



# Connect

01

March 2021



## DUST-FREE

———— Page 19

Automated cleaning of workpieces with various shapes



## ON THE ROAD WITH MINITEC

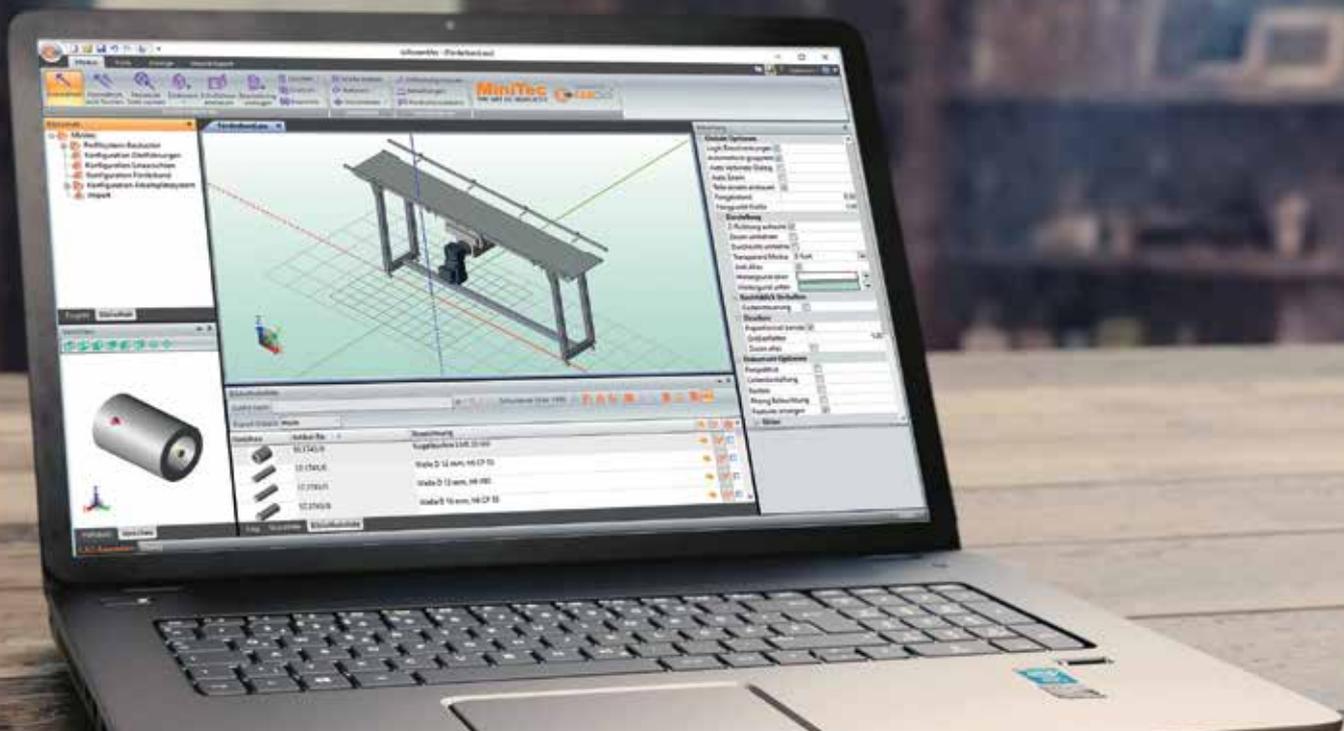
———— Page 24

Travels in a converted campervan

## 35 YEARS MINITEC: FROM WESTERN PALATINATE INTO THE WORLD

———— Page 8

From a two-person firm to a globally operating medium-sized business



# Simpler design: **with the iCAD Assembler.**

## An overview of the iCAD Assembler

- 3D design tool for MiniTec components
- Easy to operate without previous CAD knowledge
- Includes electronic catalogue and configurator tools
- Creates true-to-scale construction drawings and material schedules
- Direct interface with all common CAD systems
- Integrated deflection analysis

**Now available as  
free download at:**

[www.minitec.de/mediathek/cad-software](http://www.minitec.de/mediathek/cad-software)



## Deflection calculator **also available as an app**

The calculation program immediately shows the user whether the selected profile or integral shaft is suitable for the application. If the deflection exceeds the permissible limits, a stronger component is selected from the MiniTec modular system.





## DEAR READERS,

Today MiniTec can celebrate 35 successful years, even though due to the current Covid situation, we are unable to hold a birthday party. This is also a celebration in a family business, for whom having an excellent working atmosphere is extremely important. We will make up for it – that's a promise.

A company birthday is also a good opportunity to say thanks to our staff for their years of loyalty, fidelity, creative ideas and trust.

It is you, together with our customers, business partners and friends that have made possible our development from a small startup with two employees to an international company with sites on three continents. Currently, MiniTec has been recognised by the University of Trier as one of 146 Hidden Champions in Rhineland-Palatinate.

The company has successfully mastered several economic crises since its founding in 1986. In the early 1990s there was a pronounced scepticism about technology; many young engineers were unemployed. By taking courageous decisions in this situation, MiniTec benefited from this first crisis. We were able to attract capable engineers to our team, who are all still active in the company today.

Our countercyclical corporate policy has also proved itself in subsequent severe crises. That is why we are also making use of the Covid lockdown to develop new products and services for our customers. New formats, caused by digitalisation play an essential role in this. Through our long Partners collaboration with leading research institutes, we are able to draw on excellent technical expertise, which also benefits our partners. We are particularly proud of the fact that we have not had to let any employees go in a recession, but have come out strengthened from every crisis. We can therefore approach the next 35 years with considerable optimism.

Yours sincerely

A handwritten signature in white ink on an orange background. The signature is stylized and appears to be 'Bernhard Bauer'.

Bernhard Bauer  
Company founder

# CONTENTS



8

## TITLE STORY 35 YEARS MINITEC: FROM WESTERN PALATINATE INTO THE WORLD

From a two-person firm to a globally operating SME: MiniTec began in 1986 as a small distributorship for linear guides and developed into a global supplier of profile and linear systems as well as a plant and machinery installer. In March 2021 MiniTec celebrated its 35th anniversary.

## SERVICE

- 6 Ergonomics white paper  
Social media
- 7 Less noise in the workplace

## 35 YEARS MINITEC

- 8 From Western Palatinate into the world

## PRODUCTS

- 12 Linear system LR: For more movement
- 15 A system for elections and vaccinations
- 20 Systematic profile design

## INNOVATION

- 14 Better with assistance

## SOLUTIONS

- 18 More speed for switch cabinet construction
- 19 Dust-free

## PRACTICE

- 16 Alliance for a workstation
- 23 Trolleys in action

## VEHICLE CUSTOMIZATION

- 24 On the road with MiniTec

## INTERNATIONAL

- 26 In the Middle Kingdom
- 27 Hygiene protection for Heathrow
- 28 Profiles for Portugal

## SOCIAL COMMITMENT

- 29 Regional support  
Help for Africa

## AND FINALLY

- 30 Let the barbecue season begin!  
1000 tonnes: The MiniTec profile warehouse
- 31 Legal notice



## SOLUTIONS

### Dust-free

How can the cleaning of workpieces with constantly changing diameters and shapes be automated? This is done by a de-dusting system with the help of brushes and nitrogen.



## VEHICLE CUSTOMISATION

### On the road with MiniTec

Philipp Ritthaler is converting a van to a customized campervan using MiniTec profiles. In this interview he tells us about his project and the trips he is planning.



A new white paper deals with the challenges of workstation design and shows solutions.

## Ergonomics at the workstation

An ergonomically optimised environment for assembly work enables preventive occupational safety and helps to avoid permanent damage to health. It has also been shown to raise performance, efficiency and processing quality. Ergonomic assembly workstations have been one of MiniTec's core competencies for many years. Workstation systems are being developed according to the latest research, also with regard to the requirements of digitalisation. This experience has

now been channelled into a white paper which deals comprehensively with this topic. In addition to basic ergonomic considerations and the relationship between the human and work, it also deals with how an increase in performance and therefore, the productivity of manual assembly can be achieved for all companies.

