



# Connect

04

December  
2021



## PRINT, TEST, DOCUMENT

----- Page 22

Automating forgery-proof  
product labelling



## MOVING ON MANY LEVELS

----- Page 24

The spiral conveyor offers comprehensive  
advantages

## TECHNOLOGIES FOR THE TURN IN ENERGY POLICIES

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Complete solutions for solar technology and battery  
production



## ***We have an answer to falsified medicines.***

Thwart the plans of product pirates: The “PALC unit” and the “IPAC unit” of ISW enable the serialisation of pharmaceuticals by means of image processing and networked databases. And therefore ensure continuous traceability along the whole supply chain. The complete design and conveying technology were supplied by MiniTec.

And because the production processes are frequently different, each system is adjusted to the individual circumstances. In addition to track & trace systems for the pharmaceutical industry, ISW together with MiniTec also implements solutions for completely different areas. Curious? Then look forward to our online seminar – you are welcome to take part!



### ***Online seminar***

#### **Serialisation of pharma products**

With ISW & MiniTec systems against  
falsified medicines

**16 February 2022**  
from 14:00 - 15:00

Register at:

[www.minitec.de/pharma-seminar](http://www.minitec.de/pharma-seminar)







## DEAR READERS,

In recent years we repeatedly had to realise in what a fast-moving time we live in. The economy is in constant change. New, promising techniques and markets are now created with lightning speed but can also disappear again just as fast. Investments are then at risk. MiniTec has also already had such experiences. As we offered systems for the production of solar technology in the mid-nineteen nineties, it appeared to be an up-and-coming market. Within a few years, this industry then moved to Asia and we had to reduce our activities in this area again.

In the meantime, we are all finding out that the relocation of production or even whole industries to other continents not only brings cost advantages, but all massive problems. Among other things, the shortage of computer chips is currently hampering whole industries. A return to the advantages of regional production locations is currently the subject of intense discussions. Apart from core skills and technologies, the production of goods should return to Europe or rather Germany.

Even though MiniTec has developed into a global company over the 35 years of its existence, we have always acted faithful to our location. Our customers and not least our employees value this. Our company structure makes it easy, because we are still a medium-sized business with "heart and soul" and are one hundred percent family-owned.

With the necessary turn in energy policies, new technologies and production capacities are required. Solar energy is one of the key technologies in the renewable energy sector, and new mobility concepts with e-bikes and electric vehicles need batteries. We are now very active in both areas: For many years we have offered production components for the photovoltaic industry as well as complete production lines for solar thermal energy sector manufacturers. And we offer automated systems for battery production, which is currently booming due to the enormous demand worldwide. Find out more in the title story of this issue. Interesting times lie before us. Staying power pays.

We wish you and your family a happy Christmas and a good start in the new year.

Yours

A handwritten signature in white ink on an orange background. The signature is stylized and appears to read 'Sandra Geyer-Aktenkirch'.

Sandra Geyer-Aktenkirch  
Managing Director

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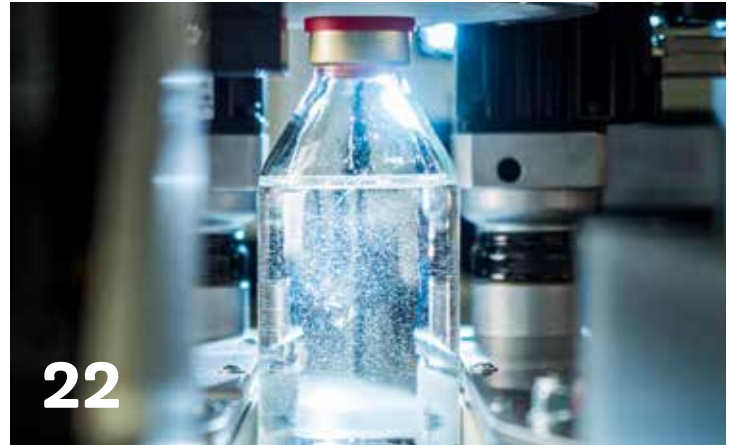
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**SOLUTIONS****Print, test, document**

The north German company ISW is specialised in image processing systems for forgery-proof product labelling. MiniTec supplements these solutions with individually configurable production lines for batch labelling and traceability.

**PRODUCTS****Moving on many levels**

It is flexible and economical in operation: The WF 3000 spiral conveyor transports goods on different levels on the smallest floor area and at the same time acts as a buffer in the production.



# MINITEC AT TRADE FAIRS AND EXHIBITIONS IN 2022



**Normal trade fairs are due to take place again in 2022. Due to the pandemic, in the past, many events were cancelled or postponed. In the coming year, MiniTec will again be represented at the most important trade fairs of its industries.**

Right at the start of the new year, MiniTec will be exhibiting at the Werkstätten-Messe (Workshops Trade Fair) in Nuremberg. From 19 to 22 January 2022, in Hall 12.0 on Stand 325, the focus will be on our workplace systems. The trade fair focuses on the needs of the disabled.



The focus is on workplace systems at the workshops trade fair.

## werkstätten:messe

MiniTec has been specialised in workplace systems for many years and has set itself the task of contributing to integration with ergonomic workplaces. Combined with new digital assistance and training systems, disabled workshops should also be able to operate as competitive providers in future.

The MiniTec SmartAssist worker assistance system guides employees step-by-step through the work process with diagrams, photos or videos. At the same time, the systems are used for quality testing or documentation. Orders with smaller lot sizes or more complex tasks can also be implemented with them. A special feature is the intuitively operable MiniTec SmartEdi editor. This enables workshops to easily create the respective work instructions themselves.

## LogiMAT in Stuttgart

**At the LogiMAT, the International Trade Show for Intralogistics Solutions and Process Management, we will be exhibited from 31 May to 2 June 2022 in Hall 1 on Stand L08.**

The stand will focus on a demo system for battery production. This shows the handling of batteries in an assembly process. The system was initially created as a 3D CAD model, then automated virtually with a digital twin and then built. The conveyor technology units such as the TSG system, which is optimised as a timing belt conveyor for tray transport, linear axes such as LMZ (Y-axis with timing belt) and LMS (Z-axis with spindle mounted on ball bearings) are integrated for high-precision placement of the products and a robot for the handling. The system is supplemented with an automated guided vehicle system (AGV), which is equipped with a Mod sorter for flexible positioning of the battery packs.

The new, compact pallet circulation system UMSL will be presented as a further, real exhibit. This allows even more efficient use on the smallest space with simultaneous large loading capacity. It enables machine tools, workstations and handling equipment to be linked or serves as a robot feeder. Further solutions will be presented virtually on the trade fair stand.



At the LogiMAT, a demo system clearly illustrates the advantages of automated production.



