



Connect

01

March
2023



MORE PRODUCTIVITY IN 4/4 TIME

How a medium-sized business
increased its production capacity
radically ___ page 18



SOLUTIONS FOR PRECISE LINEAR GANTRIES

Adapter plates open up all the
advantages of a linear system
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MORE EFFICIENCY IN MANUAL ASSEMBLY

How ergonomics and cost
efficiency can be combined
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Simply safer: **MiniTec protection systems**

Safety and occupational protection come first in production environments. **MiniTec** offers tailor-made solutions for this based on its modular system. Regardless of whether it involves machine protection, noise control or hygiene protection. Whether individual components or complete solutions. They include:



- Safety fences
- Access controls
- Active noise control with enclosures
- Lifting doors and vertically traversable protective hoods
- Office modules
- Hygiene partitions and much more

And thanks to the tried and tested profile system, MiniTec protection systems can be designed extremely flexibly and individually, changes are possible at any time.

When will you discover the art of simplicity?



minitec.de/schutzeinrichtungen



DEAR READERS,

It is often relatively small parts or components that bring machines or even whole plants to a standstill in the event of a defect. As a supplier of linear units and conveying technology systems, we know what this means for our customers in the worst case: Standstill of a production line or even the entire production.

Shafts in particular, which are installed in every linear unit, are one of these sensitive parts. We therefore set up our own shaft production, many years ago in our plant in the Palatinate town of Waldmohr. We are thus able to deliver all shafts installed by us in the shortest possible time – in fact, usually within a day. State-of-the-art machine tools enable us to produce even the smallest lot sizes quickly and economically in top quality.

However, we are also able to produce more extensive lot sizes or unusual dimensions here, shafts up to six metres long say. And our well-assorted warehouse always has sufficient hardened precision shafts in stock, with diameters from 3 to 100 millimetres as well as rail guides and threaded spindles. In an article on page 6 and 7 in this issue we report on several interesting new additions.

At the Waldmohr location we make sure that we can produce in-house all necessary parts for machine and special machine building as well as automation projects that are not standard. These are, for example, workpiece carriers, adapter plates or general special parts made of metal. Our customers also benefit from this large vertical range of manufacture, as at MiniTec they can count on a high degree of delivery readiness and the shortest delivery times.

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

Yours sincerely
Tobias Doll

A handwritten signature in black ink, appearing to read 'T. Doll' with a small heart-like mark at the end of the last name.

Director of Production

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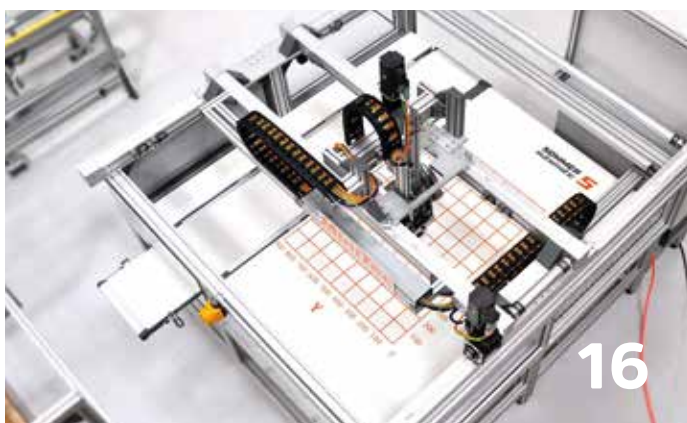
COVER STORY **MORE EFFICIENCY IN MANUAL ASSEMBLY**

The greatest challenges in manual assembly are the ergonomics and the cost efficiency of the processes. MiniTec has addressed this topic for many years and combines its ergonomic workstations with an assistance system as well as conveying technology and handling components. This results in precise fitting economic solutions for manual assembly in industry and in workshops for the disabled.



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How to manage a big order – this precisely sums up the situation at Bizerba in Meßkirch in the summer of 2021. In itself a positive result, it was necessary to increase production capacity sixfold in the shortest possible time. MiniTec was brought on board to make sure of success.



