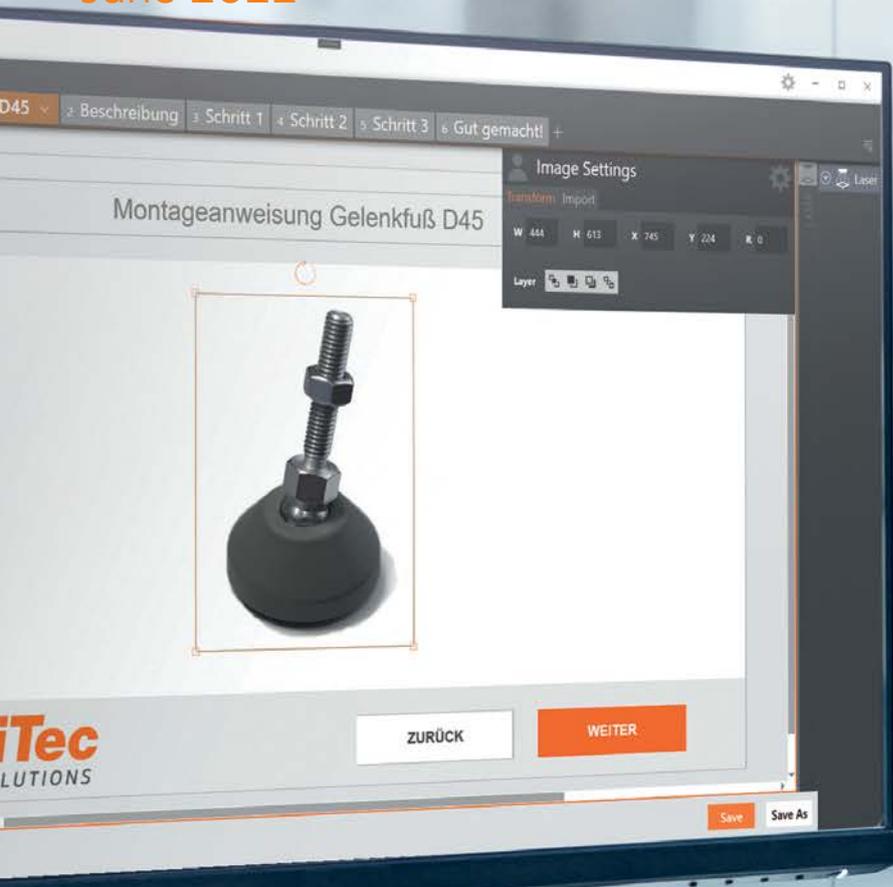




Connect

02

June 2022



CONTINUOUS PRODUCTION FOR GREATER PRODUCTIVITY

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Hager optimises with MiniTec assembly and conveying system



MINI CONVEYOR BELT

----- Page 16

Compact dimensions allow efficient use even in the smallest of spaces

NEW WORKER ASSISTANCE SYSTEM

----- Page 6

More effective assembly and order picking with MiniTec SmartAssist



Simply more efficient: Intralogistics with conveyor systems from MiniTec.



Storage lifts



Conveyor technology



Warehouse management system (WMS)

Individual systems for intralogistics

intelligent stockkeeping is the key to fast delivery times and satisfied customers. MiniTec offers the right conveying technology for you to achieve this. And anything else you need for your logistics, through to complete warehouse logistics systems.

We acquired the necessary know-how when optimising our own materials management, warehousing and logistics, the result of which was an ultra-modern warehouse logistics system. This includes fast and space-saving storage lifts,

conveyor sections from our own product range and a link to the existing ERP landscape. The solution led to faster delivery to customers, more reliable and transparent processes and significant time savings.

MiniTec engineers designed and implemented the new system. We can therefore also implement similar concepts for you. When will you discover the art of simplicity?

More information can be found at:
www.minitec.de/loesungen/lagerlogistik





DEAR READERS,

After almost twenty years of development, we recently presented our new worker assistance system at the Automatica 2022 Exhibition, where it was met with a great deal of interest. The development of MiniTec SmartAssist focused on a high degree of practicability and simple handling and operation. With it, companies therefore open up completely new possibilities of interactive employee support and thus the optimisation of assembly processes. This is not only possible in manual assembly, but also in order picking.

The road to this efficient system was long and sometimes stony. We had set ourselves the goal of developing the simplest possible programming and operable assistance system for assembly, which provides valuable help not only in industry but also in workshops for people with disabilities. We therefore engaged in intensive dialogue with customers and research institutes and permanently tested prototypes, both internally and externally. Sometimes it emerged that we had integrated too many functions, sometimes the operation was not simple enough. We considered all this feedback and these experiences very carefully and incorporated them into the further development.

Not only we are very satisfied with the results, but above all our customers and potential customers who have examined and tested MiniTec SmartAssist to date. We are optimistic that with it, we can make an important contribution to economic assembly while achieving high quality at the same time. You can read more about the MiniTec SmartAssist in the title story of this Connect edition.

Another article on the youngest addition to our conveying technology range, the new mini conveyor belt, shows that we continuously supplement our portfolio with useful, practical products. This was designed for the transport of small parts and enables efficient use in the smallest of spaces. The range of applications is enormous and their integration – based on our modular logic with standard components – is very easy.

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

Yours sincerely

Andreas Böhnlein
Director of Engineering

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The development of MiniTec SmartAssist, the new MiniTec assistance system, focused on a high degree of practicability and simple handling and operation.

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SOLUTIONS

Continuous production for greater productivity
The electrical engineering company Hager banks on a MiniTec assembly and conveyor system for the assembly of complete panels for meter boxes and small distribution boards. A very efficient assembly line with controlled material flow was created.



PRODUCTS

Moving in the smallest of spaces
A new mini conveyor belt for the transport of small parts extends the MiniTec portfolio. It enables efficient use in the smallest of spaces. The range of applications is enormous, their integration very easy.

Clever helper: Edi stands for MiniTec SmartEdi, the editor – the brain and control instrument.
Buddy stands for the MiniTec SmartPlayer – the executor, which implements the Edi instructions.



MINITEC SMARTASSIST ASSISTANCE SYSTEM RETHOUGHT

The MiniTec SmartAssist has arrived! The solution was launched at the Automatica in Munich. After almost twenty years of development, the new MiniTec assistance system is therefore now available and can be used by customers.

With MiniTec SmartAssist, completely new possibilities for interactive employee support open up for companies with immediate effect. It does so not only in manual assembly, even though this is and remains a key environment for its use. However, there are also many other areas where the system makes sense. At the forefront: Order picking in the warehouse and dispatch department. For just like employees can be advised and informed by instructions on the screen and with many other aids when assembling components, this assistance can, of course, also be used for the packing of products for placing in storage or for dispatch.

For assembly and order picking

Anyone who was at the Automatica exhibition in Munich was able to see for themselves on site. A combination of both scenarios, i.e. assembly AND order picking was shown on the stand. After the assembly of an example product – in this case a giveaway for exhibition visitors – it was packed in a bag together with other freebies, precisely as instructed.

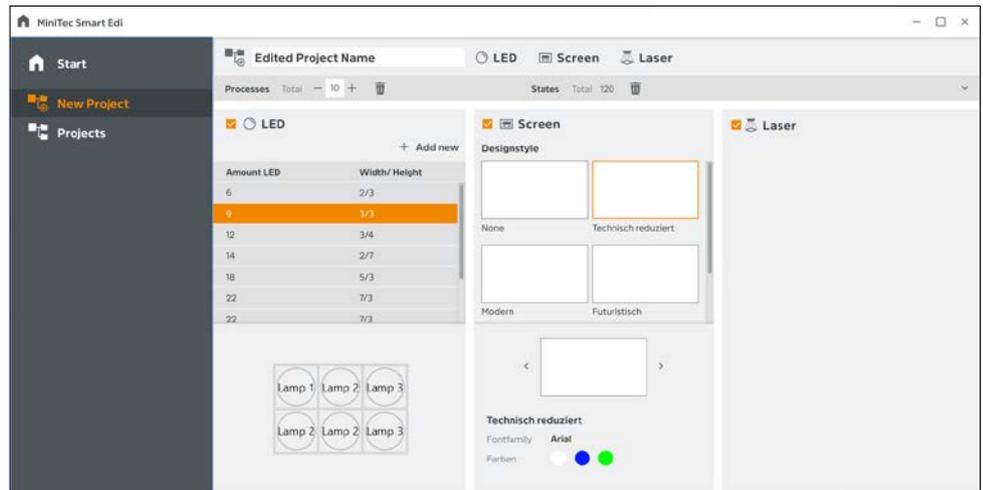
Quality improvement

Apart from the assistance for employees, an important benefit created by MiniTec SmartAssist is also the increase in quality. This is because the system's step-by-step guidance of the workers ensures a significant reduction in the error rate. In addition, in future the implicit possibility of quality control is also feasible. For just like the solution provides support with all kinds of different devices (monitor, light strips, laser projectors, etc.) during assembly or order picking, in principle, control instruments such as camera test systems can, of course, also be integrated.