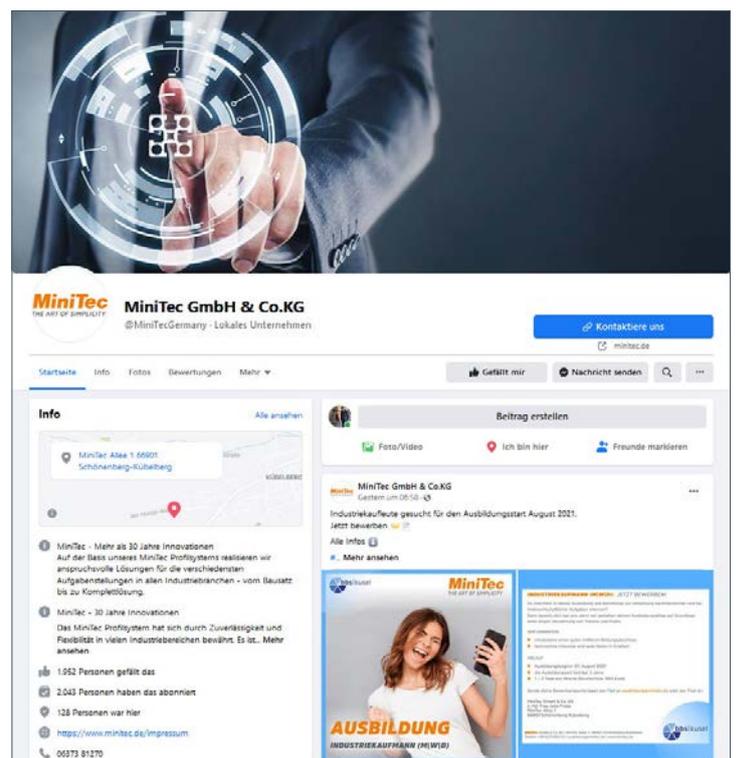
The focus is also on very practical aspects such as the spatial design of a workstation. It is not only body dimensions that are important here, but also the reach envelope, standing and sitting dynamics as well as the correct lighting and noise protection. The considerations range from the individual workstation to the assembly line. Assistance systems which support the worker during assembly are also important.

Due to the Coronavirus pandemic, the subject of workplace hygiene has also been included in the white paper. Based on its workspace and modular system, here MiniTec can offer many solutions for safe and efficient workstation the current circumstances.

The [white paper can be downloaded free of charge at www.minitec.de/whitepaper](http://www.minitec.de/whitepaper).

## MiniTec on all channels

MiniTec has set up a whole series of social media channels for interaction with customers, interested parties and business partners. In addition to having the classic website, the medium-sized company is also on Facebook, LinkedIn, Xing, Instagram and YouTube. Visitors will find information about the product portfolio, smart solutions for industrial manufacturing, a wealth of corporate information and digital assistants for design, planning and procurement. Videos that describe automation solutions and technologies now play a major role. Information on current developments at the German sites and the numerous branches worldwide is also posted on Facebook, among others. Job offers are found mainly on LinkedIn and Xing. But the channels also show the human side, because the visitor learns things – including private matters – about one or another staff member.



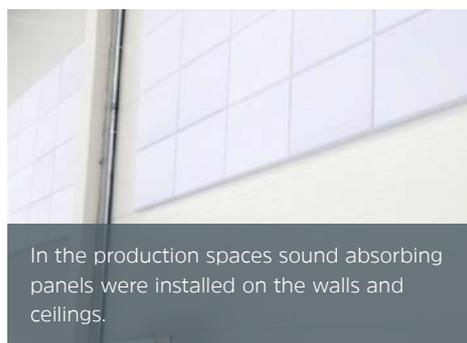
# LESS NOISE IN WORKING AREAS



The high quality of products and services, responsibility to the environment and the well-being of its employees have always been important aspects for MiniTec. This is confirmed by regular certifications such as the current one for occupational health and safety.

MiniTec GmbH & Co KG has been certified in conformance with OHSAS 18001 since 2006. Now the British standard occupational health and safety standard OHSAS has been superseded by DIN EN ISO 45001 and as an international standard, it is also recognised and applicable worldwide.

ISO 45001 clearly raises occupational health and safety to the status of a strategically important management issue and provides a suitable framework for its continuous improvement. At the centre of an occupational health and safety management system is one of the most important interested parties of every company: the employees. For years MiniTec has succeeded in keeping the numbers of work-related accidents to a very low level, compared to the rest of the industry.



In the production spaces sound absorbing panels were installed on the walls and ceilings.

What is fundamentally new is that ISO 45001 focuses on the interaction of a company with its business environment. The British standard, on the other hand, is focused directly, and in some way isolated from the management of OSH hazards. In

addition, the high level structure is more relevant with the standards still implemented by MiniTec, such as DIN EN ISO 9001 (QA system since 1996), DIN EN 14001 (environmental management system since 2000) and DIN EN ISO 16247-1 (energy management system since 2016).

## Measures that pay off

In 2019 and 2020 extensive measures were carried out in MiniTec's offices and production spaces to reduce noise and improve room the room acoustics.

In the production spaces sound absorbing panels were installed on the walls and ceilings.

In the offices attractive wall-mounted sound absorbing panels were installed that can also be used as pin boards. These pin boards are not only functional, but also blend inconspicuously into the

room aesthetic. The measures have led to a halving of the sound level (4 dB-A). The staff were excited about the measure.

**NOISE  
REDUCED  
BY A HALF**



**35**  
YEARS

# FROM WESTERN PALATINATE INTO THE WORLD

From a two-person firm to a globally operating SME: MiniTec began in 1986 as a small distributorship for linear guides and developed into a global supplier of profile and linear systems as well as a plant and machinery installer with a focus on workstations, protective systems, conveyor engineering and automation. The company's steady growth and international success are based on smart products, intelligent complete solutions and good customer service. This March MiniTec celebrates its 35th anniversary.

In the USA MiniTec would probably have been described as a 'garage company' because of its humble beginnings: Bernhard Bauer and Gernot Conrad founded MiniTec GmbH in the Hessische Bergstrasse region of Germany, with the purpose of distributing linear guides imported from Japan. The young company was not a great success at first; that only changed with the move to Waldmohr in Western Palatinate and the expansion of their range to include ball bushings and miniature ball bearings.

By 1989 the range had already been supplemented with aluminium profiles and MiniTec technicians were working on their own products. They had established that all the systems available on the market at the time required special screws and nuts for assembly. That was inconvenient

Pictured left to right: the management board with Andreas Böhnlein, Tobias Doll, Sandra Geyer-Altenkirch and company founder Bernhard Bauer



and time-consuming. As a consequence, MiniTec developed the profiles with the modular dimension of 45 mm which are still successful today and can be quickly assembled with a single tool and standard M8 DIN screws and nuts. Hence the company's slogan at the time: "Save time!".

### Profile connector accelerates growth

The subsequent development of a profile connector that was a perfect supplement to the profile modular system was like a quantum leap for the company. Having patented this connector, the young company embarked on a rapid growth course: In 1992 they moved into a new building in Waldmohr and expanded production capacity. The following year MiniTec started CNC production and due to the company's growth, in 1994 it became necessary to build an extension. Others followed in 2001 and 2004, and in 2009 a new headquarters building was built in Schönenberg-Kübelberg.

### Already digital in the 1990s

From very early on, modern technologies played an important role. Already by the mid-1990s the first version of the design software CADmenu had been published, which significantly simplified the work of designers and buyers. Since then, the software has been constantly further developed up to the current iCAD Assembler version. "For us innovation was always something that went hand in hand with solid engineering. We support the simple use of our products, components and systems with very effective software in the spirit of our slogan: The Art of Simplicity", says Andreas Böhnlein, Director of Engineering. Today, everything in his division is already developed on a digital basis; designs can be tested in simulations as 3D CAD models and be presented to the customer before they are actually built. For example, interlinked assembly workstations or even entire material flow solutions are created on the screen; everything fits together, the costs are transparent and commissioning is simplified and shortened with the help of the configurator.

### On course for global expansion

But back to the 1990s: Since then MiniTec has had a presence at the leading industry trade fairs, which led to increased demand, including from overseas. This prompted Managing Director Bernhard Bauer to found subsidiary companies in France, UK and USA. Later these were followed, among others, by Slovenia, Spain and China. Today, MiniTec employs 420 people at 11 different sites across the world and is represented by sales and service partners in 60 countries.

### Locally loyal and committed

In 2015 the founder, Bernhard Bauer, retired from the company, and has been active in an advisory capacity ever since. He was succeeded by Ulrich Wigand as Chairman of the Executive Board, Tobias Doll (Director of Production) and Andreas Böhnlein. Ulrich Wigand was one of the original employees and held important positions until his retirement in 2017. He was succeeded by Sandra Geyer-Altenkirch, the daughter of Bernhard Bauer, who has since been in charge of the commercial management. "We remain positive about the qualities of the German location. We have well-trained and motivated employees and good contacts with the Universities of Kaiserslautern and Saarbrücken", emphasises Sandra Geyer-Altenkirch. "For the best customer service we rely on an extensive, well-stocked warehouse and optimised production process, that allows delivery on the same or following day. This is made possible by the constant investment in the latest processing technology, consistent quality assurance, an efficient organisation, but above all, a highly qualified team", adds Tobias Doll. Thousands of customers across the world benefit from this today and will do so in the future.

## A SUCCESS STORY “MADE IN GERMANY”

The usual ingredients for a successful company include having a good idea, market expertise and the will to succeed. Bernhard Bauer, the founder of MiniTec, also realised that sooner or later, it also needs a bit more than that. Nevertheless, he led the company to success. We spoke to him about the highs and lows and his experience of 30 years as the managing director.