## Abenteuer & Allrad, Bad Kissingen

**From 16 to 19 June 2022, the focus is on individual vehicle fit out, in particular, the possibilities for campers based on the MiniTec aluminium profile system.**



## Automatica 2022, Munich

**From 21 to 24 June 2022, efficient and reliable production concepts from MiniTec will be presented at the Leading Exhibition for Smart Automation and Robotics.**

## Interschutz 2022, Hanover

**At the world's leading trade fair for fire and rescue services, civil protection, safety and security from 20 to 25 June 2022, our industry solutions for emergency services and individual vehicle fitout take centre stage.**

## Motek, Stuttgart

**At the International trade fair for automation in production and assembly from 4 to 7 October 2022, MiniTec presents solutions for assembly, handling and conveyor technology.**



**INTERSCHUTZ**



# MINITEC BERLIN: NEIGHBOURHOOD WITH PROFILE



**MiniTec has developed continuously from a specialist for miniature guides into a leading technology company and special purpose machinery manufacturer. Today, 420 experts in eleven branches implement tailor-made solutions for customers. One of these is located in a traditional technology park and from here services east Germany.**

It is a location with tradition: The MiniTec subsidiary in Berlin is based in Adlershof. This was founded in 1754 as a farmyard, was later the cradle of German engine powered flight, a research, film and then television centre and today is the location of one of the most modern technology parks in Germany. This, as well as a university campus, are located at the former airfield, which is now a park. Research facilities, six institutes of Humboldt University and around 1,200 businesses have settled on an area of 4.2 km<sup>2</sup>.

An ideal environment for a technology company such as MiniTec. At the end of 2016, MiniTec took over two Berlin companies, with which it already had a longstanding partnership and which now operate as MiniTec Berlin GmbH. Since then the location advises and supplies customers and partners in east Germany under a new flag and the leadership of Constantin Wernick.



It is difficult to imagine industry, trade and logistics without aluminium profiles.

An art installation in the Forum Adlershof, a technology park with tradition.





The markets in east Germany are serviced from Berlin.



Constantin Wernick heads the Berlin location.

### Joining without drilling

The Berlin company's range of services extend from the design and assembly of individual parts through to complete machines. One focus lies in the area of small series, prototypes as well as in test setups. However, conveyor sections, guards and assembly workplaces are also designed to customer specifications. If sophisticated complete solutions for automation are involved, the know-how of the parent company is also brought to bear.

This is based on the tried and tested MiniTec modular profile system with the innovative connectors. Adjustments, changes and extension

of constructions are therefore possible at any time, because the profile connectors do not need machining.

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## ADVICE AND SERVICE FROM A SINGLE SOURCE

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### Turning and milling in perfection

Precision, speed and flexibility are the suppositions when it comes to machining: Machine components are produced to individual specifications

on the modern machinery. The sheet metalworking takes place including surface treatment (anodising, powder coating).

### Well connected

As is usual in the MiniTec Group, in Berlin advice and service as well as contact with customers is a priority. The offer from a single source ranges from the process analysis through to commissioning. The location has been developed continuously in recent years for this purpose. Today, modern IT systems such as CAD or ERP software are used and all locations are networked with each other. Numerous application examples from different industries verify the benefits.



The range of services of MiniTec Berlin extend from the design and assembly of individual parts through to complete machines.

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# TECHNOLOGIES FOR THE TURN IN ENERGY POLICIES



**One topic that has always occupied humans is energy. Today we need to master the change from fossil fuels to renewable energy sources. Ideas, concepts and technologies are necessary for this. MiniTec has been very active in this field for many years and offers production facilities and modules for energy generation and storage products.**

Human kind's hunger for energy increases continuously, in particular, the industry, building and traffic sectors as well as commerce, trade and service companies and private households are among the largest consumers.

The turn in energy policies and sustainability are a necessity, which must be implemented in order to maintain natural resources on our planet and to continue to enable our modern way of life.

To this end, Germany has set itself ambitious targets for reduction in greenhouse gas emissions: By 2030, the emissions are to be reduced by at least 55 percent compared to 1990, and greenhouse gas neutrality is to be reached by 2050. In addition, the European Green Deal aims for the EU to be climate neutral by 2050.



Framing stations are used to mount the frame on the module and are always designed to suit the system.



## Hunger for energy

Renewable energy should enable a turnaround and remove the need for fossil fuels. Solar technology plays a central role in the generation. As the generation of electricity is not possible continuously, energy stores are needed. Batteries are also the basis for wireless loads such as electric cars, tools or mobile phones, notebooks, et cetera. Billions of batteries are in use today.

Not only solar systems but also batteries are needed worldwide. Their production requires complex production lines. It is a growth market that also offers many opportunities for small and medium-sized enterprises.

MiniTec has specialised in production lines for photovoltaics (PV) and solar thermal energy (STE) since the mid-nineteen nineties - and was thus one of the first suppliers on the market - and offers them worldwide. Automated systems for battery production have now been added. Both are growth markets with plenty of potential. Companies that operate in this environment can draw on

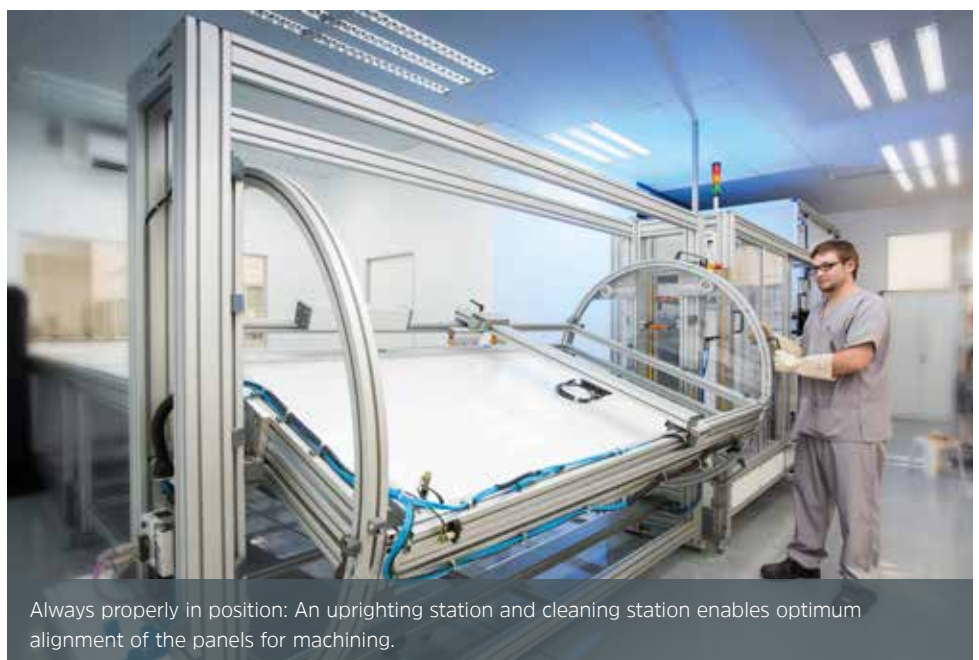
trendsetting production and handling concepts from MiniTec.

