeding system. On arrival the cartons are separated out and are then printed, to make them clearly identifiable and traceable by means of different coding with plain text. This is followed by quality control. The 1D and 2D codes, image representations such as logos or plain text marked on the cartons are checked for correctness and quality by high-performance cameras. The advantages of image processing-assisted systems compared to code scanning solutions are evident: Apart from codes, they can also check plain text and the overall quality of the printed image. Faulty products are separated out directly by blowing on them with compressed air through a nozzle; the cartons are ejected via an inclined metal sheet into the NOK container. This is verified by sensors.

### Up to 400 products per minute

The cartons are conveyed through the system by three synchronously running toothed belt conveyors, two on the underside and one on the top. The belt speed can be up to 500 mm/s and can be set using the touch interface. This enables up to 400 products per minute to be serialised regardless of the packaging size and the respective marking requirements. The height and distance of the conveyor belts can be adjusted separately using a crank handle. The size of the carton in the flow direction can therefore vary: Packaging up to 30 cm wide and between 1.5 and 13 cm high can be carried through the system. A convenient HMI (Human-Machine Interface) networks the machine, Printing and control equipment as well as possible add-ons make for an easy to operate overall concept. A software kernel controls the production process



The medicines are moved through the system via toothed belts. Right in the photo (blue) the compressed air nozzle for ejecting incorrect cartons.



MiniTec and ISW offer a joint tracking and tracing solution for the pharmaceutical industry, which protects against product piracy.

via the software modules, sensors and actuators and communicates with the connected ERP/MES system. Safety is also taken care of, as locked safety devices prevent manual mixing up of products.

### Individually configurable

Because the production processes are frequently different, each PALC system must be adjusted to the individual circumstances. The required flexibility is ensured by the MiniTec profile system and the know-how in the company. "ISW's expertise in image processing and automation, our experience in mechanical engineering as well as our modular profile system complement each other in the PALC systems in an ideal way", says MiniTec customer consultant André Hintz. ISW Managing Director Tobias Wichmann confirmed this: "Demand for our PALC units is increasing steadily. We know the diverse international requirements, to put a stop to counterfeit drugs and thanks to our cooperation with MiniTec, we are able to adjust the PALC automated, modular tracking and trace system individually and flexibly. This is also reflected in the range of uses, which extend from medium-sized pharmaceutical companies through to international corporations."



# ALWAYS EXACTLY ADJUSTED

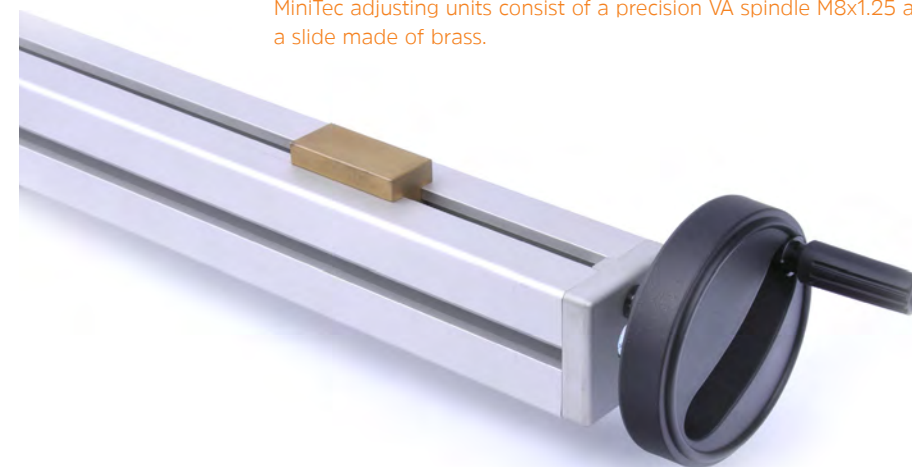


**MiniTec adjusting units are manual spindle-driven linear axes with limited stroke length. They are designed for applications that do not require large dynamics and high cycle frequency. The Mini, VEW and VEN series are available for the different tasks.**