### Mr Bauer, why did you become the founder of the company?

For many years I had worked as a purchasing manager of a large industrial company. Some ideas in my head from my long professional experience had crystallised which I wanted to put into practice. Also it was always my declared aim to be independent and self-reliant.

### How did the company name “MiniTec” come about?

At the time we were importing tiny high-precision linear guides from Japan, from which we derived “MiniTec”.

### What was it like in the early days?

Well, it wasn't exactly easy. Sales didn't take off right away. It was only in the second year with the expansion of the portfolio and the subsequent development of our own products that we started to make progress.

We started pretty unconventionally with our distribution and marketing activities: The first 20 brochures were produced in the kitchen by a three-person team with scissors and paste and duplicated with the photocopier.

### Who was in the team?

My wife Sonja had actively supported me from the very beginning. Together with a female staff member they did everything from booking orders, goods procurement to packaging and shipping. Not forgetting Ulrich Wigand, whom I had known from a previous company and who built up the company with me and was later also on the management board. We have a lot to thank him for.

### What were the biggest milestones in the development of the company?

Success arrived with the aluminium profiles and primarily with our innovative connecting technology and profile connector, which doesn't require any processing at all. After the presentation at the first trade fairs, we realised quite quickly that we were on the right path. We were soon running out of space and had to invest in our first company building. Early on we developed contacts abroad and started to internationalise the company.

### Can you sum up your company philosophy in a single sentence?

The basis was always innovative products, very good service and motivated staff. True to our slogan “The Art of Simplicity”.

As a family business we have always pursued very long-term goals, even when it was sometimes difficult. But you learn from setbacks and wrong decisions!

### Five years ago you retired from active management of the company. What does your ‘retirement’ look like?

I provide support and advice to the company and the active management and still follow events with great interest. Together with my wife Sonja, I manage after our foundation, which supports social projects both in our local region and Africa.

Then there are also some grandchildren from my three daughters who like to do things with their grandfather.



The first MiniTec catalogue



**1999** The USA subsidiary was already founded by the end of the 1990s.



**2005**  
Award of the  
'Innovative SME'  
entrepreneur prize.



**2008**  
Ground-breaking  
ceremony for the  
new headquarters  
building in Schöner-  
berg-Kübelberg.

**2010**  
Opening of the  
SolarThermal  
Competence Center  
in Waldmohr with  
from left to right:  
Bernhard Bauer,  
Environment Minister  
Margit Conrad,  
Sonja Bauer.



**2011**  
Founding of the  
Spanish subsidiary  
MiniTec Espana.



- 1986** Founding of MiniTec GmbH in Bensheim, southern Hesse
- 1987** Move to Waldmohr/Western Palatinate
- 1989** Aluminium profiles expand the portfolio
- 1990** Development of the MiniTec profile connector
- 1991** Construction of a factory building in Waldmohr, 8 employees in Germany
- 1993** Start of CNC production
- 1994** First extension in Waldmohr
- 1995** First version of the design software CADmenu
- 1996** 30 employees in Germany
- 1997** Founding of the first subsidiary: MiniTec SNC in Sarreguemines/France
- 1998** First complete solutions in factory automation
- 1999** Founding of MiniTec Framing Systems in Canandaigua NY, USA
- 2000** Founding of MiniTec Zirndorf/Bavaria
- 2001** Second extension in Waldmohr, 70 employees in Germany
- 2002** The 100th Employee is taken on
- 2003** Development of the Internet application iCAD Assembler
- 2004** Third extension in Waldmohr for Linearcenter and logistics
- 2005** Founding of MiniTec UK in Basingstoke near London
- 2006** Founding of MiniTec Slovakia in Rabca, 136 employees in Germany
- 2007** Founding of MiniTec Slovenia in Grize
- 2008** Foundation stone laid for new company building in Schönerberg-Kübelberg
- 2009** Move into new building with 12,000 m<sup>2</sup> production space and 3,000 m<sup>2</sup> office space
- 2010** Opening of the Solar Thermal Competence Center (STCC)
- 2011** Founding of MiniTec España S.L.U.  
Move into new headquarters in Schönerberg-Kübelberg/ Palatinate  
World market leader in laser welding systems for solar thermal power, 180 employees in Germany
- 2013** Founding of MiniTec System Technology Co. Ltd., China
- 2016** 10 sites worldwide, representation in 60 countries, awarded "Attractive Rhineland-Palatinate Employer", 240 employees in Germany, 60 employees worldwide
- 2017** Founding of MiniTec Smart Solutions (Kaiserslautern)
- 2018** Founding of MiniTec Berlin GmbH Soldering equipment added to product range  
MiniTec Framing (US) moves into its own plant
- 2020** New distribution partners in Sweden and North Africa
- 2021** **280 employees in Germany, 420 employees worldwide**

# THE LR LINEAR SYSTEM: FOR MORE MOVEMENT



MiniTec modular profile system. This ensures that the respective linear unit fits seamlessly into the construction.

## Modular system for maximum flexibility

The LR linear system is particularly flexible because a whole family of linear components are available which are coordinated with each other. The range includes ready-to-install linear axes as well as carriages, drives, deflectors, rails and an extensive range of accessories. The linear axes of the LR linear system is ideally suited for use in handling installations, measuring and adjusting devices as well as for the precise guiding of doors or large lifts.

The LR linear system is based on a double row of profile rollers made from ball bearing steel and hardened precision steel shafts. With this system it is possible to manufacture linear guides of any length, so that very long traverse paths can be achieved. The toothed belt drive also contributes to this, which also permits a high operating speed.

## Linear shafts in various forms

In addition to individual components, ready-to-install linear axes are available, which for an order only require the specification of the desired stroke length and the deflections. The abbreviations LR 6, LR 12 and LR 16 refer to the thickness in millimetres of the integral steel

**MiniTec offers a wide range of linear technology products to suit the profile construction kit: The LR linear system is a particularly sought-after concept that for many years has proven itself in practice for a wide range of applications in in-house designs.**

Movement is healthy! For many constructions in mechanical engineering it is even essential, because it is only through moving components that they fulfil their actual function. This starts with simple width, length or height adjustments, via 'pick and place' devices to measuring equipment and

multidimensional gantry robots. Accordingly, MiniTec linear motion technology forms the ideal complement to the profile system. The spectrum ranges from individual components via adjustment units and sliding guides to linear modules ready for installation. The common feature is the unlimited compatibility with the



**Online seminar: 'Linear motion technology from MiniTec: Just move more precisely!' on 4 May 14:00–15:00 Register now free of charge at [www.minitec.de/linearseminar](http://www.minitec.de/linearseminar)**

shafts, which is correspondingly important for loadbearing capacity.

**Suitable for use with any profiles**

In accordance with the proven MiniTec modular principle, the profile system is the ideal support for linear motion technology. If no drive is required for the LR linear system, every MiniTec profile of the 45 series can be used as a profile rail guide. Simply attach the shaft carrier or rail, clip in the shaft and you're done! It is also possible for only one side of the rail to be driven.

**Stable and loadable**

The carriages are fitted with a double row of profile rollers. Depending on the loading, the carriages can be equipped with very many rollers. These are directly fixed on to the carriage plate with steel strips. This gives the construction the greatest possible stability and it does not

move. No special roller profiles are necessary for the assembly of the carriages. The backlash-free setting of the guides takes place with eccentric bushings.

The carriages are available open or completely enclosed. The enclosed carriages have felt wiper strips integrated into the cover caps, which remove coarse dirt from the shafts while at the same time supplying them with lubricant. The wiper strips can be quickly and easily replaced after loosening the side screw connections. The LR linear system can thus be used without restriction even under dirty or hygienically critical conditions of use. Due to its width of up to 32 mm, the toothed belt of the LR system is also particularly stable.

**An all-round mover**

The LR linear system and its diverse components offer unlimited flexibility. Thanks to its simple design it is almost predestined for self-designed

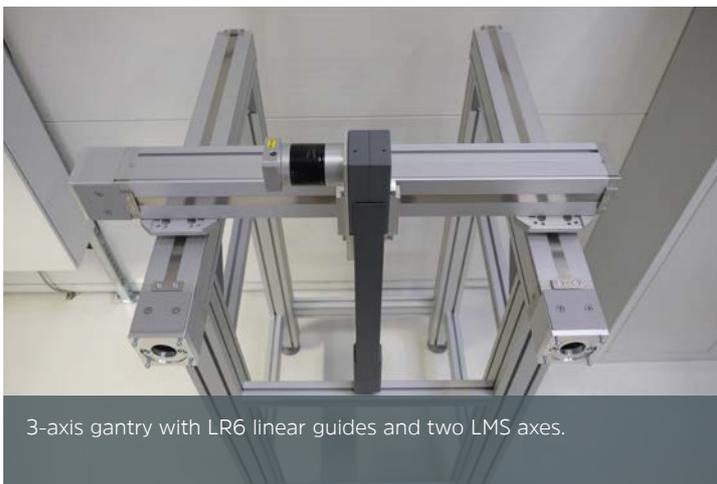


Long traverse paths and high speeds are achievable with the LR 6 linear axis.