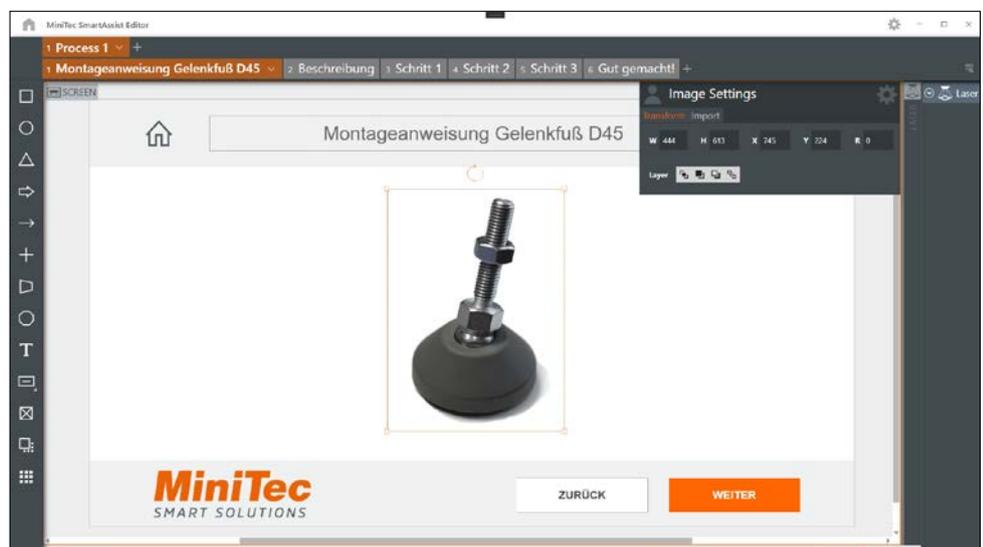
This was also demonstrated impressively at the Automatica using the described example, because at the end of the assembly and order picking, a test system of the MiniTec partner ISW checked that everything had been assembled and packed correctly. If everything was correct, a corresponding sticker was printed out for the dispatch, which even included serialisation and personalisation (a MiniTec adviser responsible for the exhibition visitors was printed on the sticker).

Smart becomes smarter

Why is MiniTec SmartAssist different to many other assistance systems, what makes it so special? The main difference is the easy creating and editing of work instructions, including activation of the required assistance modules. For while this is often work to be done by the respective provider, with the MiniTec SmartAssist, the user does it himself – and is therefore completely independent and flexible.



Creating a new project with many setting options.



For example, for inserting an image in assembly instructions – whose properties can be exactly defined in the menu.

Thanks to the intuitively operable editor, the “MiniTec SmartEdi”, they have all the options they need to create interactive instructions and at the same time, to incorporate all the useful components for support (Pick2Light, laser projection, ...). Without programming knowledge and after only a short training phase! If the employee has finished their work instruction, it can then be used at the workbench on the MiniTec SmartPlayer.

MiniTec SmartAssist thus consists of two central components, the MiniTec SmartEdi and the MiniTec

SmartPlayer. The system's particular advantages only occur when the two parts interact. Only then does the solution become smarter and develops its extensive added values for customers.

Helpers for workers: Edi and Buddy

To clearly illustrate this difference, especially at the market launch, we created the two helpers, Edi and Buddy. Edi symbolises the editor, i.e. MiniTec SmartEdi. He is the brain in the background, the control from which all actions arise. Buddy stands

for the player, i.e. the MiniTec SmartPlayer – he is the actual assistant, the executing worker that uses all available means to do what Edi has assigned to him.

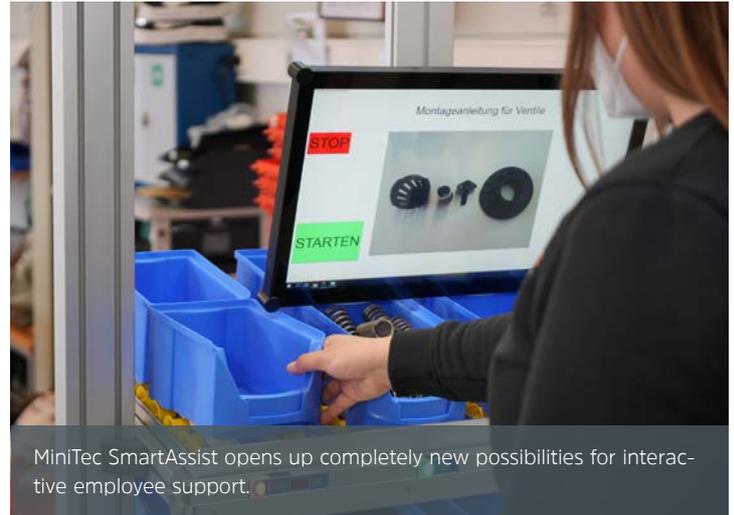
Optimised user interface

Before going live, the “finishing touches” were put onto the user interface of the MiniTec SmartEdi, in order to make working with the editor as enjoyable as possible. The development generally focussed on clarity, so that the software assists you in the best possible way while you are creating the work instructions and so that you achieve good results – wait and see, you’ll be surprised!

Now get to know MiniTec SmartAssist!

MiniTec SmartAssist can improve your assembly and packing processes considerably and at the same time, it provides valuable support and help for your employees. It therefore contributes to more satisfaction and wellbeing in the workplace and at the same time ensures higher productivity and quality.

A separate area for MiniTec SmartAssist has been created on our website at www.minitec.de/minitec-smartassist and is now available. There you will find all the details of the system and the different assistance modules, which can be used to provide support.



MiniTec SmartAssist opens up completely new possibilities for interactive employee support.

For even more information and a no-obligation consultation, our specialists André Hintz (North Germany), Steffen Schoft (Central Germany) and Frank Stattaus (South Germany) are available to visit you on site – they look forward to you contacting them!

A good opportunity to get to know the assistance system is also an online seminar to be held on **23 August 2022 from 14:00 to 15:00**. Further info can be found at www.minitec.de/service/online-seminare.



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

MINITEC SMARTASSIST AT THE NIEDER-RAMSTÄDTER WELFARE ORGANISATION

Before the market launch, MiniTec SmartAssist was also tested extensively in practice, among other things, in workshops for disabled people. There it was found that the assistance system not only provides support for training and increasing quality, but also opens up new possibilities for work participation.



Workshops for disabled people (WfDP) are an area of use for which the MiniTec SmartAssist really is predestined. For here the approach to the solution, with which the different disabilities of workers can be addressed individually, takes particular effect. Above all, because the group leaders with their background knowledge can use the editor to create the instructions and the aids used themselves.

Several workshops therefore tested the system under real conditions in practice during the phase before the "going live". We already reported on the experiences of the Landstuhl Westpfalz workshops as beta testers in assembly in a previous issue of Connect. Another test candidate in this environment is the charity, the Nieder-Ramstädter Diakonie (NRD), a welfare organisation. It has been supporting people for more than 110 years. Apart from its work with the disabled, the NRD is actively engaged in youth welfare, work with the elderly and with inclusion companies. The entity has around 2,400 employees who work in more than 50 locations in 30 towns and communities in Hesse and Rhineland Palatinate.

>>>

Regional roots

Starting as an employment project for a dozen people, over the past 20 years it has gradually grown into a modern service provider that is deeply entrenched in the region. Around 200 employees with different physical and mental disabilities now work in the Rheinhessen Workshop (RHW) in Wörrstadt.

From simple to demanding tasks

Rheinhessen Workshop's project manager, Stefani Hirschenkrämer, had clear ideas for the use of MiniTec SmartAssist from the outset:

"On the one hand, our goal is to use workplace systems to reduce the training time. On the other hand, we want to enable employees who already assemble smaller production lines to also be able to carry out more complex work independently."