MiniTec adjusting units can be installed in any standard profile of the 45 series. They consist of a precise VA spindle M8x1.25 and a slide made of brass. The spindle is simply pushed into a profile groove, the slide is guided by the sides of the groove. The unit is very easily mounted with a bearing block on the front of the support profile. They are operated with a handwheel. Typical applications are, for example, adjusting the lateral guides in conveying

equipment or adjusting sensors or light barriers. XY units can be implemented very easily with the angle bracket. The mini adjusting units are characterised by maximum flexibility, small installation space and low costs. This unit is designed for low loads up to 2 kg.

MiniTec adjusting units consist of a precision VA spindle M8x1.25 and a slide made of brass.



## VEW and VEN adjusting units

The VEW and VEN adjusting units are available for higher loads. Both series are based on the standard profiles 45x90 and 90x90, whereby the 45x90 base profile can be used upright (H) or flat (F). All adjusting units are driven by trapezoidal thread spindles TR16x4 as well as a high-precision fit spindle nut made of brass. They are optionally operated manually with a handwheel or a stepping motor.

Optional digital position indicators, slide clamping guides, spindle covers

## HIGH FLEXIBILITY, SMALL INSTALLATION SPACE, LOW COSTS

made of stainless steel and angular drives are available. The maximum stroke length for both series is 1860 mm. Thanks to the modular structure based on the standard profiles, special slide lengths are possible. All adjusting units are perfectly compatible with all other components

of our profile system. Combinations of several axes to form X, Y and Z units can also be easily achieved with standard components.

## Use even in demanding environments

The slides of the VEW adjusting units are guided on hardened precision steel shafts, Ø 12 mm in h6 tolerance. The bearing of the carriage consists of slide rails made of a special low-friction and low-wear polymer. Lubrication is not required, which is an advantage, particularly in case of extreme use conditions such as wet operation or high dust production. The plain bearings can also be set for high-precision fit. The repeatability of this unit is  $\pm 0.15$  mm. The allowable load depends on the length of the load-bearing slide rail (=slide length); it is calculated with 50 N/10 mm slide rail.

In the case of the VEN series, the slide is guided by slide rails in the grooves of the basic profile. This guide can also be set for high-precision fit, however, the repeatability is  $\pm 0.20$  mm. The load capacity, use conditions and options correspond to those of the VEW series.

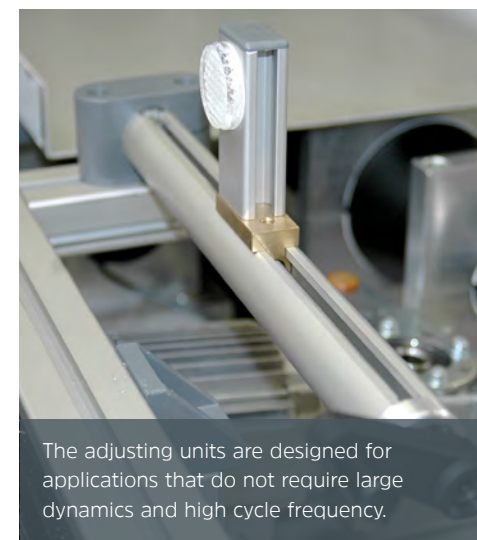


The adjusting units are operated using a handwheel.



Thanks to the MiniTec modular system, everything is compatible with each other.

The advantages of this version are the particular cost efficiency and the smaller installation space.



The adjusting units are designed for applications that do not require large dynamics and high cycle frequency.





## FRS: KANBAN MADE EASY

**Kanban has established itself as a method of process control in many areas. In line with the pull principle, the method is based on the actual consumption of materials in the provisioning area and place of consumption. MiniTec's FRS is a practical solution for implementing kanban in the workplace.**

MiniTec enables kanban to be implemented at the assembly workstation using different systems. One particularly variable solution is the FRS (flexible roller carrier system). This is a modular system for implementing MiniTec constructions for material provision via rollers.