## The turn in energy policies needs new technologies

In a greenhouse gas-neutral energy system, electricity from renewable energy will be the most important form of energy in the future. This requires extensive development of wind power and photovoltaics. The production of solar panels requires lots of know-how. In this

## TURNKEY PROJECTS WITH APPLICATION GUARANTEE

field, MiniTec concentrates on the automation of modular assembly systems for photovoltaic modules as well as laser welding machines for thermal solar collectors. Worldwide, such systems have been in use by manufacturers of solar collectors and photovoltaic modules for many years and have helped them to increase quality and productivity. The MiniTec range of services here extends from the system layout to the design, assembly/installation on site, commissioning through to training the employees. The core skills in automation, assembly engineering, material flow, quality assurance or workplace systems pay off here.



Always properly in position: An uprighting station and cleaning station enables optimum alignment of the panels for machining.



## With the power of the sun

In the solar technology market, MiniTec is a pioneer; an assembly line for photovoltaic modules was developed in 1996 and was offered to the manufacturers of this new technology. In 2010, at the Waldmohr location, the "Solar Thermal Competence Center" (STCC) was opened for the further development of solar collectors and the corresponding production technology. The many years of experience in photovoltaic technology combined with the trendsetting laser welding technology form the basis for the development of modern production lines for photovoltaic modules. MiniTec also supports collector manufacturers, from the planning to the setting up of a production facility through to certification and production start. A unique service in this industry. Soon after, in 2011, it was even the world market leader in laser welding machines for solar thermal energy. The first fully automatic frame press for PV modules and the market launch of "flashers" with integrated safety tests for highly efficient module production followed.

## Everything from a single source

MiniTec has repeatedly adapted its solar technology offer in recent years. On the one hand due to technological progress, on the other hand, the customers' requirements have also changed over the years. This is, after all, also the strength of a medium-sized company, which operates with focus on the market and thus customer-focussed. Today the portfolio includes automated modular assembly systems for photovoltaic modules as well as complete production lines for manufacturers in the solar thermal energy sector.

Important stations in these systems are, for example, a framing station, the flasher tunnel and the quality assurance inspection.

The framing stations are used for assembling the frame on the module. The module is conveyed on the framing station either semi-automatically (on ball transfer rollers) or automatically (on a conveyor belt). There the frame pieces are mounted on the module manually. After selecting the frame parts (with screwed corners; with corner connection angles), the station can be adapted individually. Equipped with turntable, lifting station and vacuum suction cups, the module can be moved easily. The worker can now fix the parts on the module without any great effort.



Laser welding technology is an economic and forward-looking technology for industrial mass production of solar absorbers.

The modules with frame are tested in the flasher tunnel, and the test with a light flash is performed. This is used to determine the power output of solar modules and solar cells.

Another quality assurance measure takes place in the "visual inspection" area of the system. A visual control station with LED background lighting enables precise inspection of the panels. These are then transferred with a fully-automatic gantry pallet loading system.

## Perfectly connected

The connection of the solar components plays another important role in the production. Here laser welding of solar absorbers has established itself. This is an economic and forward-looking technology for industrial mass production. The latest generation of the MiniTec laser welding machine (LSA) is used for increasingly broader applications in the production of full-surface absorbers for thermal flat collectors. It is a fully-automatic machine designed and built to state-of-the-art standards with modern CNC controls.

High-quality and durable connections with top heat transfer result. In addition to very high process safety and reliability, the laser welding machine (LSA) is also characterised by its enormous flexibility, which enables it to be set up within a very short time and without a great deal of effort for welding all kinds of different customised products with different tube diameters.

## Mobile energy stores of the future

The trend to increasing mobility drives the demand for batteries. No wonder that an increasing number of battery

factories are being built worldwide. Battery production is also a central component of the turn in energy policies.

The lithium-ion battery clearly dominates the storage technology – regardless of 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. There are numerous conveying, handling and testing tasks to deal with.

With its many years of manufacturing expertise in plant engineering and construction, MiniTec offers tailor-made solutions for the assembly, handling, conveying and testing processes.



Precision and speed in battery production are achieved through a high degree of automation.

## Precision & speed

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.



Compact and fast: A demo system for battery assembly.

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. Robots can naturally also be integrated into the automation of handling areas by MiniTec.

With modern IT tools such as 3D CAD software, digital twins and simulation technology, virtual systems are designed in advance within the scope of projects. These show all production steps and simulate work and automation processes. Only then are the real systems created.

## Flexibility for production

Even if it is not always possible to fully automate all the steps in production or in quality assurance, MiniTec still helps. Special manual workplaces can then be integrated, especially in small and medium-sized production facilities with a high degree of flexibility. The MiniTec SmartAssist worker assistance system can be used here to guide workers through the individual processes. Not only simple work instructions but also complex repair processes can be easily described and shown with the system.

Manual workplaces for the quality testing and/or repair of modules and packs can also be useful in large series.

MiniTec is available as a competent partner for semi-automatic and highly automated assembly solutions.



Offered solutions can be found at:  
[www.minitec.de/solartechnik](http://www.minitec.de/solartechnik)  
[www.minitec.de/batterieproduktion](http://www.minitec.de/batterieproduktion)



# PROGRAMMED FOR SUSTAINABILITY

Photovoltaics is currently experiencing a renaissance. Including in France, where Voltec Solar started over ten years ago – and due to the steadily growing demand, felt compelled to optimise and automate the production processes. MiniTec provided valuable support and produced highly efficient systems for Voltec. A progress report.



Dinsheim-sur-Bruche is a charming small town in the historical region of Alsace, thirty kilometres from Strasbourg. The area invites people to take part in all kinds of tourist activities, among other things in the nearby Vosges mountains. Hardly anyone would think that one of France's most innovative manufacturers of photovoltaic systems was located here.

And yet it is true: Voltec Solar has been producing photovoltaic modules in Dinsheim for more than ten years. In 2009, a 30 MW production line was installed in a 4500 m<sup>2</sup> plant, which had previously accommodated a sawmill. Due to the growing demand, in 2019 the company decided to increase its annual production capacity to 200 MW – and at the same time to invest in greater automation of the production lines.

### Complete production in-house

Voltec covers almost the complete production process and divides it into two main areas – the clean room and the backend. The clean room is where all the work is done to create the multi-layer solar panel.

This begins with the soldering of the cells to form so-called strings, which are then placed on glass with EVA film by robots. EVA film and an additional backsheet film are then attached to the back. A laminator now bonds everything in a vacuum so that the solar panel is encapsulated and protected. The next steps are the framing and the installation of the connection socket.