Ergonomics also plays an important role. Height-adjustable MiniTec workstations therefore prevent tension and postural defects due to incorrect sitting positions and allow alternating working in a sitting and standing position. The workstations have a variable underclearance for wheelchair users. At the same time, the arrangement of tools, measuring equipment and workpieces is adjusted to the physical circumstances of the employees and their space within reach.

Order picking in a practical test

The RHW assembles test sets for different laboratories. In this process, different materials for a test set are placed in a resealable bag. It is important that all materials are included in the bag. The visual step-by-step instructions (lights and screen) signal to the employee which material must be taken from which container. An access control ensures that material has actually been taken from the required box. Thanks to the graphic representation of the material, a visual check takes place automatically.



Job done, thumbs up from MiniTec SmartAssist: A "success acknowledgement" is also important.

Stefani Hirschenkrämer is very impressed with the findings and results to date. The work scheduler is particularly keen about how fast and easy she can create the work instructions with the editor. This is where she sees clear

WORKPLACE SYSTEMS REDUCE THE TRAINING TIME

advantages of the MiniTec SmartAssist compared to other systems. For her, the benefits of the solution for the employees are perfectly obvious:

"The system opens up new work participation opportunities for our employees. Together with specially adapted workplaces, our employees are able to carry out work independently, and can do so after a short familiarisation period."

NEW MAIN CATALOGUE PROFILE SYSTEM

It is something like the standard reference at MiniTec: The main profile system catalogue, the ninth edition of which has now been published. With more than 600 pages, it provides a comprehensive overview of all part variants and components of the profile system, supplies technical data and an abundance of information, ideas and tips. It also contains notes on drives and controls, pneumatic and hydraulic installations, through to ESD-compatible constructions.

A glance in the extensive work gives an indication of the virtually limitless variety that the modular profile system offers. For more than 35 years, efficient and cost-effective solutions for many tasks in industry have been created on this basis. From a simple frame to work and assembly stations, conveyor systems through to constructions with the highest technical standards.

The modular system is based on different profile cross-sections as well as components and accessory elements. The use of DIN screws, bolts and nuts makes the system particularly economical. The patented MiniTec profile-lock fastener, which requires no machining of the profiles, is unique.

The new main catalogue is available as a – still valued – hard copy as well as in an electronic version. The electronic catalogue provides the option of convenient searching. In any case, taking a look in the catalogue makes the order process simple, because all necessary information is available in a clearly arranged form. The catalogue can be downloaded free or ordered at www.minitec.de/service/downloads-katalogbestellungen



Order the
MiniTec main
profile system
catalogue 2022

AT THE MOTEK 2022 TRADE FAIR

This year, MiniTec will again be represented at the Motek. The international trade fair in Stuttgart is the leading event for production and assembly automation, feed technology and material flow, rationalisation through handling technique and industrial handling.



At this event, among other things, the focus will be on our solutions for efficient assembly processes, because they are the key to economic

production. Other topics will be conveyor technology and warehouse logistics.

Customers and potential customers at the trade fair will have the opportunity to exchange ideas with the industry specialists of MiniTec and to look at the latest developments.



Motek, Stuttgart, 4 to 7 October 2022
International trade fair for automation in
production and assembly
www.minitec.de/motek2022



CHANGEOVER TO CONTINUOUS PRODUCTION FOR GREATER PRODUCTIVITY

The globally active electrical engineering company Hager banks on a MiniTec assembly and conveyor system for the assembly of meter boxes and small distribution boards. A very efficient assembly line with controlled material flow was created, which functions considerably more effectively than individual workstation production. More are to follow.

Since the nineteen nineties, lean production has been a widespread approach to efficient production processes. The so-called flow principle is firmly associated with it. Its aim is to achieve fast and interruption-free material and information flow in order to achieve the shortest possible throughput time along the entire value-added chain. This philosophy is also followed by Hager Electro based in the Saarland town of Blieskastel. The globally operating

company is a leading supplier in the house power supply sector. Its main products are meter boxes and small distribution boards. Meter boxes essentially consist of the enclosure and the actual technology, which is accommodated in a so-called complete panel. When it is installed in the house later, the complete panel contains all electrical components, from the switches to the cables through to the safety technology.

Hager offers almost 500 variations of the complete panels, in order to optimally meet the customers' requirements. It is not only possible to order the complete panels separately, but also already installed in the corresponding meter cabinets. Despite the many variants, in most cases, large numbers of the complete panels are ordered because Hager's customers are mainly wholesalers.

From the individual workstation to linked assembly

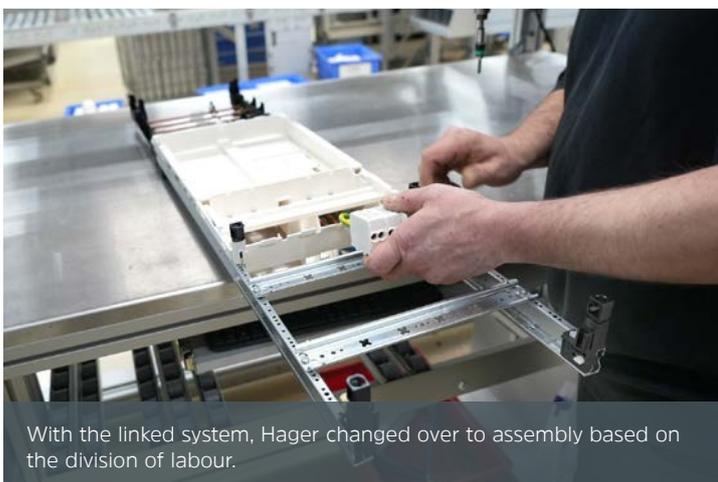
The assembly by experienced, skilled personnel has taken place until now at individual workstations, i.e. one employee assembles a complete panel completely alone until it either went to the dispatch department or to the final box assembly.

“The idea arose to organise this sequence in future as a serial process, in which the assembly takes place via multiple stations, based on the division of labour”, said Alexander Markovic of Hager’s lean management department. “We therefore wanted to assemble the complete panels along a line, similar to assembly line production in car manufacturing. An assembly line with controlled material flow is simply considerably more effective than individual workstation production. Our goals were higher productivity with a simultaneous improvement in quality.”

Accordingly, we had to design and implement an interlinked workstation system. According to Markovic,

there were good reasons why MiniTec was chosen when they were looking for a suitable engineering partner: “It was simply the best solution. The best concept. The MiniTec engineering department gave us excellent support. And the flexibility of the MiniTec modular profile system was another important argument. In addition, we had already had good experiences working with MiniTec in other projects.”

ERGONOMICS IS IMPORTANT FOR EMPLOYEES AND PRODUCTIVITY



With the linked system, Hager changed over to assembly based on the division of labour.



Alexander Markovic, who works in the lean management department, is confident that Hager’s productivity will improve considerably with the new assembly line.

Following intensive project meetings, a tailor-made line consisting of three assembly workstations and a packing station was finally designed. The assembly workstations are connected to each other by conveyor belts.

Ergonomics as a time factor too

Hager attached great importance to the ergonomics of the workstations. This is seen, for example, in the reach distance, which should not be longer than 80 cm, so that the employees can easily reach all important tools and materials. Alexander Markovic said: “Ergonomics is important for the health of the employees, but also for productivity. For the further the reach distances are, the longer my production process takes. It is therefore a clear time factor! We and the MiniTec engineers spent a long time puzzling over how to implement this optimally.” The final result of our considerations was to arrange the material within a semi-circle. Refilling with the most frequently required parts takes place from the rear of the workstations. This means that the assembler is not disrupted in their work and the assembly process can continue without interruption while the materials are replenished. MiniTec’s mobile container racks, already tried and tested by fire services, are used to provision the particularly heavy copper cable.

Everything arranged compactly

The packing station is directly connected to the assembly workstations, so that the packing operation is seamlessly integrated in the material flow. Here, too, the replenishments are supplied from the rear. If boxes have to be filled, the employee fetches them from the pallet



Material is replenished from the rear, the complete panels are transported via sensor-controlled conveyor belts.



MiniTec transport trolleys were individually adapted to Hager's requirements.

at the rear and places them on the worktop of the packing station with the sliding table.

All assembly stations are electrically height adjustable to adjust them optimally to the height of the employees and to enable fatigue-free working.