It is based on the special MiniTec profile 45 FRS, which is compatible with MiniTec's standard profile series. It has a retaining device for different roller types. Accordingly, the material provisioning at the workstation can be configured to the individual requirements. Everything is flexibly adjustable at any time and can be modified as soon as the requirements change.

### The right roller for every task

Suitable roller inserts are available not only for large and heavy materials but also for smaller transport goods. Rollers with lateral guides are available if there is a risk of slipping off to the side.

Is ESD capability important? Then you will also find the right products for this issue. A special ball roller element is available if materials are also to be able to move sideways. Complete roller strips are available for bridging larger distances – these save having to string together individual roller elements.

### Configure individually

The FRS also provides extensive accessories to match the wide range of roller types – from covers to protection from contamination through to adapters for height adjustment through to return stops.

When compiling the components, note that they have different heights. Accordingly only elements with compatible heights should be combined. Differences can also be levelled out, for example, with an adapter. Equally, for example, in the case of the sliding profile it is possible to align it with the required system height through its installation position.

It was never so easy to implement kanban in assembly workstations! The MiniTec experts are available if you have any questions regarding the suitable compilation of an FRS system.

## AMAZINGLY SIMPLE SOLUTION

**MiniTec's Flexible Conveyor System (FMS) is a complete transport and positioning system for workpiece carriers.**

**It provides the fastest and most diverse form for process optimisation in production.**

Transport systems are an essential factor in networked production. The products to be assembled must be moved carefully and precisely from one machining station to the next. In general, pallet transport systems are used for assembly tasks. One challenge for the designer is to deal with this task while at the same time being as energy-saving, low-noise and cost efficient. Modern production systems also have to be flexibly convertible, in order to deal with ever smaller lot sizes. The control requirements also play a decisive role.

### Transport on the double belt

To use the areas in the assembly as optimally as possible, such production lines are usually installed as circulation systems. The pallets are generally deflected by their own drive; an electrical or pneumatic lift-out station is frequently also required for the change in direction.

True to the motto of Sergej P. Koroljew, a Russian aerospace engineer "The genius of a design lies in its simplicity. Any one can build complicated things", he engineers of MiniTec developed a brilliantly simple



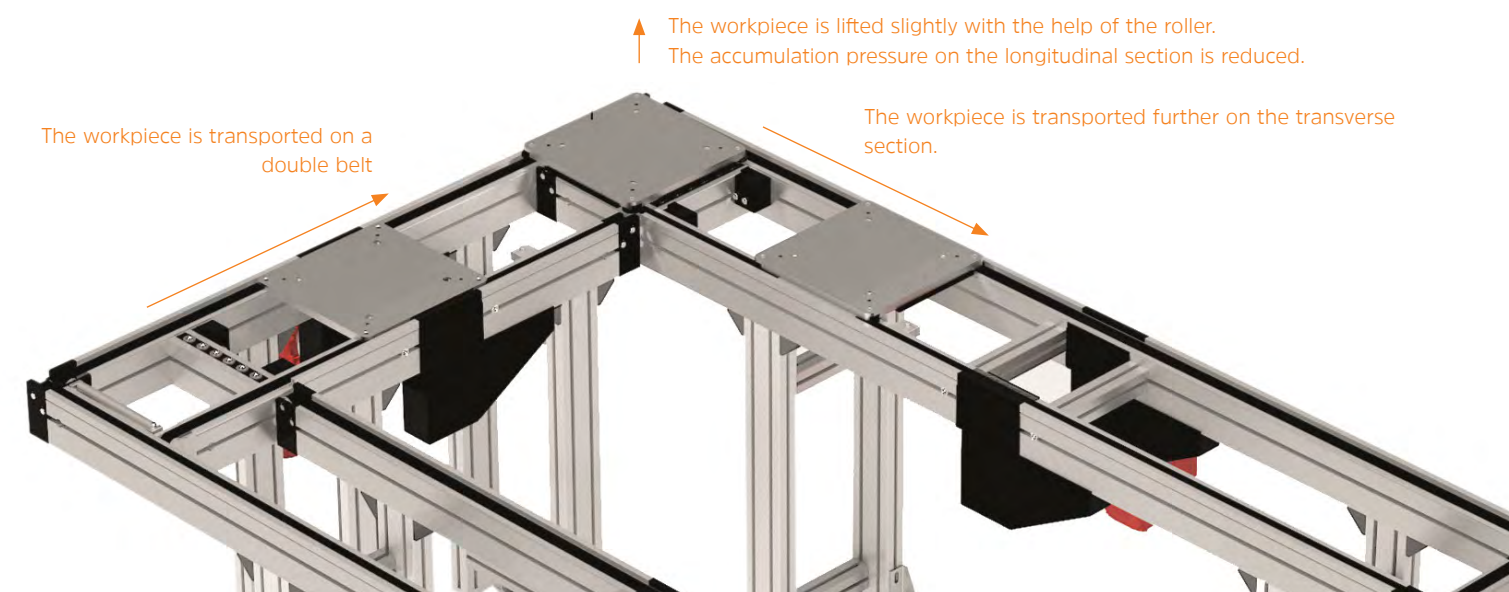
The FMS flexible conveyor system functions simply and is very reliable.