The LW 90 carriage is composed entirely of profiles.

constructions. It is also easy to adjust and maintain, while at the same time extremely flexible and not only in relation to the traverse paths – for example, the carriages can also vary greatly in length and width. The LR system can be seamlessly integrated with the MiniTec profile system and has proved itself for many years in countless constructions.



3-axis gantry with LR6 linear guides and two LMS axes.



Complete solution with LR12 energy chain guide based on the MiniTec modular system.

# BETTER WITH ASSISTANCE



**Aids for worker guidance are often necessary to ensure assembly work is performed flexibly and efficiently. This not only facilitates the use of different staff members, it also significantly reduces the training effort. MiniTec already offers assistance systems to meet this challenge. In future companies will even be able to design their own worker guidance systems.**

Particularly with multi-variant production, companies are increasingly faced with the task of how to quickly train their employees in the respective assembly activities and support them during their work. This is where worker assistance systems can offer valuable help. For many years MiniTec has supplemented its workstation system with interactive assistance systems for worker guidance. For example, Pick-2Light uses different coloured signal lights to indicate to the operator which components in the supply rack are required. They can also be supported step by step through the work process with graphics, photos or videos. This is a great help particularly in workshops for people with disabilities.

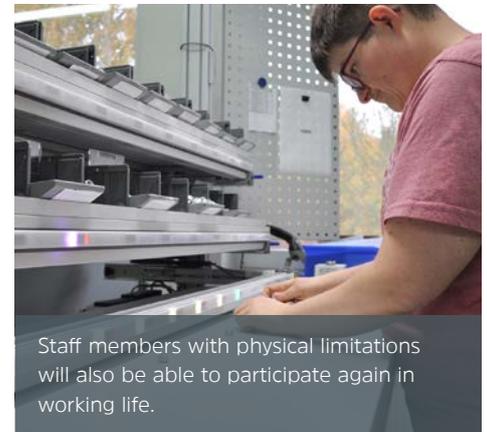
## New assistance system

Due to their many years of experience with such solutions for assembly workstations, the experts at MiniTec have been thinking how to align them even better with customers' requirements. It was on this basis that a concept was developed for a personalised MiniTec assistance system.

The solution guides the operator through the assembly process supported by media such as pictures or videos. There are various options available for process support and interaction because the system is modular in its structure and allows the control of a wide range of hardware components – including Pick2Light lighting strips, touch monitors, intervention sensors, balances and many more.

## Store assembly processes with Editor

The key component of the MiniTec assistance system will be an intuitive editor, that allows the user to design and store the processes for the assembly of new products in a simple manner. The system does not require any knowledge of programming and



Staff members with physical limitations will also be able to participate again in working life.

is almost self-explanatory.

The MiniTec assistance system will significantly reduce the learning time and ensure a noticeable increase in productivity. The error rate will be lower, the quality better. When there is a shortage of skilled staff, it offers the possibility of integrating unskilled personnel into assembly work. And even staff members with disabilities can join in working life again. Of course, the solution can also be usefully deployed in other areas apart from assembly, such as in the goods receiving area, order picking or dispatch.

The benefits are explained in the virtual MiniTec exhibition at [www.minitec.de/minitec-expo](http://www.minitec.de/minitec-expo) (Stand: workstation systems, webinar recording).



Assembly workstations with worker guidance are modular in design and can be supplemented with assistance systems.



# A SYSTEM FOR ELECTIONS AND VACCINATIONS

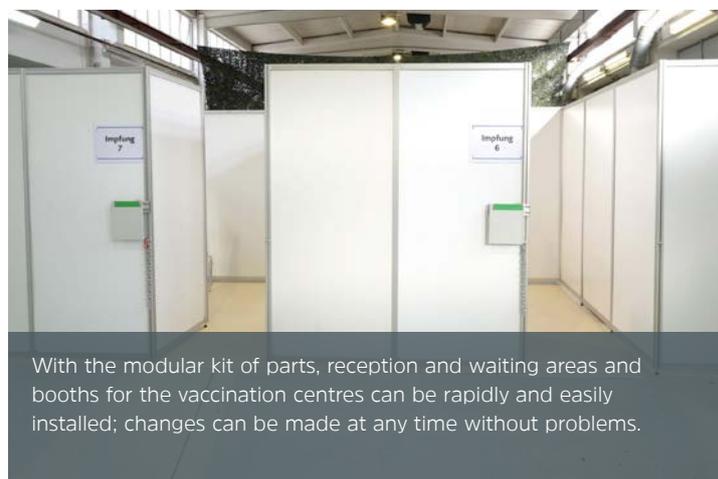
**At present, the German authorities are having to equip both vaccination centres as well as making preparations for numerous elections. This requires installations that on the one hand meet hygiene protection requirements, but are also flexible in their installation, modification and reuse. MiniTec supports this with its modular kit of parts.**

In 2021 the public administrative organisations in Germany are facing major challenges: Not only do they have to master the biggest vaccination roll-out in history, they also have to organise elections for district councils, state parliaments and the Bundestag. Never before has there been such a need for flexibility. Apart from issues like vaccine procurement and personnel recruitment, it is the fit-out of the vaccination centres and polling stations that is concerning the authorities. The organisation of these public facilities must meet the respective requirements and provide reliable hygiene protection. At the same time, it is preferable to avoid the vaccination and polling booths becoming unusable after their deployment and therefore requiring disposal.

With its proprietary modular kit of parts, MiniTec also provides the ideal basis for these applications in order to equip and meet the needs of both vaccination centres and polling stations. Hygiene protection and social distancing regulations can also be implemented. This starts right at the reception desk with the hand sanitizer point and continues with the tables and polling booths. With the modular system it is very easy to construct furniture for reception areas and individually adaptable partitions from aluminium frames and Perspex that are stable and easy to

clean. With their smooth surfaces, these are much more hygienic than other materials such as wood. If required, they can also be fitted with castors, so that they can be used anywhere.

The polling booths can also be fitted with an adjustable table top or as an ergonomic complete solution for sitting or standing voters. All polling booths are easily erected or dismantled so that they can be more easily stored and transported after use. Speakers' platforms for election campaign events can also be supplied. Customised



With the modular kit of parts, reception and waiting areas and booths for the vaccination centres can be rapidly and easily installed; changes can be made at any time without problems.

solutions are also possible, of course.

## **Modular vaccination centres**

Similar requirements apply for the installation of vaccination centres: Here there are also reception and waiting areas as well as booths. All the necessary spaces can be flexibly designed with the mobile partitions. They are rapidly assembled, have a stable pedestal and can be easily joined together to form vaccination booths. Further information is available at [www.minitec.de/wahlen](http://www.minitec.de/wahlen) and [www.minitec.de/impfzentren](http://www.minitec.de/impfzentren).

# ALLIANCE FOR A WORKSTATION



**SEW Eurodrive, MiniTec and German Pension Insurance are working together to support the reintegration into the work process of an employee with a disability. In the Graben-Neudorf factory a team responsible for the design, manufacture and assembly of electric motors took on the development of a design concept that would combine the economic and ergonomic aspects for an assembly island. They created a flexible workstation system which can be adapted to the respective and individual needs of the employee at any time.**

A few seconds can change a life. This was the experience of a long-serving employee working in the assembly department of the Baden-based company, SEW-Eurodrive. The company, from Bruchsal in Baden, develops and manufactures high quality gear motors and the associated customised electronics. The long-serving employee lost a lower leg in a motorcycle accident and could not

return to his job again due to this impairment. Those in the company with relevant responsibilities – the works management, HR and the union looked for a solution in order to enable him to be reintegrated into the work process.

The challenge was to design an accessible, ergonomic assembly workstation which also met the economic aspects. An SEW team together with MiniTec developed a solution that fulfilled all criteria. With the aid of the Key Indicator Method, a workstation concept was developed which takes into account the actual physical workload. In doing so, four key indicators were identified: Duration, frequency, load weights and posture as well as the actual performance conditions.

## Heavy drives

Even in these times of Industry 4.0, manual activities are still necessary in the manufacturing process. This is especially true when it comes to the precise assembly of electronic components. This is largely done manually,

because many of the assembly tasks cannot be performed by machines. The company from Bruchsal relies on well-designed assembly workstations grouped together and interlinked as assembly islands. In particular, the assembly of motors for airport luggage conveyors requires not only careful and precise work processes, to date it has also been characterised by effort on the part of the employees. After all, the linear combs of the electric motors alone weighs about 25 kilograms. Up to now, these had to be lifted, pushed and carried in order to work through all the assembly operations.

The aim of the project was to group together ergonomic workstations in an assembly island, where up to three employees will be able to work at one time.