ENORMOUS REDUCTION IN THROUGHPUT TIME

The table of the packing station is not only vertically adjustable overall, but also the worktop itself is additionally adjustable. The employee can therefore position the complete panel on the box without any great exertion. In addition, the last assembly table and the packing station are connected to each other so that they can be vertically adjusted simultaneously, with a slight offset. This vertical offset to the packing station is levelled out by the additional vertical adjustment centrally from the packing table.

Many special features for an optimal assembly process

The MiniTec system is also thought-out right down to the smallest detail in other areas. For example, conveyor belts have deliberately been used to link the workstations instead of roller conveyors, in order to handle the products with care during transport. The belts are sensor controlled, like those of a supermarket till: If an employee places a product on it, the conveyor moves forward automatically. The conveyor belt's own drive is naturally also important, in order to level out the height differences mentioned. It is therefore not a problem if the line rises. The construction is designed so that the conveyor belt adapts the height adjustment of the worktable automatically.

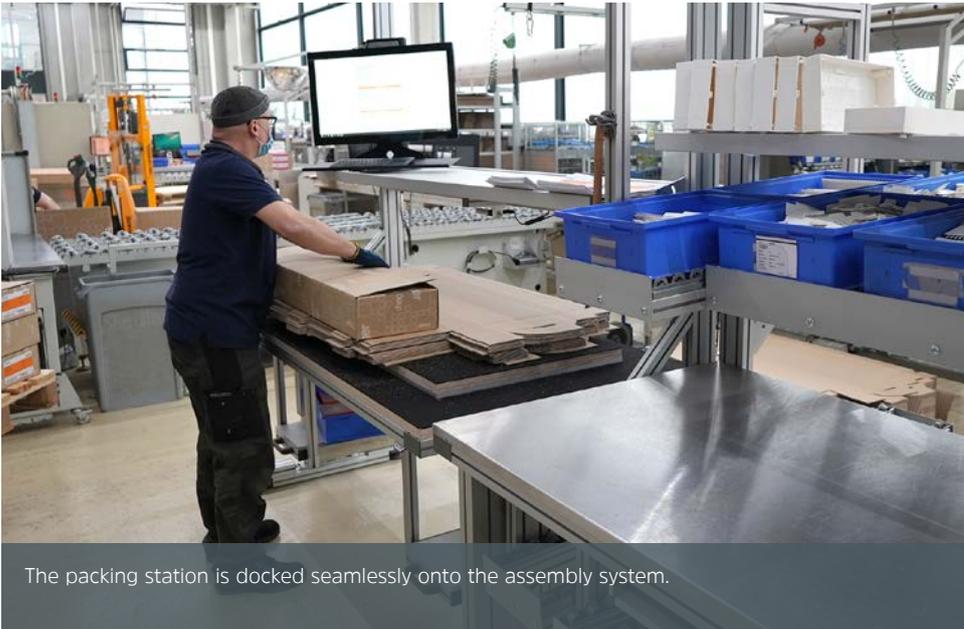
Gradual introduction

The changeover from individual workstation to flow production based on the division of labour was, of course, a paradigm shift for the employees, some of whom had been

used to the previous way of working for 20 to 30 years. Accordingly, Alexander Markovic proceeds cautiously in the introduction – with many feedback rounds and consultations. During this phase, details are also often optimised, i.e. the “fine tuning” takes place. “During the introduction, the aim is also to find the right timing. How much can an employee do, so that the material always flows right? We therefore also have two conveyor belts between the two stations, which we can use as a buffer. If one employee is too fast for their downstream coworker, the conveyor belts function as temporary storage and standstills are avoided.”

First effects noticeable

Even though Hager is still in the process of introducing the system, the first effects on productivity are already noticeable. “In the past, we have always gained 23-30 percent in productivity by changing over to a line, and that will also happen here. We are confident that we will improve our productivity considerably within the next half-year”, said Markovic.



The packing station is docked seamlessly onto the assembly system.

Link to the ERP system and assembly lines

Paperless production is already reality at Hager. On the workstation monitors, the employees can not only display the order but also the drawing or packaging instructions for a complete panel. In addition, further information such as maintenance and cleaning plans or the station sheet, which shows what is produced at which station.

Digitalisation in the area is planned to be expanded further in the future, said Markovic: "This will be our first production line that will be fully integrated digitally. This means that in the near future we will connect the line to our ERP (Enterprise Resource Planning – standard business management software) and to our



The conveyor belts are deliberately installed as double conveyors so that they can also function as a buffer.



Hager's main products are meter boxes and small distribution boards.

MES (Manufacturing Executive Software – software for controlling the production). We will then be able to follow

A DIGITALLY INTEGRATED PRODUCTION LINE

the production digitally. In future, the orders will be displayed on the system monitors via the ERP system, and the subsequent feedback is also sent to the system. Information on production progress, i.e. on tooling up operations, faults or quality problems is also provided via the system as messages, so that the shift supervisor can come and assist."

The collaboration with MiniTec is also to continue: "When we are finished with the current assembly line for 1-panel complete panels, we definitely also want to implement a line for the 2-panel products, and then possibly one for the 3-panel products too. The shortening of the throughput time and growth in productivity due to the flow production are already enormous and MiniTec has proven itself to be an ideal partner for the implementation of appropriate assembly systems."



MOVING IN THE SMALLEST OF SPACES

When the little ones make it big: The new mini conveyor belt is designed for the transport of small parts and enables efficient use in the smallest of spaces. The range of applications is enormous; they can be integrated very easily in a very short time.

MiniTec offers a complete conveying technology portfolio, which not only covers mechanical engineering requirements but also those of plant and system construction in all kinds of different industries. This range has now been supplemented with a new mini conveyor belt. This sets itself apart due to the very small space required and it is used to transport small parts.

The key component is a special size 45 aluminium profile (profile 45 FRS), which can be seamlessly installed in any MiniTec construction. It functions as a base and support profile for a 25 mm wide conveyor belt. The length of the conveyor belt can be between 250 mm and 2,000 mm.

Drive choice

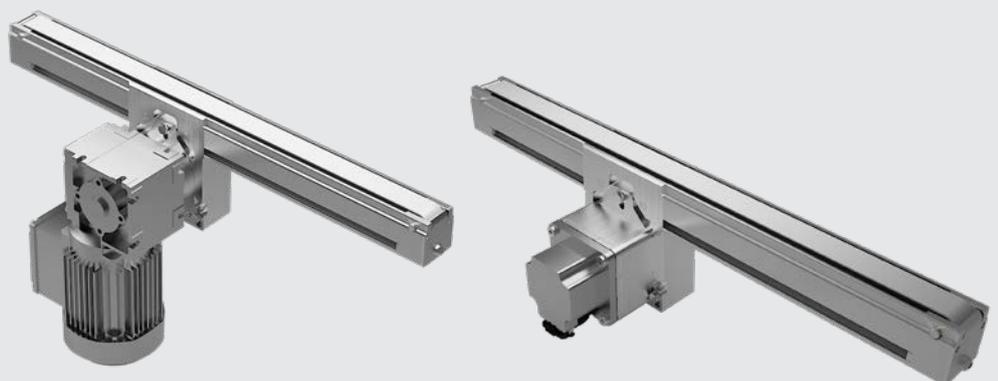
Either a head drive or a middle drive is used, this means it can either be positioned at the end of the conveyor section or within it. The head drive is equipped with a servomotor, an optional three-phase AC motor or a servomotor can be used for the

middle drive. Which motor is suitable depends on the respective situation and requirements.

If the speed needs to be variable, servomotors are advisable since their speed can be changed continuously. In the case of the three-phase motor, on the other hand, the speed is fixed and is either 3.4 or 4.3 or 6.6 m/min depending on the type. However, its speed can also be set variably by means of a frequency converter (accessory).

Diverse possible uses

The range of uses for the new mini conveyor belt is enormous. Wherever small parts have to be transported, the solution can be integrated quickly and easily – and due to its simple structure, the customer can also do this themselves. And because the base is the size 45 FRS profile, mini conveyor belts can also be used to feed and remove materials in combination with the MiniTec kanban system.



The mini conveyor belt is available not only with a head drive (large image) but also with a middle drive. In the case of the latter, the choice is between a three-phase AC motor and a servomotor.



EQUIPMENT STORAGE FOR FIRE SERVICES

MiniTec practical racks made from the aluminium profile system for storing battery-operated equipment sets. Different versions are available. The fire services can carry out the setup and adjustments themselves.