Erick Valdez, engineering project manager: “We make this procedure almost completely automatic. Only a few tasks, which are difficult to automate, are carried out by employees. In addition, they help us to check whether all the work has been done correctly.”

High quality is the be-all and end-all for Voltec, which is why a corresponding check is undertaken after each production step. After the assembly, a flash of light is even used to simulate the sun, to ensure that the module produces the correct power output.



The panels are positioned for the visual inspection by a multi-articulated arm.

### New concepts for more efficiency

Next the condition of the cells is checked – i.e., whether anything has broken or has been positioned wrongly. This control process and the subsequent loading of the finished solar modules onto pallets used to take place with a very large amount of manual effort. To increase the speed and achieve the required productivity, Voltec had to make the workflows more efficient and increase automation.

Which is why they contacted MiniTec: “We were looking for an experienced partner, who could help us with our project. Important criteria were also a faster and more flexible customer service as well as high reliability of the systems. MiniTec convinced us with its extensive experience in photovoltaics and its good product and service quality”, remembers Valdez.

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**DURATION OF  
THE VISUAL  
INSPECTION  
HALVED**

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### High level of consulting and project competence

A decision that Valdez did not regret: “The project progressed very successfully from the outset. Stefan Buchem, as the MiniTec project manager, and his team had convincingly extensive technical knowledge and useful concepts. We noticed that we were dealing with competent people, in whose know-how and experience we could trust. That was important since the aim was to create a completely new process. We had an idea, and

Thanks to two identical control stations, the inspection takes half the time.



MiniTec developed potential solutions with us and pointed out where improvements could be made. We gave them information and questions and the quality and speed of the answers were truly satisfactory.”

## 44 SECONDS FOR A SOLAR MODULE

### Test faster

From this a solution finally emerged, which produced a significant increase in productivity: After testing the condition of the cells the panels are lifted by a pneumatically driven multi-articulated arm, placed in a vertical position and are presented to an employee for the visual inspection. The employee compares the information on the control screen with the panel. Depending on the result, the panel is assigned the relevant quality level and is labelled with a corresponding barcode. Based on this classification, a decision is made whether the panel is passed on to the next step or is sorted out for examination and repair.

“Classifying the panels in this way is very important for us, to ensure that we do not send any faulty panels to our customers”, says Valdez.

The control station is implemented twice – while the employee is still busy checking one panel, the next panel moves into the second station and is lifted. If the checking of one panel is completed, the employee turns around and can test and classify the next panel without delay. This almost doubled the throughput.

### Fully-automatic palleting

After the classification, the final sealing (potting) of the connection takes place and the panel is loaded onto a pallet for dispatch. Two employees used to be necessary to palletise the finished models and lifted each module onto the relevant pallet manually. This process was therefore also very time consuming.

Today the palletising takes place fully automatically with a multi-axis linear gantry. Initially a robot was also discussed; the gantry costs less than a robot but also has the particular advantage of a significantly larger range. To test the fitness of the solution in advance, MiniTec first created a digital twin. Based on this, the complete workflow could be simulated and optimised realistically before the system was implemented.

An effort that paid off, as the speed was increased significantly, including for the palletising. As the panel runs in, its quality class is identified from the barcode on it, the panel is lifted and placed on the corresponding pallet. A vertical distance meter informs the gantry of the height of the respective stack – as an indication of when it is full and for precise placing of the module. If the loading capacity is reached, this is indicated to the system by a corresponding light signal and the pallet can be transported to the dispatch department.

### Goal achieved – new plans for the future

The MiniTec systems Anlagen play an important part in reducing the throughput time considerably – a solar module is now produced every 44 seconds. Erick Valdez: “We not only have advantages in terms of speed, since thanks to the classification of the panels in multiple steps, the result is now also significantly more reliable than before.”

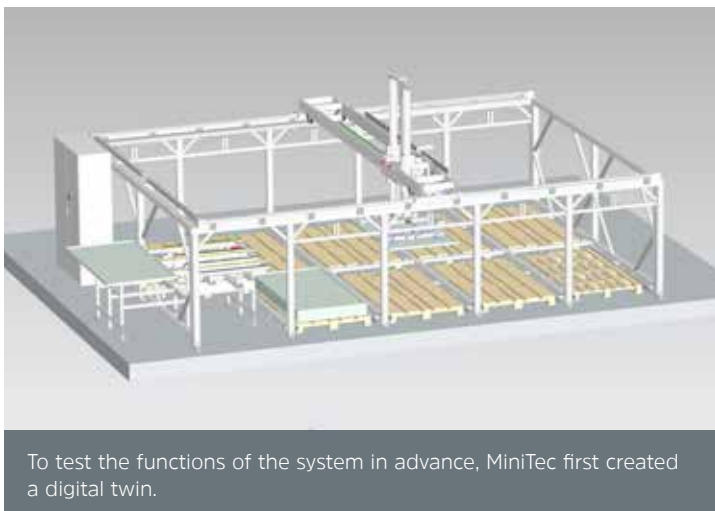
And because it is common knowledge that if you don't go forward, you go backwards, the manager is already thinking about the next measures to take: “The solar market is growing very quickly and we are competing with Chinese suppliers. We therefore continue to search for potential improvements in the production and will concern ourselves with this next year. MiniTec will naturally be on board again, the company showed itself to be an extremely reliable and competent partner. This is also clear from the short project time of only just 4.5 months and also that the budget allowance was strictly adhered to.



The technical project manager Erick Valdez is satisfied – as a result of the process optimisations, a solar module is now produced every 44 seconds.

Furthermore, MiniTec systems are already also in use in other areas of Voltec, for example for conveying the solar modules from the clean room into the backend.”

Voltec considers itself to be well-prepared for the future. The company is specialised in installations with panels for large surfaces: “We are already the largest supplier in this segment in France and want to further develop our position in the European and international market in the future, together with our partner Systovi”, says Valdez. The preconditions for this are good, especially as Voltec places particularly high importance on sustainability: “A large difference between us and other suppliers is our small CO<sub>2</sub> footprint. We have the smallest CO<sub>2</sub> footprint on the market. We want to further improve and develop this. We want to produce the solar panels with the lowest environmental impact!”



To test the functions of the system in advance, MiniTec first created a digital twin.



The automatic palletising system from MiniTec has shortened the throughput time significantly.





# SYSTEMATIC PROTECTION

**Safety and occupational protection come first in production environments.**

**MiniTec offers a wide range of protection system products and tailor-made solutions.**

**MiniTec supplies the ALMO company, one of the world's leading manufacturers of disposable syringes based in Germany's North Hesse region, with protective enclosures.**

**An effective measure for man and machine in the highly automated production and the intralogistics with an automated guided vehicle system.**

ALMO Erzeugnisse Erwin Busch GmbH is based in the town of Bad Arolsen in the state of Hesse. With 380 employees, the company produces around two billion disposal syringes per year under clean room conditions for all kinds of different medical applications. The ALMO products are used in more than 160 countries of the world. The semi-finished parts for the disposable syringes, plungers and barrels are produced from plastic in an injection moulding process and are then transferred for further processing, printing and assembly.