### ENERGY SAVING, LOW NOISE AND COST-EFFICIENT

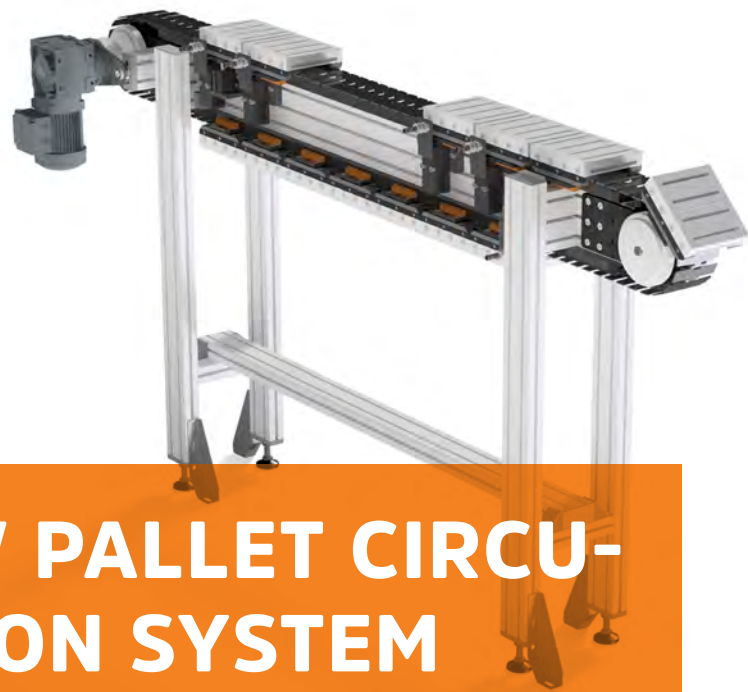
solution, which was also patented: the flexible conveyor system FMS.

Here the pallet with the workpiece is transported on a double belt. The grip of the belts is sufficient to lift the pallet slightly at the end of the section onto a roller attached to the front of the transverse section. In this way, the accumulation pressure of the longitudinal section is reduced, while the grip of the transverse belts is increased. In this way, the pallet

change in direction is achieved without its own drive and without additional controls. A good example of our claim: The Art of Simplicity!