In recent years, an increasing number of fire services have decided to replace their previous hose-bound hydraulic rescue equipment with modern, battery-operated equipment sets. Yet after making this decision, many fire services are faced with the next problem: How do we load the battery-operated equipment sets into our vehicle?

Working closely with LUKAS, one of the leading manufacturers of hydraulic rescue equipment, the MiniTec designers used the aluminium profile system



The storage unit can also be easily and individually adjusted to the circumstances on site in next to no time.

to develop special storage units for battery-operated equipment sets.

Different solutions available

The storage units are based on the 30x30 profile and are available as horizontal and diagonal storage. The fire service can choose one of the two solutions depending on the storage space available in the vehicle's equipment compartment. Nonetheless, the storage unit can also be easily and individually adjusted to the circumstances on site in next to no time. The storage units can be delivered as a kit or fully assembled.

Easy setup and adjustments

Many fire services are already using the system and are impressed – including Christian Hewer-Schwarz, deputy fire commander of the volunteer fire service in Brunenthal: "I assembled the storage unit myself, with the help of the setup instructions, and after the delivery of the Lukas components, I very easily adjusted it to them. In the vehicle, an HLF 20 (dual-purpose ladder appliance), we were easily able to adjust the MiniTec profile system to the existing unit retainer."



Christian Hewer-Schwarz, Volunteer fire service, Brunenthal



**HEIDELBERG
WALLBOXES:
IMPROVING
ERGONOMICS FOR
PRINTED CIRCUIT
BOARD ASSEMBLY**

MiniTec is a longstanding partner of HEIDELBERG, a leading manufacturer of printing machines, and now also of wallboxes for electric vehicles. Alongside the profile system, workstations and ergonomic lifting equipment are also used in the production.

For more than 170 years, Heidelberger Druckmaschinen AG has been a reliable partner for the global printing industry. However, it also looks around for interesting new areas of activity and growth markets. Thus, due to its power electronics know-how, HEIDELBERG has now established itself as a leading supplier of charging systems in the e-mobility market in Germany.

The company initially started in this external field of business with charging electronics for the charging cables of other manufacturers. It then gradually took on the task of developing its own charging systems, such as the wallbox for the private sector, and presented relevant products on the market.

The printed boards with the control logic for the wallboxes are manufactured in HEIDELBERG's electronic production department. This is where the company also develops and designs the complete electronic inner workings of its printing machines.

The printed circuit boards are mainly assembled by machine, however, also partly by hand. The responsible HEIDELBERG work scheduler, Gunther Kullmann said: "There are two different production areas. One is the SMD assembly, which involves all the small parts – this is done by machines. But then there are also components that cannot be handled



With the new work environment, Gunter Kullmann ensures more ergonomics in the printed circuit board assembly.

by machines, and here employees are still assigned to assemble the printed circuit boards."

ERGONOMICS IS AN IMPORTANT TOPIC FOR OCCUPATIONAL SAFETY

240 handling operations per shift

The health of its employees is very important to HEIDELBERG, accordingly, the company attaches great importance to ergonomics in the workplace. Kullmann said: "Ergonomics is an important topic for occupational safety, as a company

also has a duty of care towards its employees. Therefore, for example, all our tables in the whole production are height adjustable, which is very much appreciated by our employees."

Improving ergonomics was also a topic for the printed board assembly, Kullmann said: "The background was that we have around 240 handling operations per shift in which a workpiece weighing around 9 kg must be lifted, carried, turned and put down. Until now, this was done purely manually. If you visualise lifting and positioning 9 kg 240 times, then it definitely has an impact on health in the long run. We therefore looked for a solution that improves ergonomics for the employees significantly and is therefore beneficial for their health."

MiniTec has the best concept

In order to work ergonomically at the assembly table and also to make the link compatible for soldering, a mobile aid was required, which can level out different heights. Various firms were therefore contacted, with whom HEIDLEBERG had already had good experiences in the past in other projects. Gunther Kullmann: "MiniTec is a partner of HEIDLEBERG, who has been supporting us plant-wide for many years with its profile system and with whom we have also implemented a number of worktables

and ergonomic lifting equipment in the workplace. Another supplier was also shortlisted, but we then opted for MiniTec due to the better concept."

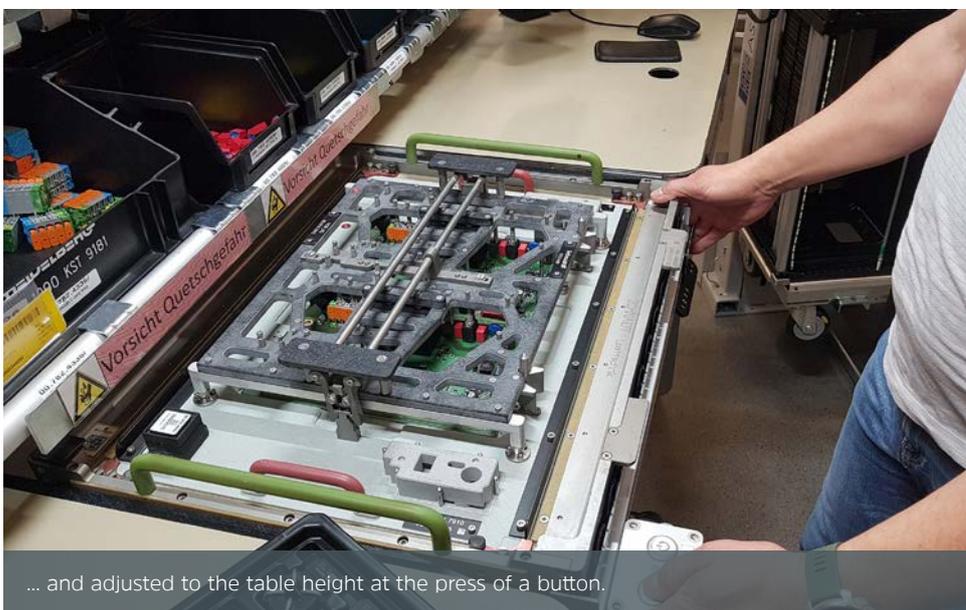
Because the circumstances were clear, Kullmann had specific ideas about the objective. The concepts and suggestions were then discussed with MiniTec and finally implemented. There was no standard product for the specific task, instead the MiniTec solution had to be redeveloped for HEIDLEBERG.

Individually height-adjustable lift trolleys

The main element of the MiniTec construction is a programmable lifting column. The work process is now organised so that the employee first equips a soldering jig to specification on their table. The relevant parts are available in boxes in an exchangeable trolley in front of them, at a suitable reach distance (a great deal of attention was also paid to the ergonomics of the table itself). The table has a recessed area in which the mobile lifting equipment with the soldering jig is located; it forms one



The MiniTec lift truck can be pushed into the worktable with exact fit ...



... and adjusted to the table height at the press of a button.

THE IMPACT ON EMPLOYEES' HEALTH HAS BEEN REDUCED SIGNIFICANTLY

level with the remaining work area. If the equipping of the soldering jig is finished, it must be positioned on a conveyor system on the other side of the work area, which transports it into the soldering machine.

The transfer point on the conveyor system is fixed and its height cannot be adjusted. Depending on how high the employee has set their worktable, including the lift trolley, the height difference between them and the transfer point can therefore quickly be 10 to 15 cm. The lift trolley therefore has a height adjustment that is individually programmed for the employee (the settings are stored by a teach function), which can be triggered at the press of a button.

The employee accordingly makes the height adjustment via a button on the way to the transfer point and there they transfer the assembled printed circuit board onto the conveyor system. They then remove a finished, soldered assembly from the conveyor system, take this back to their worktable with the lift trolley and on the way they again make the height adjustment to match the worktable.

Quality test integrated

Automatic quality control takes place first, before the lift trolley is moved to the conveyor system after the equipping. To this end, there is a camera above the table, which compares the specified assembly to the actual one after the assembly work is finished. The truck is held tight electromagnetically while the test is running.

If the camera finds an error, the worker must correct it and then restart the test. Only after the control of the assembly is a "PASS", i.e. there are no more errors, does the magnet release the truck so that it can be moved out. The truck remains locked as long as the test produces a negative result.

The table itself is also based on the MiniTec modular profile system and was developed and implemented by HEIDELBERG in its own equipment workshop. Due to the longstanding, plant-wide use of the MiniTec profile system, the company has three employees with MiniTec experience, who are able to build such equipment themselves.