As the disposable syringes are mass-produced goods, a high degree of automation and efficient production have always been required, in order to be competitive for the world market, even in Germany.

An important production factor is also the intralogistics. Due to the spatial circumstances, the existing conveyor technologies and the infrastructure within the production, ALMO decided to implement this automation task with an automated guided vehicle system (AGV). This meant that most of the installations could remain in their accustomed places. Special transport containers were also introduced into the production.

## **Modular structure**

One challenge was that the whole system, i.e. the circuit and transfer stations, as well as the new infrastructure had to be modular and expandable. Within the scope of the project, 55 machines were each equipped with two transfer stations and connected, and several special stations were set up, for example, for quality assurance. To make the connection to the individual machines easier, the transfer stations were designed first and were

standardised to the extent that only three different types of transfer stations were required to implement the overall system.

A large number of new interfaces were created at the different machines by the new transfer stations to be installed, these interfaces had to be made safe by protective enclosures.

### Individual protective enclosures

A protective enclosure was designed for each station type, taking into consideration the needs of the employees, the specifications of the manufacturer of the automated guided vehicle system, the occupational health and safety requirements and the process flows. It was quickly found that standardisation in the same way as the transfer stations was not possible. Individual adaptations had to be made to the individual installations.

## EFFECTIVE PROTECTION FOR THE PRODUCTION

The MiniTec protection system was chosen to implement the enclosures. The decisive factor was good experience with the MiniTec modular profile system. This has been used for years for the protective enclosures at the machines in the production.

### Quickly designed

The MiniTec iCAD Assembler CAD tool was also helpful. Here the protective enclosures could be designed in 3D and adjusted to the respective machine. The design documents were then sent directly to MiniTec. There the designs were checked and a quotation was prepared. The good contacts between ALMO and MiniTec employees



ALMO produces around two billion disposal syringes per year under clean room conditions for all kinds of different medical applications.

was an advantage here. This meant that questions about the designs could be clarified quickly and easily, and also the constructional know-how of the MiniTec technicians was also input into the new protective enclosures. These were then preassembled by MiniTec on the basis of the CAD data. The individual segments could then be assembled on site quickly and easily.

### Extensions based on tests

During the initial test runs of the automated guided vehicle systems (AGV) in the halls of the manufacturer it was then found that extensive additions had to be made to the protective enclosures in order to safely separate the AGV and the employees. Diverse passageways between the machines with fixed guards had to be closed or secured with doors so that the AGV could provide the required performance without endangering the employees. Once again, the compatible modular system of MiniTec proved its worth, as it was easy to change or extend the protective enclosures.

The ALMO products are used in more than 160 countries of the world.



Among other things, fixed partitions were installed between the protective enclosures of the transfer stations in the area of the injection moulding departments, as here the employees do not have to step onto the track. Guard doors were added in the printing and assembly department to ensure employees had their usual access to the machines. It was made sure that the employees did not have to carry out any additional hand movements, for example, pressing a button. A very simple solution was found: A door with door closer monitored by a light barrier.

### Systematic protection

Light curtains were attached at the transfer stations of the printing and assembly department, as the transport containers are emptied here. The position of the light curtains was revised three times until the final solution was found. Here too it was an advantage that the components of the protective enclosure to be changed could be dismantled and replaced by new components easily.

## SAFETY WITH MODULAR CONCEPT

A clever solution was developed by applying MiniTec's motto: "The Art of Simplicity": While in the first approach, light curtains and additional light barriers were necessary to secure the stations, through tests and adjustments to the automated guided vehicles and the stations, it was soon possible to completely do without the light barriers:

As soon as an AGV approaches the station and stops, it signals readiness for transfer of the container. The light grid is then switched off and the container is discharged into the station. As soon as the vehicle has completed the container handling the light curtain is switched on again. Only then is the vehicle given the release to move.

With these measures based on the MiniTec protection system, a safe working environment was implemented for man and machines.

## CASES FROM THE KIT

NoWe Cases was founded in 1990 in Witten (Ruhr region) and emerged from the fixed idea to be able to cook decent food while on tour. The modular diversity of flight case construction was combined with kitchen elements and assemblies from camping. In the ensuing years the first mobile kitchens were created, which are now used by professional caterers and diverse emergency services throughout Europe. The offer now includes transport housings for all areas of the event industry, special housings with disinfection units, mobile washstands, treatment units for giving first aid in a disaster and transport housings for large and small trade fair materials.

Due to the diverse possible uses and types of application, the need to use a modular system that can be easily integrated into the case construction quickly arose. NoWe Cases found this system at MiniTec and since then has completed numerous projects. "Thanks to its modularity and the ease with which it integrates in our components, the MiniTec portfolio

offers us a cornucopia of professional solutions, which we can also always verify with the relevant figures thanks to the very good MiniTec support. Simply ideal for our industry", is how Norbert Wenzel, owner and name giver of NoWe, describes his many years of experience with MiniTec.



Whether small or large cooking station, the modular system provides all options.



Profiles and cases on the move – NoWe also enables that.



# THE JOURNEY CONTINUES

We at Connect have already reported many times about Philipp Ritthaler, our specialist for camper fit out. This year he fitted out a new van – with the MiniTec profile system. This time we report on the latest news of his project and the developments in vehicle fit out.



## Campers and like-minded people at the trade fair

However, that is not all: This year – although at short notice – MiniTec went to Bad Kissingen as an exhibitor at the “Abenteuer & Allrad” trade fair (Adventure and all-wheel drive). Vehicle and people interested in adventure know and value Europe’s largest off-road trade fair. “We made many great contacts and met interesting people. We were very surprised by the large crowd at the stand. The trade fair was a complete success” said one of the colleagues on site.

## It continues

Flexibility is required when it comes to fitting out vehicles, this is particularly true for the fit out of recreational vehicles. The MiniTec modular system provides the ideal basis for this and creates space for creativity.

In past issues of the Connect we have already reported several times on the camper fit out project. A new line, which we service with our know-how from vehicle fit out in the emergency services sector. Always on board: Philipp Ritthaler, who is fitting out his own camper with the MiniTec profile system.

Much has happened in recent months. Not only Philipp Ritthaler is fitting out his van with the MiniTec profile system, Marco Küster, filmmaker and travel enthusiast, has completed the fit out of his horse transporter repurposed as a tiny house on wheels. So that he can combine travel and work anywhere in the world. Always on board: Wife Helena and son Toni. A short film with impressions of the fit out and several journeys as well as plenty of information on all aspects of this topic is available on our website at [www.minitec.de/camperausbau](http://www.minitec.de/camperausbau).