# NEW PALLET CIRCULATION SYSTEM

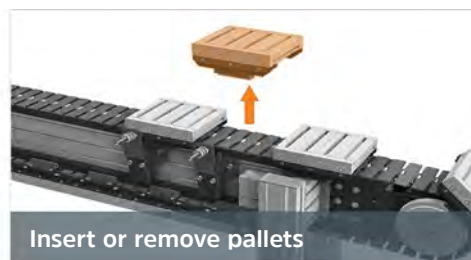
MiniTec España supplements the pallet circulation system with the new compact version UMSL for cost-effective conveying of goods in the smallest space. The new version was developed by our Spanish subsidiary.

The new UMSL (L for Light) pallet circulation system is a very cost-effective solution with minimum space requirement for linking machine tools, workstations, handling equipment or for robot feeders. In the new system, the pallets are guided on precise linear guides with

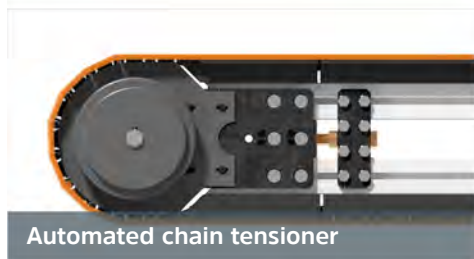
maintenance-free roller elements. This ensures exact positioning of the pallets and the energy required is reduced significantly. The unloaded pallets are deflected vertically at the end of the conveying section by a positive, form-closed gripper and are returned hanging on the underside.



Pallet return



Insert or remove pallets



Automated chain tensioner



Accumulation of pallets

Pallet accumulation is possible not only on the conveying level but also during return of the unloaded workpiece carriers (WPC). The system even allows use as an overhead conveyor with pallet return on the top.

The pallets are driven by a continuously circulating central chain, the automatic chain tensioning ensures safe and reliable operation. With a track width of 165 mm, the UMSL conveyor offers maximum flexibility in the smallest space. The UMSL unites a sophisticated machine combination of 2 conveyors (transport and return) + 2 lift units in a single conveyor.

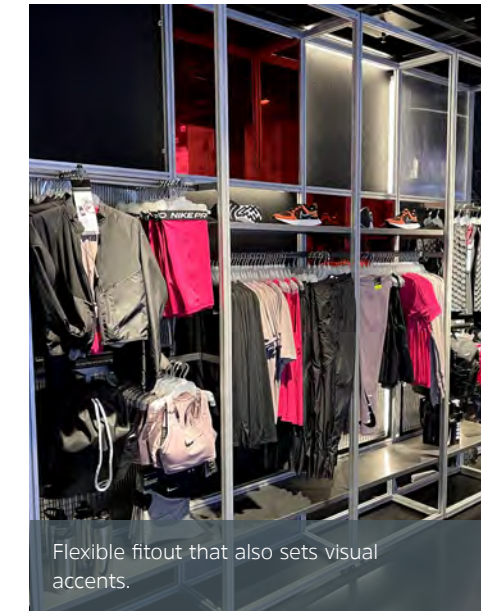
## CONVEYING ECONOMICALLY IN THE SMALLEST SPACE

### Modular structure

The UMSL construction is based on the high-quality standard components of the MiniTec modular system. The pallet circulation system is therefore compatible with all the components of the modular system. Additions such as test stations, assembly and unloading stations can be seamlessly integrated.

MiniTec and its experienced engineers provide support for the planning and implementation of conveyor systems as well as their adaptation to special tasks.