Goal achieved

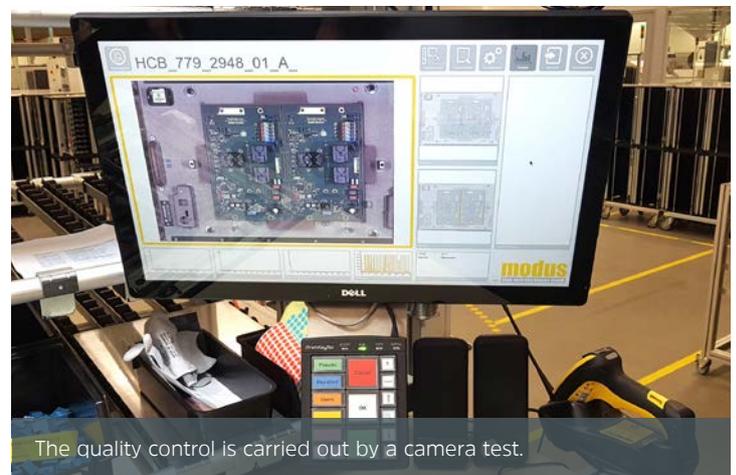
Gunther Kullmann is satisfied with the result: "The impact on employees' health has been reduced significantly by the MiniTec solution, which was our goal. The development phase took a long time, but the lift trolley works and from the way it is in use at the moment, one can say it is a success. The cooperation with MiniTec was good as usual. We exchanged ideas and information regularly and the requirements set by us were implemented perfectly."



The lift trolley can be lowered to the level of the opposite conveyor system to dock onto it.

Good prospects

The HEIDELBERG area of business with the charging stations is developing very positively, said Kullmann. The wallboxes will therefore soon be positioned in a separate business unit under the name "HEIDELBERG Amperfiert". In addition, Heidelberger Druckmaschinen AG is also an OEM for many other suppliers, i.e. their boxes contain technology "made by HEIDELBERG".



The quality control is carried out by a camera test.

By the way: A HEIDELBERG charging station was also recently installed on the MiniTec company site in Schöenberg-Kübelberg – as a free service for customers who visit us by electric car.

For further information on the Heidelberg wallbox, visit: wallbox.heidelberg.com



INSTALLATION OF SURFACE ELEMENTS IN GUARDS

Vision Zero is the new prevention strategy of the “Berufsgenossenschaften”, Germany’s social accident insurance institutions. The goal is “zero accidents – healthy working”. An important component of this strategy is execution of safety devices for machines and equipment according to the regulations.

There are numerous legal regulations and EN ISO provisions for the execution of protective devices and guards for machinery and equipment. Apart from electrical safeguards such as light curtains, scanners and sensitive strips, guards provide a particularly high degree of safety. If executed correctly, they can reliably control hazards. Apart from protection from ejected parts or moving machine parts, the protective devices and guards should also ensure the greatest possible visibility of danger zones or work processes. For this purpose, corrugated mesh or acrylic glass panes are frequently used as surface elements. MiniTec offers numerous solutions for the installation of these surface elements.

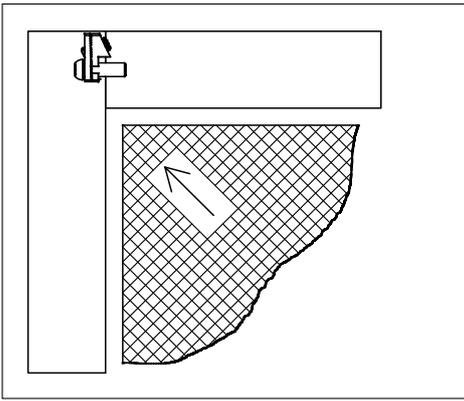
Installation in the profile groove of standard profiles

A differentiation must be made between installation in the profile groove and the subsequent assembly of surface elements. The assembly sequence must be planned accordingly for installation in the profile groove. The subsequent installation is generally easier.

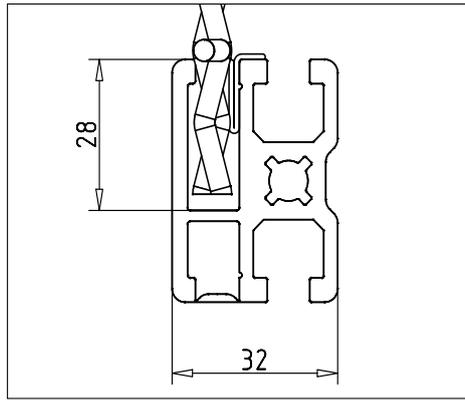
6 mm thick panes can be installed directly in the groove in conjunction with the edging profile. The edging profile is pressed into the groove with the opening facing upwards before the surface material is inserted. The pane is then pushed into the edging profile. This method is suitable for 6 mm thick panes. However, installation with insert seals or a spacer profile is recommended.

Cost-effective assembly

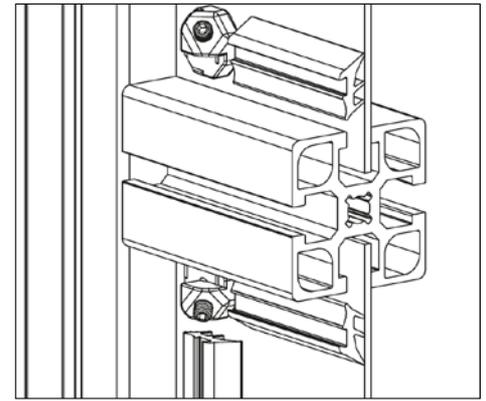
Panes made of glass, acrylic or composite material and 2 or 6 mm thick can be fixed in the profile groove and sealed with suitable insert seals. The seal is pressed in afterwards. When installing the frame, it must be ensured



Profile corner with connector and free corner



Clamp profile for large protection panels and corrugated mesh constructions

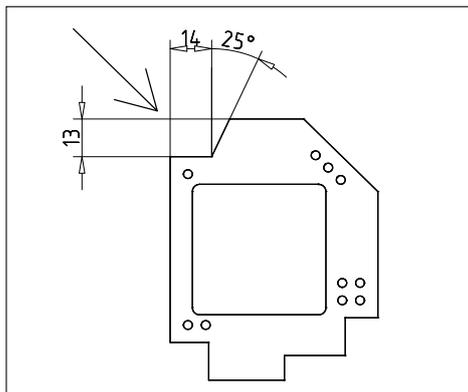


Earthing block in conjunction with insert seal

that the profile connectors with the setscrews are installed on the outside. This leaves the frame corner free and it is not necessary to notch the panes. This method is particularly cost-effective, a frame is not required to hold the panels.

also enable fast removal of the protection panels for service work or tool changing, etc. This method is particularly suitable for the enclosures of robots.

Earthing clamp: 0.7 to 2 mm thick surface elements are very easily earthed with the earthing clamp. The clamp is fitted on before the pane is installed, the claws provide the conductive connection.



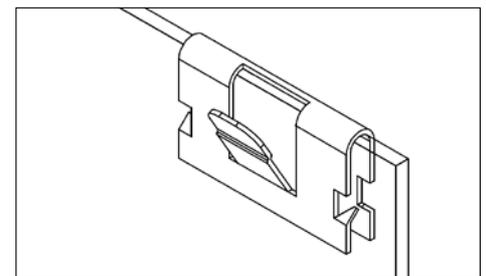
Template with notch dimensions

The loading capacity of the guard units made of clamp profile and corrugated mesh 40x40x4 mm was determined empirically by the TÜV Saar using pendulum tests and a mass of 100 kg. The results of these tests are shown in the following table.

Earthing guard panels

Feldhöhe HS mm	Feldgröße B mm	Last F N
1820	500	1200
1820	750	1200
1820	1000	1000
1820	1250	1000
1820	1500	1200
1820	1750	1100
1820	2000	1000

Table of the dynamic load capacity of the protection panels



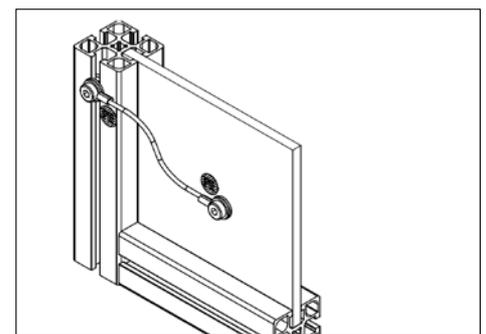
Earthing clamp for metal sheets and thin-walled components

Notching on one side of the panes is only necessary for installation with intermediate struts. We recommend using a template for the notch.