MiniTec still has much planned in this area. What is definitely decided: In the coming year, MiniTec will be at the Abenteuer & Allrad 2022. An ideal place to meet with customers and to find individual solutions for their vehicle fit out together. All participants look forward to the pending projects.



Camper fit out is successful with know-how and the modular system.

# PRINT, TEST, DOCUMENT

**The north German company ISW is specialised in image processing systems. The manufacturer has developed solutions that print forgery-proof labelling on products by means of inline printers and verify the data. MiniTec supplements these solutions with individually configurable production lines for batch labelling and traceability.**



Pharmaceutical vials – named with the English word derived from the Latin word *phiala* – are usually glass containers in the shape of a bottle. They are available in diverse types, colours and sizes. Everyone currently has images of bottles with liquid covid vaccine on their mind. The medical requirements for such containers are high: They must not change the contents by reacting with them; they must protect the contents from decomposition from outside and they must be tight and sealed to prevent atmospheric influences on the contents.

In addition, pharmaceutical products must be produced forgery-proof to prevent product piracy (EU Falsified Medicines Directive (2011/62/EU)). To this end, unique codes and information are applied to the bottle and closure. ISW GmbH in Kölln-Reisiek near Hamburg is at

home in this environment with its track & trace solutions. The manufacturer has developed applications, which print the products in a forgery-proof way by means of inline printers and have the data checked and verified by image processing and networked databases. MiniTec supplements these solutions with individually configurable production lines for batch labelling and traceability.

## Printing and testing

There are many areas of use for this, for example, a pharmaceutical filling company, which requires a solution for its vial filling, in which the containers are closed off airtight with a stopper. ISW has developed a solution for this: A metal cap is attached and crimped to ensure the tight fit of the stopper. This must be labelled and the printing then checked directly for correctness. Important codes and information are printed on the caps for the purpose of traceability and product safety. Applying these codes or plain text and checking them for correctness inline is the tasks of the solution developed by ISW, the IPAC unit (Inline Print And Control unit).

The IPAC unit is integrated in the customer's production process. The filled and sealed vials enter the IPAC unit with the same regularity as the production cycle. Appropriately locked safety devices prevent the mixing of products during the ongoing process. Detectors determine the arrival of a product and trigger the printing of the metal caps with codes and numbers at the right time. Downstream a high-resolution camera with appropriate LED lighting takes an image of the printing, finds the code to be read in the correspondingly set window, "reads" the printed information in the image and compares it with the set data for the respective order.



Inline printers attach forgery-proof labels to the products, the data are verified simultaneously.

### Automatic recognition

In this case, “read” means text recognition (OCR – Optical Character Recognition). The registered and identified data are either compared with the customer database in the customer ERP or with the data accompanying the current order. If deviations occur, the respective product is removed from the product cycle immediately. To add further safety, a log of the activities is kept in conformity with the requirements, in which all deviations from the setpoint are recorded.

The advantages of the IPAC unit are obvious: Ensuring product safety, conformity with the requirements in standards and laws for pharmaceutical products as well as one hundred percent control without losing time, as the system operates in synchronisation with the production cycle. And the dimensions of the IPAC unit are very compact so that production space is not wasted unnecessarily.

### Precise-fitting software

The image processing and text recognition software and the interfaces with the customer databases are developed in-house by ISW. They are based on Windows development environments and the programming language C# (“C sharp”) as well as image processing database solutions. As a result, individual customer applications are often produced homogeneously, in which the manufacturer has all the components of their core process in hand. A physical system is then implemented with MiniTec as a tried and tested partner, who brings their full expertise in plant and system construction to bear. Handling and conveyor technology components as well as the aluminium profile system are used.



### Online seminar:

Serialisation of pharma products  
16/02/2022 from 14:00–15:00  
[www.minitec.de/pharma-seminar](http://www.minitec.de/pharma-seminar)

### Numerous possible uses

In addition to track & trace systems for the pharm industry, ISW also implements solutions for completely different areas. These range from fracture detection in ice-cream wafers to the measurement of automotive parts or counting frozen bread rolls. “There is a wealth of possible applications for image processing in all industries. The potential for process improvement is enormous”, says Tobias Wichmann, member of the ISW executive.



MiniTec implements the ISW solutions in individually configured systems.



# MOVING ON MANY LEVELS

It is flexible and economical in operation: The WF 3000 spiral conveyor transports goods on different levels on the smallest floor area and at the same time acts as a buffer in the production. The material flow can also be upwards, downwards, reversible or clocked, from which other possible uses result.

Flexibility and efficiency with simultaneously low operating costs are required in material flow. The MiniTec WF 3000 spiral conveyor meets these requirements in many ways: It was designed for the greatest possible economic efficiency, it is very easy to integrate into conveyor sections, enables height differences of up to three metres in halls or production lines to be overcome and with more than 50 metres conveyor length, it provides plenty of space for buffering products in production. And all this with a very small base area of less than three square metres.

Other advantages are provided by the optional reversing operation: The material flow can be upwards or downwards, reversible or clocked, with a continuously adjustable speed



from 5 to 50 m/min. The tower is designed for a load up to 20 kg/m conveyor section and a total load of 300 kg.

### Convey economically

The MiniTec spiral conveyor is robust and economical in operation. Only two electric motors are required to operate the installations, which has a positive effect on energy costs. State-of-the-art control technology is used for the synchronisation of the drives, which also enables dynamic speed applications. To save energy, the unit can also be equipped with automatic switching off when it has been run empty. The distance between the conveyor levels can be varied according to the dimensions of the material to be conveyed. Optimised slide bars ensure minimum noise development. Due to the exclusive use of high-quality components, the unit is virtually maintenance-free; in the latest version, interfaces for remote maintenance and display of the service intervals are now also available.

## A BUFFER FOR PRODUCTION

A range of options to match the task set are available for optimum use as a production buffer, cooling tower or for logistics. If used to feed production lines, for example, part identification with image processing can be added upstream. Equally, an optional level control and display is offered. In case of frequent product change, controlled running until empty is also a helpful option.

### Numerous possible uses

At one MiniTec customer in food production the conveyor is used to convey the products from the packing station up to under the hall ceiling. From there, a segmented chain conveyor, also from MiniTec, then carries the products to the truck loading station 700 m away. There a WF 3000 returns the parcels to hall floor level, where they are placed on pallets by a robot. The whole floor area therefore remains clear for undisturbed forklift traffic.

Another example is its use in a production line for automotive components. In this case, the tower is loaded manually with steel parts. The capacity of the tower is sufficient to load a connected production machine for 90 minutes fully independently. The finished parts are removed by a MiniTec gantry robot, which then supplies the subsequent process modules. With a total height of 2000 mm, this tower has a conveyor section of 40 m and a controllable conveyor speed of 5 to 11 m/min. The conveyor process can be clocked variably.