### Flexible modular construction

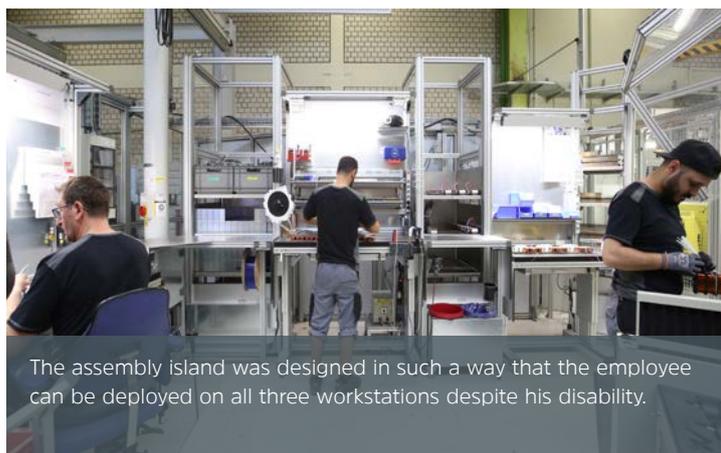
For many years, SEW-Eurodrive has relied on the MiniTec workstation system and their expertise in assembly and conveyor engineering for the interlinking of workstations.

A further important component are the assistance systems for manual assembly. These include monitors, projectors, pick-by-light systems, cameras and links to IT systems for augmented reality, enterprise resource planning (ERP) and MES software (manufacturing execution systems).

By recognising the intentions of the operator and with knowledge of the product being manufactured, the software can present suitable additional information or visualise and monitor the next process steps.

In principle, every workstation is a special design.

The importance of the design of a manual assembly workstation is often underestimated. This is because it is



The assembly island was designed in such a way that the employee can be deployed on all three workstations despite his disability.



MiniTec has designed an accessible, ergonomic assembly workstation for SEW-Eurodrive which also fulfils the economic criteria.

not only carried out from the point of view of optimising the production flow and increasing the quality and efficiency of the work, also its ergonomic design has an influence on the well-being and performance of the employee. Assembly management also has to take into consideration shorter modification and setup times.

More than ever, manufacturing requires flexibility.

**LOADS  
REDUCED**

from

**25 KG**

to under

**5 KG**

### Relaxed working on the assembly island

At SEW-Eurodrive detailed planning and analysis was followed by the construction of an assembly island which combines all the required properties. The results are considerable: It was possible to reduce the effective loads over the entire process chain from about 25 kg to under 5 kg and the working heights can be adjusted as required

without setup effort. Short distances due to process-oriented material arrangement simplify and accelerate the work process and accident risks are greatly reduced through skilful workstation design.

The assembly island was designed in such a way that the employee can be deployed on all three workstations despite his disability. Two additional staff members are on duty, depending on the workload. Tasks can be allocated flexibly, as all staff members have mastered every move and process. Another great benefit is that it monotonous, constantly repetitive work processes can be avoided. This solution enabled the long-serving employee to be fully integrated again into the work process, despite his limitations.

# MORE SPEED FOR SWITCH CABINET CONSTRUCTION



**Efficiency and speed are also required in switch cabinet construction. Friedrich Lütze GmbH, which specialises in electronic and electrotechnical components, have opted for an automation solution from MiniTec. The new system fits components into aluminium strips for cable routing. It enables higher production volumes and a significantly more efficient assembly of switch cabinets.**

For decades Friedrich Lütze GmbH has devoted itself to the subject of switch cabinet wiring and with Airstream has brought to market a system that advances standardisation in the switch cabinet. A system in the assembly that fitted aluminium strips with comb segments for wiring, caused more and more problems in daily operation. Moreover, it could no longer cope with the increased volume of orders after the introduction of a new product range. It was therefore replaced with a more modern and more efficient system from MiniTec. The system mounts tiny plastic parts ('combs') on to

## PRODUCTIVITY SIGNIFICANTLY INCREASED

aluminium strips. The prepared strips are used in the form of wiring frames in switch cabinets, where they are filled with electrical sub-assemblies. The combs act function as cable guides.

### Simple operation

First the desired Airstream strip variant is selected on the HMI operating panel. The width of the strip is adjusted manually via a handwheel. Then the strip is placed into the machine and pushed to a movable longitudinal end stop. This automatically determines the length. The longitudinal end stop is fitted with a pneumatic cylinder and pneumatic

clamping elements, so that the rail is adequately fixed during pressing. To prevent the rail slipping, an additional manual tensioner is used for certain rail geometries.

A two-hand button is used to start the process. The sliders advance and press the combs taken with them on to the rail. Only as many sliders advance as the length of the rail permits. After pressing, the sliders travel back and the equipped rail can be removed manually.

After commissioning, the system was taken into productive operation at Lütze, where they were very enthusiastic about the system: "The solution from MiniTec allows for a significantly higher cycle time and productivity, which offers considerable advantages for the future as the volume of orders increases. The equipping time of a rail could also be reduced, which was also important to meet production deadlines. At the same time, the intelligent concept ensures a smooth, safe process. Consideration was also given to noise protection: Noise is reduced by a special protective housing. With the new system we are now prepared for further growth", say the project managers.



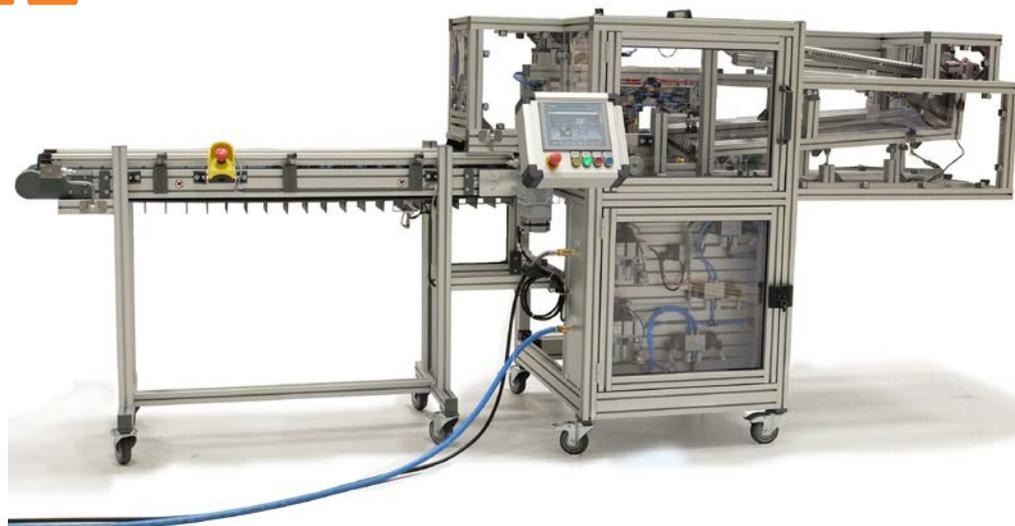
The automation solution fits components into aluminium strips for cable routing.

# DUST-FREE

**How can the cleaning of workpieces with constantly changing diameters and shapes, sometimes even conical shapes be automated – and preferably without time-consuming retooling? A de-dusting system can do this with the help of brushes and nitrogen.**

Cleaning dirty workpieces by hand – this is not only a time-consuming process, with large numbers of workpieces it is also physically stressful for the person doing it.

For this reason Minitec has developed and constructed a de-dusting system for a customer which can clean a wide variety of workpieces by means of brushes and nitrogen – and practically without cumbersome and time-consuming retooling procedures. But the highlight is that the feed and



shapes can be fed on to a single system, cleaned and also discharged. At the moment five different workpieces are running with only two changeover units.

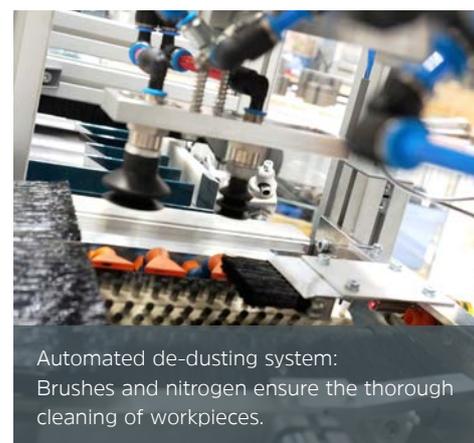
The dirty workpieces are fed in via a clocked rotary turret and an inclined plane which enables the rolling of conical components, without having to modify the infeed. A vacuum suction cup serves as gripper, which is equipped with a spring-loaded pressure piece that adapts to every component diameter – thus obviating the need to retool the gripper.

## Rotating brushes and nitrogen

The cleaning process takes place by means of rotating brushes and the supply of nitrogen under pressure, with which the workpieces are blown off – compressed air being too impure at this point. A sensor checks the suction unit – the system only runs only when this is functioning and the nitrogen can be suctioned off along with the dirt. Thus the system is protected from contamination,

but more importantly, the staff are protected from nitrogen.

To convert the system for a new batch, it is sufficient to simply replace the guide brushes on the front of the cleaning station with little effort. The side brushes hold the workpiece in place, so that the vacuum gripper can grab it and discharge it on to a timed belt with weld-on bars. The bars stop the workpieces touching, therefore preventing damage.