Installation of surface elements in clamp profile 45x32

Installation in the 45x32 clamp profile is advisable for large protection panels (guard units) and corrugated mesh constructions. The protection panels are completely preassembled and are installed in the frame of the construction later. The special protection panel fixing angles

Earthing block: Numerous applications require conductive connection of the surface elements to the profile frame. 1.5 to 2.5 mm thick aluminium or steel sheets are earthed with a special earthing block. This is screwed into a profile corner in conjunction with the surface element. One earthing block per surface element is sufficient for reliable earthing.



Earthing conductor for ESD areas

ESD earthing conductor: The cable is screwed tight in the profile groove, the other end of the cable is fixed onto the surface element with the standard accessories.

In the next edition of Connect we will be presenting to you more of the numerous possibilities for the subsequent installation of surface elements in existing frames.

FROM BASINGSTOKE TO BENGALURU (FORMERLY BANGALORE)



Almost half a kilometre of profiles for India.



Stairs with profile for diagnoses.

There are several new developments at MiniTec UK: Our British subsidiary recently delivered half a kilometre of profiles to the Indian government for a large construction programme. The order included full 6-metre lengths of 90x90 and 90x19 profiles, 450 m in total, and 15,000 nuts. The order was completed within 12 months and is part of an on-going delivery. All profiles and accessory parts were packed in shipping crates for the journey across the Indian Ocean.

Another project involved climbing stairs – as a contribution to convalescence. The movable stairs were designed and built, among others, for the biomechanics laboratory

of the Manchester Metropolitan University, to make the diagnosis and monitoring of sports injuries easier. Each step is equipped with dynamometer platforms, which enable the sports physicists to determine the precise area of a sportsperson's complaints.

A stair was designed so that it adapts to the gait of the patient and can be completely retracted when not in use. This revolutionary solution will change the way in which sports injuries are diagnosed and treated.

EXPANSION IN ESTONIA

The signs are also pointing to growth for MiniTec's partner in Estonia, Alas-Kuul AS: The company recently moved into new and larger premises with a total area of 756 sqm. In particular, the design and automation areas benefit from this. "Our main aim was to be quickly available for everyone on the Estonian and Baltic market", said sales manager Imre Käpa.

Several interesting projects have been completed in the recent past: A production line with 20 different ergonomic workstations, with various buffer conveyors and a pallet lift. As well as a product handling solution with toothed belt and a movable railway container for Toyota Hilux Tools, in order to achieve better capacity utilisation of the vehicle.



Production line with ergonomic workstations



High availability due to a significantly enlarged warehouse.



INNOVATIVE POOL COVERS ON A MINITEC BASE

Private pools are becoming increasingly popular. However, especially on smaller properties, there is often a space issue, because you don't want to lose your patio to be able to enjoy a swim. In addition, there are safety aspects – the greatest possible protection against accidents should be ensured when the pool is not being used.

Against this background, the Walter Pool company in the Alsation town of Brumath has developed a completely new kind of pool cover.

The WaluDeck Flat is actually a patio, which can be pushed over the pool and then acts as a protective cover or deck. The system can be used all year round and provides the best protection and optimal use of space. The pool becomes a playground, a place to relax or an outdoor dining area.

Flexible, stable and weather resistant

To realise the idea, Walter Pool needed a construction system that can be flexibly adapted to the different dimensions of the swimming pools, is stable and weather resistant and also enables easy setup on site. The MiniTec modular profile system was quickly chosen, because it supports the modular concept in an ideal way.

After completing a prototype and presenting it at trade fairs, the solution has now been included in the Walter Pool product range. There are two series, one for whirlpools with maximum dimensions 3,000 x 3,000 mm and a maximum load of 300 kg in the middle of the deck, the



This pool cover combines safety, functionality and aesthetics.

other for normal pools with maximum dimensions 6,000 x 4,000 mm and a central load capacity of 500 kg.

The advantages of the MiniTec modular system came into play again in the marketing, because it enables the do-it-yourself method: The customers receive a kit including the aluminium profiles and assemble the whole deck themselves at home.

Guillaume de Troostembergh, Managing Director of Walter Pool, is exceedingly satisfied: "WaluDeck Flat is a perfect solution, not only for small gardens. And the MiniTec profile system is the ideal base construction for it. The modular system is flexible, is easy to set up and allows tailor-made implementations on site."



Flexible in form and dimensions, thanks to the modular system.

MINITEC SUPPORTS SUSTAINABILITY PROJECT FOR TRAINEES

The “AZUBIFIX” project originated as part of an initiative of the vocational college in Kaiserslautern. Trainees repair defective small electrical appliances in their companies. Apart from the learning effect, the project also opts for sustainability.

A new optional subject was added to the course of our trainee mechatronics technicians at the BBS I Kaiserslautern: In four “AZUBIFIX” classes per week, the trainees repair defective small electrical appliances. In all the trainees’ firms – including at MiniTec – notices were distributed stating that employees could hand in defective small electrical appliances, which are repaired in the vocational college class.

Yet how does that work? “Colleagues can hand in their defective small electrical appliances to us and describe the defect, when and how the problem occurs and, in an optimal case, they give us the accessories and operating instructions too”, explained the trainees at MiniTec.

With the AZUBIFIX project, the theoretical teaching in the college is reinforced by more practice: Apart from repairing the devices, the students also learn the practical approach to a problem. The customer pitch, the checking of the overall circumstances and the fault analysis are very important, because often it is very banal faults, such as a defective sockets, which lead to a supposed

fault and the appliance isn’t defective at all. In other cases, it is only a small, often inexpensive component that is not working. The “customer” can then buy the component based on the description and the trainees install it – which not only saves money but also protects the environment.

Theory becomes practice

The AZUBIFIX project was initiated by a teacher who runs a repair café and repairs appliances for a small charge, thereby giving them a new second life.

MiniTec also supports the project by donating trolleys – assembled by the trainees – which enable the storage, organisation and internal transport of the small appliances.

The trainees are very keen on the campaign: “It perfectly fits the core of our training: Not everyone has contact with customers during their training in the company or can actively trace all the steps through to the repair and return delivery of the appliances. We can now all do so within the scope of this project”, the trainees agree.



The poster features the MiniTec logo (THE ART OF SIMPLICITY) and the AZUBIFIX title. It lists search criteria (defective electrical appliances) and repairable items (kitchen appliances, tools, household devices) while excluding multimedia devices. It also provides contact information for Büro Simon Lorenz and mentions that accessories and manuals are needed, and repairs should be discussed beforehand.

WIR SUCHEN:
Defekte, reparaturfähige Elektrokleingeräte.

WIR REPARIEREN:
Im Rahmen des Reparatur-Wahlpflichtfaches der Berufsschule

➔ Küchengeräte (Mixer, Küchenmaschine etc.)
➔ Werkzeuge (Bohrmaschine, Schlagschrauber etc.)
➔ Haushaltsgeräte (Rügelesen, Staubsauger etc.)

✗ Bitte **keine** Multimediageräte

• **Abgabe der Geräte:**
Büro Simon Lorenz

• **Ansprechpartner:**
Mechatroniker des 2. und 3. Lehrjahres

• Zubehör und Unterlagen zum Gerät werden benötigt
• Die Reparatur soll vorher besprochen werden

They would like this project to be used in as many firms as possible, to the benefit of the training and the environment. They emphatically support the initiative of the vocational college teacher and thank him for his commitment.

MiniTec also finds the project great and wishes its trainees lots of fun and success in its implementation. Find out how things continue in the next issue of Connect.

IT'S PEOPLE THAT MATTER



Three who are hands-on: Lena Daniel, Luca Luisa Siegfried, Cora Reidenbach (from l to r).

Women in technical or industrial occupations has long since no longer been a rarity at MiniTec. Whether the Commercial Director, the head of the System Engineering team or numerous female employees in the departments.

In recent years, the number of females among our trainee mechatronics technicians has also increased steadily – and we talked to Lena, Luca and Cora. Cora has just completed her training as a mechatronics technician, Lena and Luca are in the 2nd year of their training.

How did you find your career, why did you choose it and what distinguishes the job of mechatronics technician?