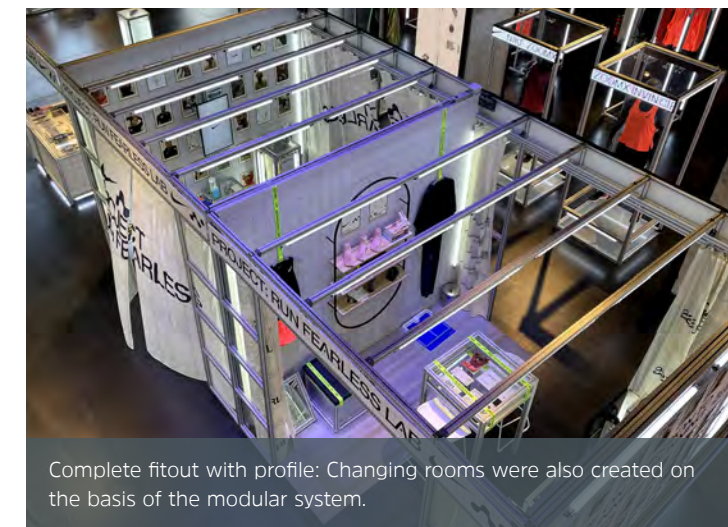
# FASHION WITH PROFILE



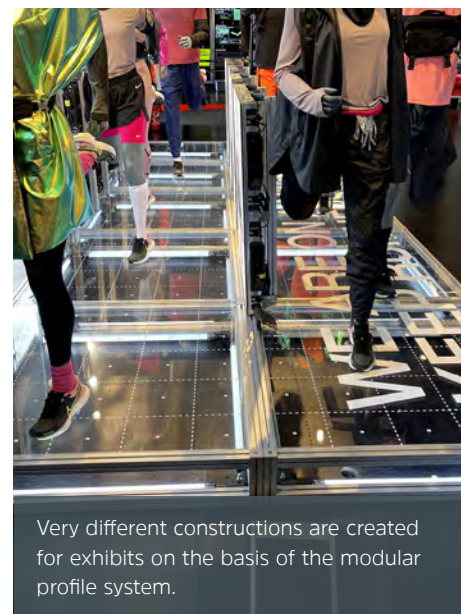
Flexible fitout that also sets visual accents.

The MiniTec profile system can be used flexibly, and this can not only be seen in factory halls. The French subsidiary MiniTec France has now also equipped a trendy sports store on the world-renowned Avenue des Champs-Élysées in Paris.

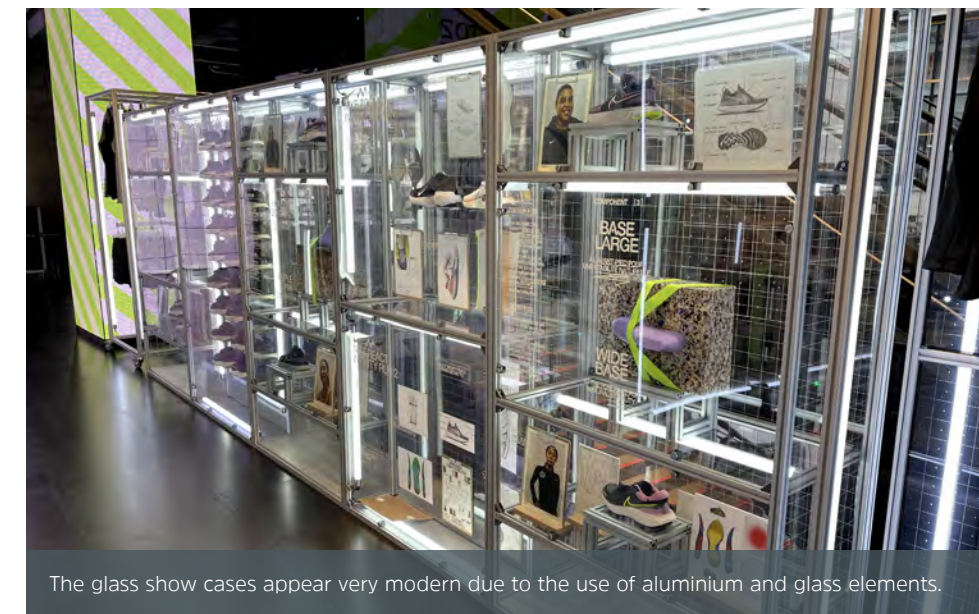
The complete shop was fitted out on the basis of the modular profile system. The bandwidth ranges from glass display cabinets through to changing rooms and presentation areas. Style, stability and flexibility of constructions go hand-in-hand here.



Complete fitout with profile: Changing rooms were also created on the basis of the modular system.