Automated de-dusting system: Brushes and nitrogen ensure the thorough cleaning of workpieces.

## AUTOMATION OF COMPLEX REQUIREMENTS

discharge are also integrated into the system. “We had to try a lot of things and were constantly faced with new challenges during the development process”, say the two project supervisors Carolin von Ehr and Stefan Schütz. Today a wide variety of

The flexibility of the system is almost limitless. It can also be fitted with castors, so that it can be positioned as required or be separated from the in-feed and discharge belts and thus the operation can be carried out more or less automatically.



# SYSTEMATIC PROFILE DESIGN

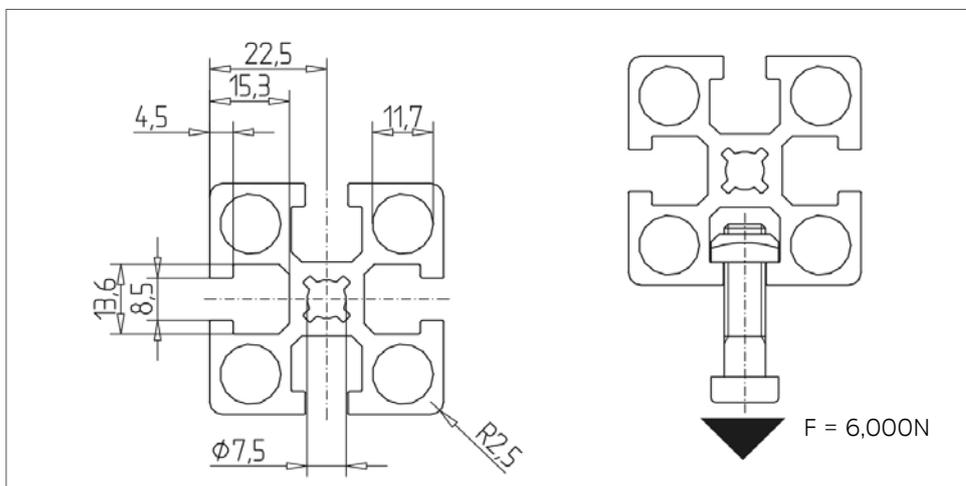
The design of MiniTec profiles is the result of uncompromising requirements: modularity, simplicity the avoidance of processing and maximum possible design freedom with the fewest number of components. Simply: The Art of Simplicity.

Aluminium profiles have become an indispensable part of industry. There are numerous systems, where the profile design is the result of various design criteria. These can be visual appearance, feel, maximum number of versions or special applications.

### Basic grid and groove shape

All MiniTec profiles of the 45 series are based on a grid of 22.5 mm. This is not a random dimension, but the result of intensive value engineering, as well as the radii, groove shape and central bore.

In order to enable the use of DIN screws and nuts, the groove of the profiles has to have a certain minimum depth so that the nuts can be swivelled into the slot at any point. In the MiniTec system M8 DIN screws and nuts are used. This requirement determines the groove depth of 15.3 mm, which also has the benefit that all applications can be covered with screws of standard length. Shallower groove depths require screw lengths in very small increments. Screws that are too short either function not at all or do not have the required screw-in



## ASSEMBLY WITHOUT DRILLING

depth. Screws that are too long hit the bottom of the groove before the component has been fixed. With a width of 2.6 mm and a thickness of 4.5 mm, the sides of the groove are designed to be extremely strong, in order to prevent the sides bending or tearing away under heavy loads.

### Central bore

The optimal form of the central bore was determined in collaboration with the Fraunhofer Institute for Industrial Mathematics (ITWM) in Kaiserslautern with the aid of FMEA studies (failure modes and effects analysis). The requirement that the use of DIN screws must be possible without prior thread cutting with at least the same stability of the connection, was fully met with the limited form.

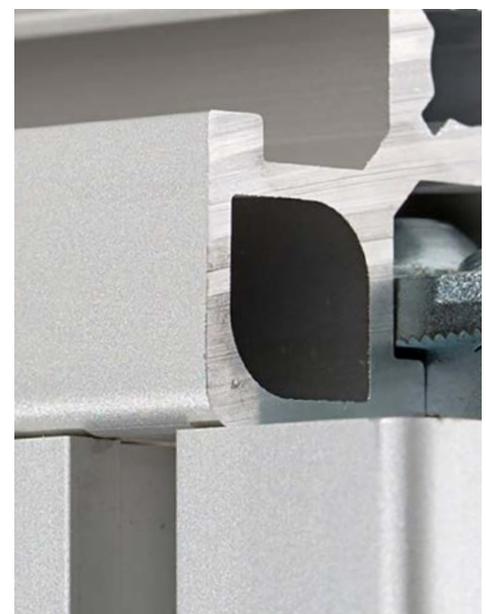


Assembly is very easy with the profile connector and the appropriate tool.

### Basic dimension

The grid dimension of 22.5 mm results in a basic dimension of 45 mm for the standard profile with four surrounding grooves. All other profiles are derived from this. The strict compliance of the modular system and the uniform groove shape has the great advantage that the same fixing elements can be used in all MiniTec profiles from 19 to 180 mm. Whether for warehousing, in the workshop or on the construction site, this is both a significant technical facilitation and an economic benefit.

The grid dimension of the 45 series is always 22.5 mm, the radii, groove form and central bore are also uniform. The sides of the groove are designed to be extremely resilient. The corner radius of 2.5 mm ensures an optimal transition of the connected profiles (right).





Pneumatics: The profiles are also ideally suited for ducting compressed air.

## Profile design

The external radii of the profiles can be determined from various aspects. Large radii of 4 mm or more have advantages in the design and feel of the individual profile bars. However, when assembling two profiles gaps there are gaps that are visually disturbing and may conflict with hygienic requirements of constructions (e.g. in the food industry). Sharp-edged profiles form gapless joints but are vulnerable to damage or injuries during processing and assembly. MiniTec profiles avoid the disadvantages of both extremes. The radius of all profiles is 2.5 mm.

With our profiles attractive constructions can be created without intrusive gaps at the junctions and without requiring special profiles and components. The surface of the profiles is slightly concave towards the centre of the groove, so that a certain pre-tension is achieved for the connection of two profiles.

G-profiles are available for applications with particular visual or hygienic requirements. The grooves of these profiles are enclosed and can be partially opened with a simple tool for the insertion of connecting elements. All other characteristics are identical to the standard profiles. All the components of the modular system are also suitable for these profiles.

## Summary

With about 70 different variants, the MiniTec profile system covers the complete range of applications including workstation design, racks, protective devices, conveyor engineering, linear motion technology etc. The avoidance of unproductive product diversity has great benefits for the materials management of our customers; production benefits from the maximum omission of processing and assembly manages with fewer tools and components.



Aluminium profiles are the basis for countless designs, for example in conveyor engineering.

# TROLLEYS IN ACTION

With the MiniTec modular system, challenging assignments in all sectors can be solved efficiently and economically. The modular system also provides countless possibilities for fire services with highly specialised requirements.



The volunteer fire service in Schönenberg-Kübelberg was faced with the question of how varied equipment could be sensibly packed for transport on the premises and loading on to the vehicles. The previous vehicle loading concept was kept very plain and simple by the competent federal authority: everything in one container and secured with lashing straps. Not very practical.

The fire service therefore developed a concept to show how this material could be sensibly and expediently loaded on to seven trolleys. Their first contact was the local firm MiniTec. A rough trolley concept was drawn



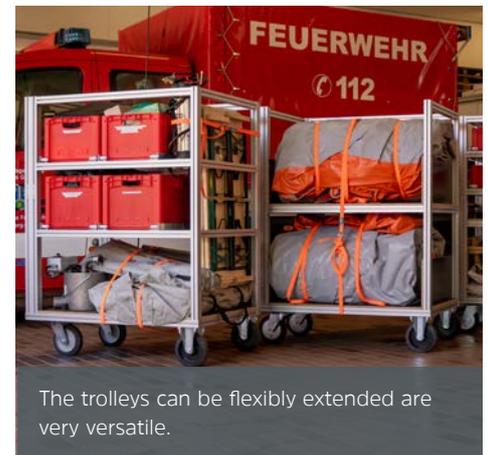
Seven trolleys accommodate the most varied loads.

up in advance by the fire service using the iCAD Assembler software. The seven trolleys were conceived and constructed in collaboration with Andreas Schmidt (MiniTec).

## Rapid assembly

Thanks to good advance planning, the fire service were able to easily mount the assembly kits. The modular construction now makes it possible to also attach various brackets or other components to load the material easily. So far, trolleys have been produced for tents, electrical equipment, hose material, protective clothing, a one-person shower, hot water components, generators with Powermoon® lighting units and even suction hoses for a portable pump with accessories.