### The store in the spiral

Interesting applications have also already been implemented in the cosmetic industry: One manufacturer uses the spiral conveyor with reversing operation as a production store and simultaneously as a cooling tower. More than 4000 products are cooled from 65°C to less than 30°C in the tower within an hour. At the constant conveying speed of 5m/min, a throughput time of eight minutes is achieved for the cooling process. The whole tower is encapsulated



The tower is designed for a load up to 20 kg/m conveyor section and a total load of 300 kg.



The spiral conveyor can overcome height differences of up to three metres in halls or production lines.

and is cooled to 5°C by a chiller. The tower has a volume of 5 m<sup>3</sup> and cools 300 kg of production in one run through.

The spiral conveyor solves another demanding task for a customer in the food industry: In order to respond to different speeds of the upstream and downstream processes, the tower must be adjusted highly dynamically from 5 to 50 m/min conveying speed. The piece weight of the packages is 1000 g and the conveying height is 3500 mm.



# ONE KIT FOR ANY EVENTUALITY

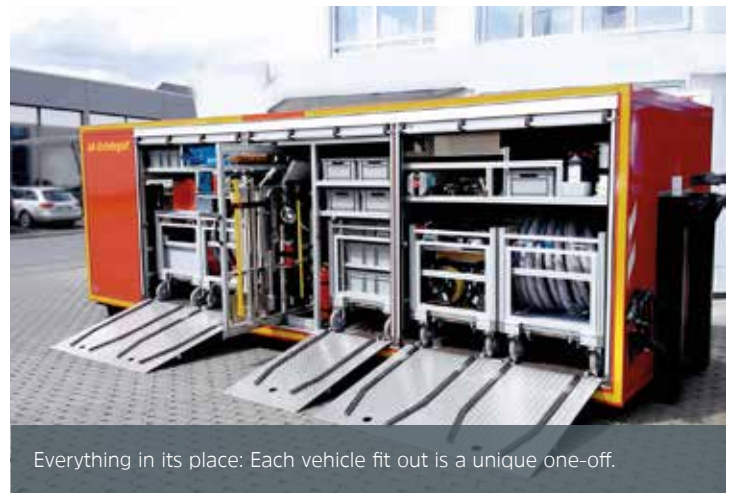
**Individual solutions are required for the fitting out of vehicles or the equipping of buildings and workshops in emergency services and fire stations. The modular system of MiniTec offers diverse options here and is the basis for precise-fitting solutions in this industry.**

Due to their very special tasks, fire services and emergency services organisations rely on vehicles and workshop equipment that are not available off the peg. With its modular system, MiniTec offers almost limitless diversity for all these requirements. This is ideally suitable for special purpose vehicles and for the design and installation of workshop areas in fire stations. After focussing on breathing apparatus in June, this time we take a look at vehicle fit out and mobile container racks.

## Individual solutions

The MiniTec modular system with construction plans and parts lists enables the fire services to plan and implement individual solutions themselves. The flexible system was developed in collaboration with fire services and is

tried and tested in practice. The patented connection technology, which does not require any machining, and the uniform groove system simplifies independent assembly enormously. Numerous fire services have purchased the profile in production lengths for years and assemble their own solutions with advisory support from MiniTec. Apart from quality, the economic aspect always plays a decisive role for use of the system.



Everything in its place: Each vehicle fit out is a unique one-off.





The flexible modular system offers fire services fit out options with many variants.

## ONE SYSTEM FOR MORE THAN 112 SOLUTIONS

secures the mobile container rack from rolling away when the handle is released.

### Easy assembly

It can be assembled in a very short time with only two Allen keys and without extensive prior technical knowledge. Each fire service can add

the individual shelves themselves on this base module, for example, breathing apparatus, transport, light, water removal, ice rescue or cage bodies.

The basic modules can also be delivered ready assembled on request.

### Systematic special-purpose vehicle fit out

An important use of the profile system is vehicle fit out, exactly according to the needs of the respective tasks. Thanks to the intelligent connection technology, the constructions can be changed at any time with no great effort and all components are reusable. In addition to the standard range, particularly load-bearing telescopic equipment racks supported on ball bearings are also available for vehicle fit out, which can be easily inserted into the construction. The installation width of 400 to 1200 mm is freely selectable with a load per unit area of maximum 150 kg. The surface of the racks is fitted with standard grooves for mounting brackets. The racks are locked securely on both sides, both in the extended and in the retracted position. They are unlocked by pressing a button, which is integrated in the practical double handle.

### Mobile container racks for all kinds of different tasks

Another special feature are the preconfigured or already assembled mobile container racks. MiniTec has developed a standard "Fire service mobile container rack" module, which complies with the guidelines for the design and use of non-powered mobile container racks by fire services. All mobile container racks are equipped with large castors with drum brakes which ensure stable positioning in the vehicle. The handle is also executed as a double handle with thermal coating. When the double handle is operated, the mechanical parking stopping brake is released, which

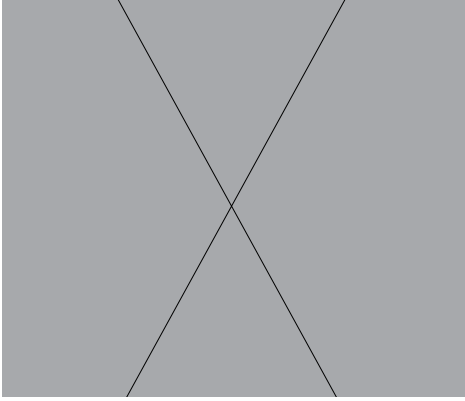


Interior fit outs with telescopic equipment racks can also be implemented quickly and easily for cars.



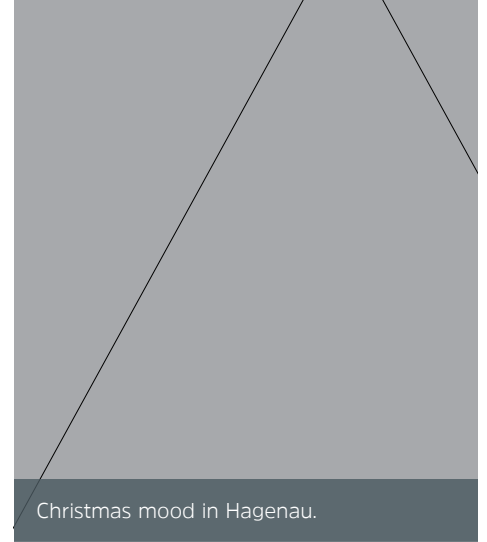
For many fire services, MiniTec mobile container racks are an indispensable means of transport for all kinds of different tasks.