Very different constructions are created for exhibits on the basis of the modular profile system.



The glass show cases appear very modern due to the use of aluminium and glass elements.



## LARGE ORDER FOR MINITEC USA



Sawing continuously for a new large order. The production capacities in the USA were increased sharply.

MiniTec has been active in the USA since 1999. The new MiniTec Framing LLC plant was opened three years ago in Farmington, in New York State. Since then, the American subsidiary has been on a growth course. 15 new employees have been taken on in the past two years and the workforce is currently working in two shifts, in order to maximise production and the machine running time. This is necessary, because this year the largest order to date with a volume of five million US dollars was signed. This required a lot of preliminary work, which is now done by a new CNC-controlled aluminium saw with automatic feed system. This is used for around 150 hours a week

– for this order alone – and makes around 2000 cuts. By preprogramming cut lengths and automatic material feed, the new saw enables production to be increased significantly.

Around 100 different orders and their cutting lists can be called up from the memory and mitre cuts of 0 to 60 degrees are possible. The storage capacities and logistics were also expanded or rather optimised.

## MINITEC UK: “THINK GLOBALLY!”

“The global reach of MiniTec and the fact that we are represented in far more than 70 countries of the world is very important for use and our customers. Even if we supply manufacturers in Great Britain and they in turn export their products, they know that in 99 % of the cases they can get the necessary spare parts or add-ons in the country in which they operate – which is a very large plus in our favour!”



Gary Livingstone, MiniTec UK

## ENTREPRENEUR, MUSICIAN, FAMILY MAN



He has achieved a lot in his life: 35 years ago, Bernhard Bauer founded MiniTec and turned a two-man firm into a globally active company. He is a family man, musician, socially committed and loves his home region.

On 28 May, Bernhard Bauer celebrated his 75th birthday and is still far from real retirement.

Many people at his age take things easy. Yet that is not his style. Bernhard Bauer is still present at MiniTec several times a week, although five years ago he handed over the management reins to a management trio that is doing a good job. He can let go, but still likes to contribute his experience as founder, businessman, engineer and merchant. And this is all still in demand.

Even though he was an entrepreneur who put his heart and soul into his work, he always managed to reconcile his work and his personal life with a healthy work-life balance. Much could be easily combined, for example, when his wife Sonja accompanied him on his business trips. He is and was always there for his three daughters and now eight grandchildren. His daughter Sandra Geyer-Altenkirch has been a member of the management for several years.

### Socially committed

For many years he has been committed to social projects in many areas: Together with his wife, he founded the “Sonja und Bernhard Bauer Stiftung” to promote early music education, mathematics, languages and sport in schools and kindergartens in his home community. With his school friend, brother Karl Schaarschmidt, a missionary in Kenya/Africa, he supports the Arnold-Jansen Elementary School in the Soweto slum in Nairobi. During the corona crisis he also helped the Rotary Club in Kusel and the Lions Club, of which he is a member. He is also involved in the construction of the Githunguri Mother Care Clinic near Nairobi.

### Home-loving and locally loyal

His home region, the Western Palatinate region in Germany, is very close to his heart. Whenever the expansion of the company was in the offing, it was clear that this would take place in the Western Palatinate region. Most MiniTec employees, whose qualities and motivation he has always valued, also come from here. Anyone who committed themselves to MiniTec always found all doors open to them.

His home community, Schönenberg-Kübelberg, also benefited from his local loyalty and gave a lot back: The present day head office was built at “MiniTec Allee 1”. He was given the freedom of the town and even received his own stamp with his likeness from the municipality.