“My mother is an industrial mechanic. I didn't want to work in an office, but with my hands. My work experience placement at MiniTec strengthened my opinion – and then I began the training here”, Cora tells us. “I also had a work experience placement at MiniTec, after I got to know the company at the training fair”, said Lena. “I am also interested in

“I AM ALSO INTERESTED IN MECHATRONICS OUTSIDE OF WORK!”

mechatronics outside of work and during my work experience placement I found that the job really suits me. I can recommend doing a work experience placement to everyone.”

“I had many different possible areas and had several work experience placements. I was looking for an “eventful occupation”, in which I can also work physically and where I am offered plenty of variety – like as a mechatronics technician. For me it was in fact the movement aspect that was most important”, said Luca.

Office or skilled trade?

You mentioned that you didn't want to work in an office. Do you have the feeling that women still tend to be seen in office jobs?

“We think so” confirmed the three young women. “It is somehow still stuck in people's heads that women work in an office and men in skilled trades or industrial areas. When we tell people in our milieu about our job, people are initially surprised. Positively surprised, but they don't expect it.”

“I think there is still a strong stigmatisation of the occupation and women per se”, says Luca, putting it in a nutshell.

What are your experiences in a very male-dominated occupation: How was or is the situation with your male colleagues or for your female colleagues?

“Well, at the very beginning I did notice that several people were more cautious with me and especially, they didn't give me the heaviest work – because I'm a woman. But that stopped very quickly and I was simply seen as a colleague who can do the same work just as well”, said Cora.

“For us it is completely normal to be a woman among men. We really can advise everyone to pursue their desired career and not to be daunted by gender clichés. It's people that matter, not their gender!”, all three agree.

FROM A MINT PROJECT TO ROADWORTHINESS

During the past two years, the MINT-AG of the integrated secondary school in Contwig developed two different two-wheelers with e-mobility: a balance bike and a scooter. MiniTec assisted.



Manfred Panter, former mechanical engineer and project supervisor with two of his students at the handover of the bikes.

As a MINT school – MINT stands for Mathematics, Informatics, Natural sciences and Technology – the integrated secondary school (“integrierte Gesamtschule” – IGS) in Contwig promotes innovative and inspirational learning in these four subjects and not only exchanges ideas constructively at regular network meetings, but also leads the way as a model for other schools.

The MINT-AG of the IGS was supported by Manfred Panter, who shared his knowledge and experience as a former mechanical engineer with the students. “Young and old must work together, the old people need the young and the young need us oldies. That way we can drive things forward together and realise great ideas. I am retired and have been interested in two-wheelers for a long time, so I offered to tackle this project together with the students of the MINT-AG”, said Panter and added: “We started in 2019 with the development of our balance bike. During my career I attended many trade fairs, and that’s where my idea of a trade fair bike came from.”

He was also familiar with MiniTec from his time as a mechanical engineer. In the school, a system was needed for the construction that could be assembled and

changed again without machining or welding. “The MiniTec profile system is perfectly suitable for this”, said Panter.

Prototype achieved with manual work

The students and the mechanical engineer produced freehand sketches, sawed, filed, screwed and assembled until the first balance bike with electric motor was created. “We were involved from the design through to the final implementation and the feeling at the end, of having our own product in front of us and starting the test run was fantastic”, described the students.

A second version is now to be created for people who can’t use such a balance bike: the scooter. On flat routes

you can easily advance with your leg movement and on uphill slopes you can actuate the electric motor by hand throttle and drive

DRIVING THINGS FORWARD AND REALISING GREAT IDEAS TOGETHER

assisted by up to seven km/h. A road licence also isn’t needed at this speed.

Convenient thanks to electric motor

The situation is different with the balance bike: with speeds up to 15 km/h, a road licence will be applied for. Then the electrics can be finally installed – including step pattern sensor, which does not allow the auxiliary motor to be started by hand throttle until steps have been completed.

Two years of class 11 students have been able to work on the project since 2019. The students look forward to realising such a project, together with sponsors.



The team has already achieved several successes.



MORE THAN JUST VOLLEYBALL

In the past, we have often reported on a project supported by us that is very close to our heart – the SASA volleyball team in the Seveto slum of Nairobi. The SASA volleyball team is more than a sports club, as coach John Sakonyi Musungu repeatedly reports to us.

Only recently, the girls' volleyball camp took place in March/April 2022 in Nairobi, where girls from other towns were brought together during the 25 days. Among other things, the sponsors' money was used to fund training materials, meals, accommodation, sanitary towels for the girls and wages for the employees on site. The camp was the preparation for the league, which restarts in May, when the schools re-open. Through the training in the camp, the girls also have the possibility of gaining high school scholarships.



Preparation for the league games took place in a camp.

Success in the Nairobi Ladies League

In its participation in the six-month Nairobi Ladies League, which was ended recently, the SASA Academy was able to host the final and achieve second place in all three categories, i.e. primary, secondary and sixth form level, with its teams.

"Thanks to the sponsoring, we were able to form strong teams, which represent our region in different competitions." The camps that take place there have a far more wide-reaching social responsibility than we are familiar with in our sport camps here in Germany. "In recent years, since the partnership with MiniTec has existed, we have been able to achieve large social successes. We have been able to reduce drug abuse, child abuse, rape, abduction and unwanted pregnancies. We have fewer school dropouts, a higher school enrolment rate, better performances in school and the nutrition and camp programmes have changed the perception of the slum residents permanently", reported Coach John.

Academy on course for growth

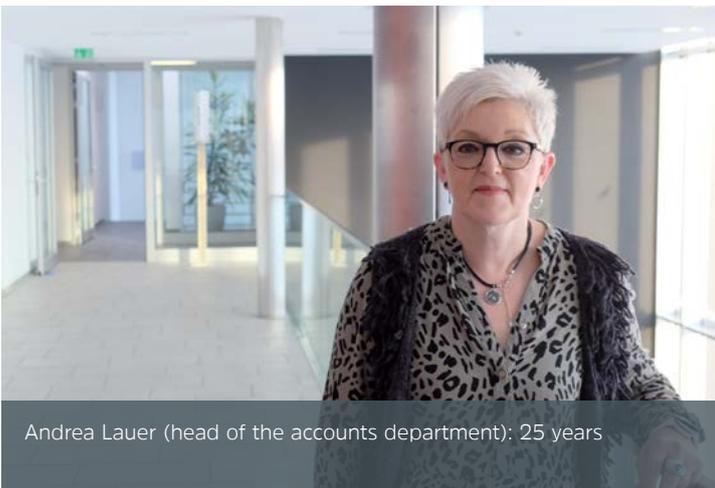
As SASA is the only academy to promote volleyball in the whole Nairobi region, it continues to grow steadily and sets itself new goals, such as doing justice to the number of new sportswomen, expanding the sports ground, to confront the extreme dust and even the rain, or to buy an 18-seater bus to drive the team to competitions. We are pleased to support the work on site as a partner and already look forward to hearing the news from the SASA volleyball team.

LONG-SERVICE EMPLOYEES AT MINITEC

Many employees at MiniTec have been on board for a very long time. Around 280 people now work for MiniTec in Germany alone. We are proud that so many have been with us for so long and still enjoy working here, for example, like Manuela Oexle: “Great employer, very good working atmosphere – I feel very comfortable and am pleased to be able to work here.”

We are pleased to celebrate our employees' work anniversary with them in this quarter:

- Andrea Lauer (head of the accounts department): 25 years
- Bodo Weingart (shaft machining): 25 years
- Harald Jann (organisation): 25 years
- Andreas Minke (field service): 15 years
- Eduardo Vigo Mar (preassembly): 15 years
- Stefan Geyer (Waldmohr works management): 10 years
- Andreas Gölzer (engineering): 10 years
- Christoph Dahl (assembly): 5 years
- Manuela Oexle (Zirndorf): 5 years
- Artur Steliga (assembly): 5 years



“Man, how time flies, in the truest sense of the word. I have worked for MiniTec for 25 years and still enjoy going to work. I rose up to authorised representative (“Prokuristin”) and thank the management for the trust they placed in me, and my colleagues who still support me.”



IMPRINT

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Your new helpers are ready to go

Edi and Buddy ensure perfect interaction in the new MiniTec assistance system. In the editor, you can create the instructions in no time at all, which are then played out on the player at the workplace – and optimally support your employees. Curious?