# MINITEC CHRISTMAS STARS SHINE IN HAGENAU



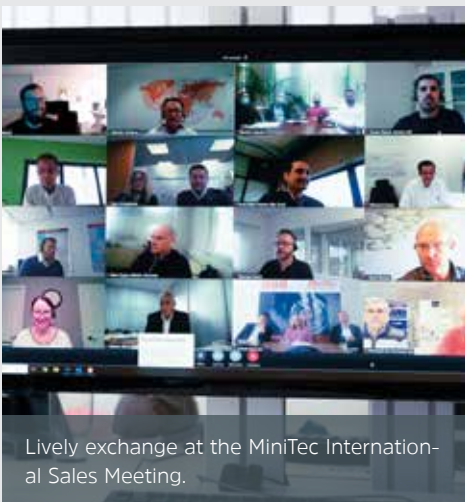
France developed a new concept in the summer for the town Christmas decorations. Curved 30x30 profiles are used, which are equipped with LED strips. The prototype was so convincing that its implementation was ordered. The result is impressive, as the MiniTec stars currently ensure a very harmonious, Christmas atmosphere in the French municipality and therefore pleasure for the population and visitors alike.

The diverse applications of the MiniTec kit are currently seen in the Alsatian town of Hagenau: MiniTec



# INTERNATIONAL PARTNER MEETING

The pandemic has changed many things. To enable an exchange with its own national companies and partners despite the many restrictions, at the beginning of October, MiniTec held a digital sales meeting ("International Sales Meeting", ISM) – with great success! The participants from all five continents found out about new products and solutions and discussed strategies and markets animatedly, as well as cross-country cooperation.



Lively exchange at the MiniTec International Sales Meeting.

Once again, it became clear how important the global presence of MiniTec is for its customers. Regardless of whether corporation, SME or start-up: For many companies, international networking with customers and suppliers around the globe is the now standard. Customers can therefore trust in the product range and solutions competence of MiniTec on all continents.



The finalists of the "Inspire Business Awards 2021".

# MINITEC UK NOMINATED

Our English subsidiary is pleased with the news that it made it into the final round of the "Inspire Business Awards 2021". Inspire rewards local businesses. Several hundred companies participated in the "SME of the year" category. We are keeping our fingers crossed for our colleagues for the final.



# “DONATE AN INSTRUMENT” CAMPAIGN



Two bands accompanied the campaign with jazzy sounds.

MiniTec founder Bernhard Bauer is an enthusiastic musician. Early musical education is therefore a topic very close to his heart.

Musical life has largely come to a standstill due to the corona restrictions, especially for children. Yet making music is enormously important for both physical and psychological development. With the “Donate an instrument” campaign, many children became enthusiastic about music.

Following a call for donations, many musical instruments that lay around unused at home were collected and were passed on to interested children in exchange for a voluntary donation. In this way, numerous violins, guitars, trumpets, accordions,

flutes, clarinets, saxophones and keyboards found new owners and are hopefully also being diligently used. Children who have registered with one of the participating music schools can even take part in free music classes for one year. The costs are paid for by the Kreissparkasse Kusel and the Volksbank Glan-Münchweiler banks. We thank the banks for their spontaneous support.

Money donations of € 3,500 collected by the campaign were divided equally between the reconstruction of the kindergarten in Mayschoß an der Ahr and for a corona vaccination campaign at the school of the missionary Karl Schaarschmidt in Nairobi.

The campaign was accompanied by numerous music groups. We especially thank the professional jazz bands, the “Schöne Töne” and the “Palatina Washboard Band” for going without fees for the charity campaign and even paying all costs for their performance.



The donations campaign was a complete success and an incentive for little musicians.

# A FLOW TRAIL FOR BIKERS



In 2022 enthusiastic bikers will be on the road here.

A flow trail including pump track, i.e. mountain bike route, which can be ridden continuously has been created in the Palatinate town of Landstuhl. The course has three levels of difficulty for children, youths and adults and will be completed in the coming year. “The “Flowtrail Landstuhl e.V.” club was founded for our project. It has eleven founders and members

from three generations – from 16 to 60, all ages are represented”, explained co-founder and MiniTec employee Benjamin Müller. The trail will be built to the DIMB (Deutsche Initiative Mountainbike e.V.) specifications. MiniTec has contributed a large part of the funding. The members of the newly-formed club give their thanks for this social commitment.



# THE STORY CONTINUES ...



35 years are a long time, almost two generations. During this time, MiniTec has developed from a small start-up into a renowned medium-sized company. Numerous crises had to be overcome, such as the 9/11 terrorist attack with grave effects on global cooperation, the financial crisis in 2008 or the collapse of the German solar industry. At present – like all businesses – we have the corona crisis to deal with and making appropriate decisions for the continued existence and further development of the company. As a result of the pandemic, raw material prices rose rapidly in the last half-year and drastic supply bottlenecks occurred.

We have managed to survive all crises to date, thanks to our forward-looking company policy and in most cases even emerged stronger. While jobs were lost in almost all branches of industry during times of crisis, we managed to acquire very capable employees and to further qualify the existing workforce. Our decision during the financial crisis to build the new company head office in Schönenberg also had a very positive effect.

Thanks to our wide product portfolio and the principle of maintaining and further developing all important skills in house, we are prepared and are able to respond to the challenges of the markets fairly flexibly.


The most important asset of our company is our employees. Our forward-looking personnel policy is not limited to retaining employees with benefits or a modern work environment. With a training rate of ten percent, we are far above the average and therefore ensure well trained up-and-coming talent in-house as a preventive response to demographic change, which also affects our company.

Other important investments in the future are the establishment of our own research department in our Waldmohr plant and the MiniTec Smart Solutions in Kaiserslautern. Detached from the day-to-day business, in Waldmohr a group of highly motivated and capable employees busy themselves with the major topics of the future such as digitalisation, innovative services and new products.

Our start-up in Kaiserslautern develops interactive assistance systems for the manual assembly of today and tomorrow.

Our new website is also prepared for the challenges of today and tomorrow: With improved user friendliness and new configurations we help our customers to find solutions to their problems faster and easier.

All measures serve to retain and secure jobs and for the continued growth of the whole Group. We can meet the coming years with a great deal of confidence and be proud to work together in a successful company. As a senior and founder of MiniTec, I wish you a peaceful Christmas and a good, health New Year with every success. Keep us in good memory.



Yours, Bernhard Bauer



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## ***Fit out vehicles easily –*** with the MiniTec profile system



With our aluminium profiles, we supply the optimum basis for vehicle fit out. Whether transporter, camper or everyday vehicle, with our profile series 30 and 45, we offer the right basis for individual requirements. The kit includes a large number of suitable accessories. Plan your individual modules yourself - whether as a practical addition or a complete interior fit out. The flexible structure of our system enables fast design, which can be changed at any time thanks to our intelligent connection technology.

**More information on the topic of vehicle fit out can be found at:**

[www.minitec.de/fahrzeugausbau](http://www.minitec.de/fahrzeugausbau)

And download our **free iCAD Assembler!**