Over the years he received numerous awards for his commitment: 2016 with the first “Westpfalz Award”. 2007 with the Culture Promotion Prize of the Town of



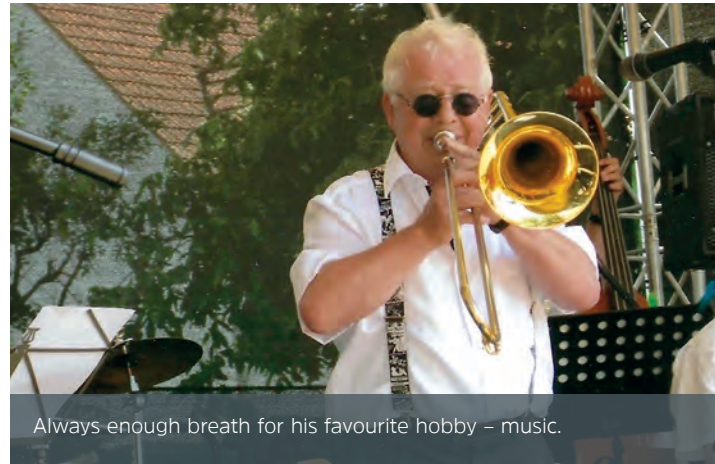
Bernhard Bauer (lh) and Brother Karl Schaarschmitt in Kenya.



Landstuhl or 2005 as an Innovative SME and Attractive Employer, awarded by the Rhineland-Palatinate Ministry of Economics. Through his work on the advisory committee of the Smart Factory in Kaiserslautern, he is always informed about the latest Industry 4.0 developments and contributes this knowledge into the management strategy meetings. He also continues to be closely associated with the company as an adviser and manager in several foreign holdings.

In addition to these numerous activities, he still finds enough time for the things that he finds fun: During his spare time he likes to ride a mountain bike, plays the trombone in the Rotary International Big Band and baritone horn in the "Bloos Blech" brass quintet".

One thing that has never changed in his colourful life: Bernhard Bauer has always stayed down-to-earth. For him it is people and being able to change things that count. And so it has stayed to this day: When he walks through the company his eyes wander here and there.



Always enough breath for his favourite hobby – music.

He knows and greets everyone. But he also has an eye for the innovations, the technology, the workflows in the company. Because he is still deeply interested in these things. His curiosity and wish to learn has never let up. And so in passing, he still has a tip on how to improve one thing or the other. And then he is once again back to being the complete entrepreneur.

## HIDDEN CHAMPION IN THE ANNIVERSARY YEAR



MiniTec received the Hidden Champion Award of the State of Rhineland Palatinate. The study by the Trier economists led by Prof. Dr. Jörn Block submitted in March 2021

covered more than 150,000 companies of all sizes. They came to the result that MiniTec belongs to the exclusive circle of only 146 firms – fewer than one percent of the whole State, which meet the nomination criteria. Hidden Champions are companies that belong to the top 3 on the world market or are at the top of a market niche in Europe. They must employ at least 20 persons, have existed for more than ten years and achieve an annual turnover between five million and one billion euros.

"Such an award naturally feels particularly good and makes us proud, especially as it is our company's 35th anniversary. Above all, because the criteria ultimately confirm our corporate philosophy", says the Commercial Director, Sandra Geyer-Altenkirch.



## LEGAL NOTICE

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**MiniTec**  
THE ART OF SIMPLICITY





Permanently  
open for you!



## Welcome to the virtual MiniTec trade exhibition!

More and more trade exhibitions are falling victim to the Covid pandemic. Despite that, we have created the **MiniTec Expo** digital trade fair so that you always have the opportunity of obtaining extensive information about our profile system and solutions.

In the exhibition area you will find virtual exhibition stands around our range of services, where **video presentations**, recordings of **online seminars** and extensive information material.

24 hours a day, 7 days a week, 365 days a year!

In the conference area you will benefit from interesting **live talks**. To make sure you don't miss anything, just sign up for our **newsletter**. Then you will also find out when there are new additions to the exhibition, because in future it will continue to be expanded with new presentations and exhibits.

Go on a virtual journey now and discover online the entire world of MiniTec!

**Register today for free and look forward to an exciting exhibition experience!**

**Register free of charge:**  
<https://minitec.expo-ip.com>