Together with two hose containers, which were also built from MiniTec aluminium profiles and elements from the modular system a long time ago, the trolley with the portable pump now forms the main component of a concept by the fire service of Schönenberg-Kübelberg for pumping



The trolleys can be flexibly extended and are very versatile.

water over long distances. “The trolleys are a real asset for the volunteer fire service of Schönenberg-Kübelberg. All the material is visible at a glance and expediently loaded on to the trolley. You can see straight away when anything is missing and more to the point, *where* it is missing”, says Officer-in-charge, Benjamin Schneider.

# ON THE ROAD WITH MINITEC



**MiniTec employee Philipp Ritthaler has already seen a lot of the world in his young life. Currently the mechatronics engineer is making use of his experience and time to convert a van to a customised campervan with MiniTec profiles. We asked Philipp about his project, his experiences and future plans.**

The image of the profile store in the production shop in Schönenberg-Kübelberg is an unfamiliar one: Among the piles of stored profiles stands a white Fiat Ducato that Philipp Ritthaler has just converted.

### ***What made you want to convert a van?***

*Philipp Ritthaler:* When I came back from my last trip, it was obvious that in the long run I would need a new set of wheels. For mountain biking of course, but generally I often go travelling for several days, weeks or months. Then I need a cheap place to sleep and also have to take some equipment with me. A van converted to a campervan is ideal for this purpose. So I end up with a vehicle that meets my exact requirements.

### ***And what does MiniTec have to do with a camping holiday?***

Of course, as a mechatronics engineer working for MiniTec I am very familiar with our profile system and I've also worked a lot with it – so I decided to fit out my van with these profiles. Our modular system offers ample

opportunities for this. And of course, it's the basis for the conversion of special vehicles like those for the fire and rescue services or the police.

On this basis I end up with a campervan that exactly meets my requirements. And anyway, I enjoy coming up with clever solutions to problems and putting them into practice. Finally, it's also the most cost-effective alternative to an existing campervan. I have just enough time for this.

### ***Where have your major trips taken you to so far?***

In my old van I travelled right across Europe with my then girlfriend. Our route took us from Germany through France, Switzerland, Italy, Slovenia, Croatia, Bosnia, Montenegro and Albania to Greece.

## ON A GRAND TOUR IN EUROPE

### ***In which situations did you reach the limits of your equipment at the time?***

The old van was the size of the iconic VW Camper, we slept in the rooftop tent and did the cooking outside. We didn't have a toilet or a shower. Especially after we got a cat and a dog, things were getting a bit tight. In good weather our setup wasn't too bad, but in bad weather, and particularly in winter, it was really uncomfortable.

All the sports equipment for mountain biking and climbing was stored in the really small boot, getting the bikes loaded and unloaded was awkward, the resulting in the inevitable mess.

### ***What improvements do you want to make to this***

### *van and how can optimise the system you have now selected?*

To begin with, the new Fiat is much more spacious. The mere fact that you can stand up and that the kitchenette and bed are inside the vehicle is a huge plus! I am also going to install a wetroom, which is not only going to serve as a shower, but also as a drying room and toilet cubicle. To save space, the toilet is pushed under the bed on telescopic slides when not in use.

We didn't have any of that before. So on the nine-month trip in wet weather our breakfast was rather spartan and to go to the toilet, you had to go out in the wet. We also often had to go without a hot shower. When we weren't on a camping site, we went into the sea, a river or lake. We didn't have any heating or insulation so many an evening we were quite cold. Compared to all that, the new campervan will be absolute luxury!

### *And where will the bikes go?*

There are practical pull-out pods planned for the new van, which make storing the bikes child's play and enable the orderly stowage of various items of equipment.

### *How is your van used in daily life? Of course at the moment, travel options have been very restricted.*

First of all, despite the Covid restrictions, a campervan is still the best way to travel. You don't need a hotel and not necessarily a camp site either. With a kitchen and fridge you're not dependent on the hospitality sector. Then when you've got hobbies like mountain biking or climbing that you can pursue outdoors without contact to other people, nothing more stands in the way of a

## SPONTANEOUSLY ON THE ROAD WITH THE VAN



Philipp Ritthaler (left) on the road with friends – still in very cramped conditions.

holiday.

### *So is biking high on the agenda for you at the moment?*

That's right. And the van will make this a lot easier, for example, when I spontaneously want to go off for the weekend or go on a mountain bike tour after work. All the tiresome loading, packing and looking for equipment, cooking utensils, clothing etc the night before is no longer necessary because everything has its place in the campervan and can stay there all the time. Similarly, I don't have to unload and put away things when I come home completely exhausted on Sunday evening. It would even be possible to drive to work from the bike park on Monday morning!

I have also got the option of washing, maintaining and repairing the dirty bikes on the campervan – even the wet clothes can be hung up in the shower to dry. The cool beer waiting in the built-in fridge when you return from a long ride is also not to be sneezed at. And of course, transporting the bikes and other sports equipment is a lot easier than in a car.

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



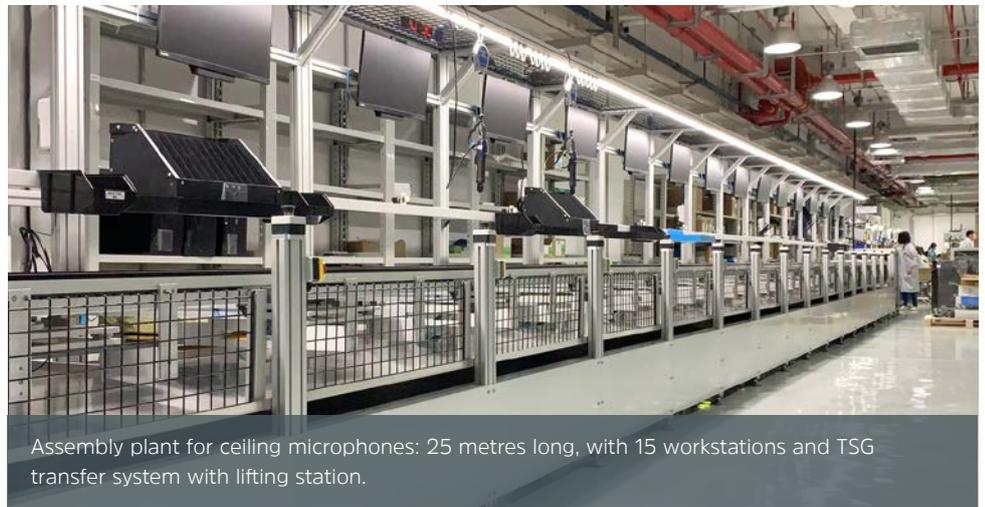
Philipp Ritthaler travelled across large parts of Europe with his old van; a new campervan will be more spacious.

# IN THE MIDDLE KINGDOM

**MiniTec did not quite hit the middle of China when it opened its branch in 2013 because Taicang is in the far east, about 30 kilometres from Shanghai. This location was nevertheless a good choice for MiniTec Technology (Taicang) Co.Ltd., because this city with 500,000 inhabitants is a prosperous region.**

Taicang ranks as a centre of German-Chinese cooperation – about 250 German firms have already located there. They include a good number of MiniTec customers. The object of the Chinese subsidiary was and is to be able to offer the same sophisticated and proven solutions and services in a timely manner as in other plants worldwide. The transit times due to the long distances are not to be underestimated: When the headquarters in Germany dispatches goods, they are at sea for about 45 days. In addition, 14 days' notice are required before they are loaded at the port. But with the presence in Taicang, the same full service as at other branches was achieved.

A project of the Berlin site shows how projects between Germany and China are run hand in hand with the colleagues in east Asia: A German customer had received an assembly plant for abrasive strips and wanted to equip his Chinese branch with



Assembly plant for ceiling microphones: 25 metres long, with 15 workstations and TSG transfer system with lifting station.

the same plant. The project was achieved very rapidly in cooperation with the two MiniTec sites with many benefits for the customer. In addition, Chinese standards, labelling and documentation could be implemented in the national language and training services were also provided locally.

Another interesting project was a large assembly plant for ceiling-mounted microphones. These were to replace conference systems on the conference tables.

The panels consist of a variety of parts which are mounted in various steps on the production line built by MiniTec. The complete plant is 25 metres long and comprises 15 workstations. Drawings and work instructions are displayed on the monitors. The workpiece carriers are conveyed with the TSG transfer system with lifting station.

In seven years the Chinese site has developed well, expanding from an initial two employees on 100 square metres to 1,300 square metres in 2019 with an office, assembly shop and store in their own building. Now there are seven people employed. "If at the start the customers were predominantly subsidiaries of German companies, it is now about 70% Chinese companies", reports managing director Michael Eicher, adding: "You need stamina in China. New business contacts are primarily made by word of mouth and personal meetings. Customer relationships are based on trust in the business partner." In the meantime between 25–30 new customers are added each year.

”  
Personal contact and  
references count.  
“



Managing director Michael Eicher (2nd from left) with his team in front of the company building.

# HYGIENE PROTECTION FOR HEATHROW

**The Covid pandemic is posing big challenges to airports, because they have to reorganise their public areas for passengers, staff and crews. Many statutory regulations have to be observed which are constantly changing. London Heathrow is installing hygiene protection partitions which are being formed based on the MiniTec modular system.**

Heathrow is the largest of the British capital's six international airports, the largest European airport and the seventh largest airport in the world. Before the Covid pandemic about 80 million travellers took off and landed there every year. In March 2020 passenger numbers decreased by 50 per cent compared to the previous year, in April the volume of air traffic then even dropped by 97 per cent. This development forced the airport operators to implement hygiene measures to protect passengers, staff and crews within a very short time.

At the start of April 2020 the London Heathrow team, which has its headquarters in south-west London, approached MiniTec UK to come up with solutions for the safety protection. These were to be capable of being integrated into zones with high contact numbers. Those include areas for baggage search, the loading of luggage, the reception area of the ID centre, ID cubicles and security areas.

## **Stringent standards– rapidly implemented**

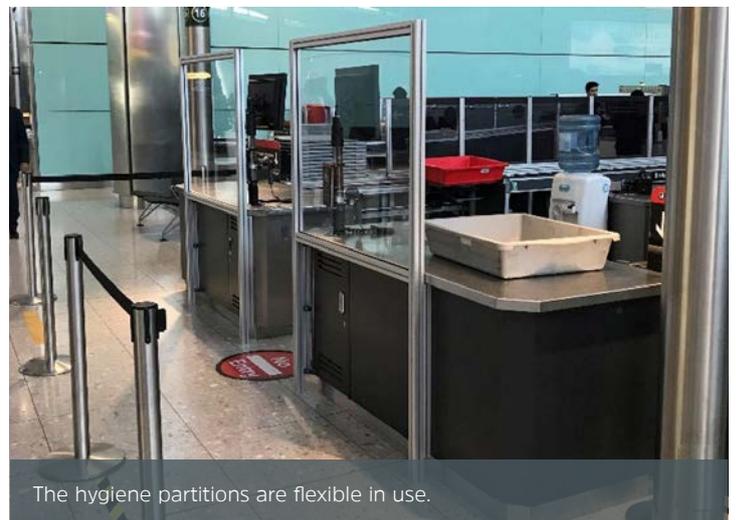
Those responsible had very clear requirements: The hygiene protection partitions were to be robust and flexible in use and be equipped with a transparent polycarbonate pane. In addition, the frames had to fit the existing desks. Some counters were also to have a document handover opening integrated between staff and passengers.



Due to the flexibility of the profile system and the ease of construction they succeeded in creating prototypes for the hygiene protection partitions within just two weeks. MiniTec

UK collaborated with the engineers on site in order to create CAD drawings and to produce initial solutions for testing. "We managed to implement this at very short notice under difficult circumstances for all those involved. Within a month we delivered six prototypes and over 80 units for installation at the airport", says Gary Livingstone, managing director of MiniTec UK, adding: "We are proud to have received Tier 1 supplier status for Heathrow, and we are looking forward to working more with the largest European airport in future – even if things are slowly getting back to normal."

**TWO WEEKS FROM START TO IMPLEMENTATION**



The hygiene partitions are flexible in use.



## PROFILES FOR PORTUGAL

**MiniTec works globally with more than 60 partners to offer a good service to its customers. Many of these partners offer individual automation solutions from a single source, such as Fluidotronica in Portugal. Interesting solutions are being implemented there for the food industry and the health sector.**

Fluidotronica was founded in 2004 and has been a partner of MiniTec since then. The head office is located in the town with the evocative name of Oliveira de Azeméis south of Porto, where a colourful mix of industrial companies has also settled. The sectors range from shoe factories, metal and plastics processing, suppliers to the automotive industry to foodstuff producers. Fluidotronica is correspondingly broadly positioned in automation solutions.

Since Portugal is also suffering severe economic effects from the Covid pandemic, Fluidotronica has on the one hand focused on its core businesses, which includes conveyor engineering, while also taking on new challenges on the other.

### Conveyors for the food industry

Conveyor engineering is one of these core competencies, which are now being increasingly focussed on. In this sector Fluidotronica has brought a new range of plant on to market for the food industry: Standard and modular belt conveyors made from PVC and polyurethane. These meet the machinery directives and FDA



The conveyor systems are designed to meet the requirements for food production.

standards for the food and pharmaceutical industries and were produced on the basis of the MiniTec modular system and conveyor engineering components and solutions.

These systems were manufactured by Fluidotronica from stainless steel alloys AISI 304 and 316, according to the product they are designed to transport and the environmental conditions they are exposed to. The conveyors meet FDA standards. They are characterised by their construction which is easily cleaned and an integrated automatic or semi-automatic washing system, which ensures hygienic operation. The systems are based on high quality materials and are designed to be very robust.



Classic special engineering: the mask machine.

### A three-layer mask machine

There was even an interesting project that arose out of the pandemic: A Portuguese customer planned to retool part of his production for the production of re-usable face masks and commissioned Fluidotronica to build the production plant. The plant was a three-layer mask machine which had been developed to achieve the automatic production of 100 masks with elastic per minute. The Minitec modular system was also used in this project.

# REGIONAL SUPPORT



The young talent of the Schöenberg Gymnastics and Sports Club 1890

For many years, MiniTec has committed itself to regional causes. At the end of the year, the Schöenberg Gymnastics and Sports Club 1890 were pleased to receive a donation of 1,000 euros. Commenting on this, Timo Molter, Chair of the Managing Board, said: "We are one of the few clubs that are still strongly committed to youth work. The donation is important for the maintenance of our facilities, which incurs considerable costs. At the moment there are about 100 active children and young people in the youth football club and in the gymnastics section, mainly in the Gardetanz\*." They are not only trained extensively in sport, they are also taught social skills. All this is carried out in daily voluntary work by numerous youth trainers and coaches."

\*[Acrobatic dance troupe traditionally associated with Carnival celebrations].

# HELP FOR AFRICA



Brother Karl Schaarschmitt (left) thanks Bernard Bauer for the support provided by MiniTec employees and the Bauer Family Foundation.

Already an established tradition for many years, again in December 2020 the hat was passed around MiniTec employees in order to raise money for 'Aktion Silbermöwe', a charity organised by the Catholic Diocese of Speyer. A considerable sum was raised which was topped up by the company and the Bauer family to an amount exceeding 10,000 euros – to the great delight of Brother Karl Schaarschmidt, who has been working in the slums of Soweto, Kenya for a long time. That the money really does make a difference is evidenced by the thank you letter of the Steyler missionary: "We were able to bring joy to many children, by transferring money to their poor families to buy food and necessary clothing. A boy needed an urgent appendix operation. We were able to help pay the rent of some who had been thrown on to the street before Christmas. A mother asked for help and money for the fare to Tanzania, to go and fetch her little boy, who had been kidnapped and abducted a month before. The donation will also help us to fence in a new school site. So it is our pleasure, to bring some joy into the hearts of poor people, despite the difficult times."

# LET THE BARBECUE SEASON BEGIN!

MiniTec employees also like to take advantage of the unlimited possibilities of the profile modular system in their private sphere. The management representative, Bernd Hoffmann, for example, has prepared for the beautiful season in the best possible way. The most important utensil for this born-and-bred Saarlander is of course, a swinging grill, which looks particularly attractive due to the curved main profile. He uses the profile groove to attach various important utensils, such as a hatchet, several bottle openers or a basket for bits and pieces. To ensure the barbecue specialities can be appropriately enjoyed, Bernd constructed an elegant glass table from profiles and placed it on his balcony, which is enclosed by a balustrade made from profiles with a glass insert. We say "Cheers" and wish you a summer of happy barbecues!



Bernd Hoffmann is well-equipped for the barbecue season.



Elegant and weather-resistant: Table and balustrade made from profiles.



There's a space for all the important things on the swinging profile grill.



## 1,000 TONNES

That's how much material the MiniTec profile warehouse in Schönenberg-Kübelberg has room for. Normally, about 600 to 700 tonnes of aluminium profiles are stored there in a wide variety of cross-sections. This warehouse capacity enables just-in-time deliveries even in times of high demand – even in Covid times. For our customers this means maximum security of procurement and thereby for their own business operations.



## LEGAL NOTICE

### Publisher:

MiniTec GmbH & Co. KG  
MiniTec Allee 1  
66901 Schönenberg-Kübelberg  
Tel. +49 (0) 63 73 / 81 27 - 0  
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### Editorial team:

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### Frequency of publication:

4 issues per year

### Circulation:

3,000 copies

### Layout and typesetting:

Lindenmayer+Lehning  
Werbung und Grafikdesign  
Ploenniesstraße 13  
64289 Darmstadt  
[www.lindenmayerundlehning.de](http://www.lindenmayerundlehning.de)

### Picture credits:

MiniTec, Adobe Stock, Fluidotronica, Philipp Rittaler,  
SEW, Stiftung Kreuznacher Diakonie, TUS Schönenberg

### Printing:

KerkerDruck GmbH  
Hans-Geiger-Straße 4  
67661 Kaiserslautern



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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 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!**

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