SOLUTIONS FOR PRECISE LINEAR GANTRIES

Linear systems are essential for all kinds of different tasks. Many tasks require the combination of different linear axes to form multi-axis systems. With the help of high-precision adapter plates, MiniTec linear actuators can be combined to form linear gantries, XY-gantries (2D) or 3-axis gantries (3D). Thereby opening up all the advantages of the linear system.

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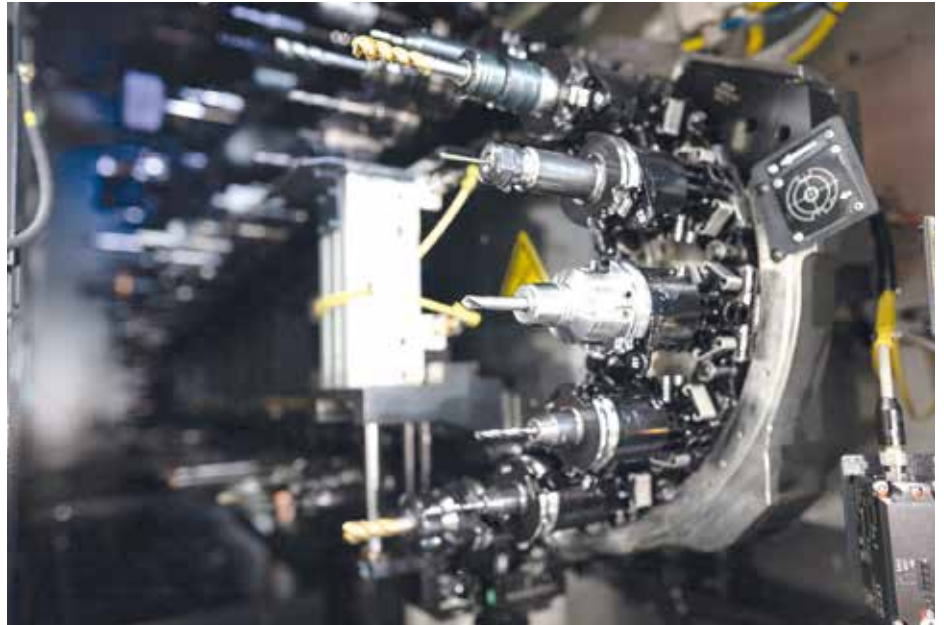
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NEW POSSIBILITIES FOR SHAFTS AND MACHINE COMPONENTS

Machining hardened steel shafts and the precise production of machine components are the specialities in the Waldmohr location. Renewed massive investments in the production have now been made.

An increasing number of customers are making use of MiniTec's offer to have machine components and shafts machined at its Waldmohr site. The machine park has now been extended to include a CMZ TTL-66 type lathe. The machine has driven tools and a 3 m bar loader. It allows simultaneous machining with three tools and no manual input. Depending on the material, longer uninterrupted running times are possible. The concept of main and sub-spindle with integrated removal of the finished parts ensures even more speed for the machining.



New machine for smaller shafts in quantity

This gives rise to new possibilities for customers with immediate effect, says works manager Stefan Geyer: "The new

machine with connected bar loaded allows us to also machine smaller edge-zone hardened precision steel shafts in larger quantities on attractive terms. Their diameter can be up to 30 mm, their length 270 mm maximum. With



The machine park in the Waldmohr plant has been extended to include a modern lathe.



Smaller, edge-zone hardened precision steel shafts can now be produced in larger quantities on attractive terms.

the existing index machine we were already able to produce lot sizes of several thousand, however, only for shafts with larger dimensions. The new acquisition therefore means an interesting expansion of our range of services for our customers."

Robot cell for loading CNC machine

Whether digital twin, worker assistance system or the networking of machines via the web (internet of things, IoT) – Industry 4.0. is now living reality in many MiniTec areas. The topic has now found its way into the machine park at the Waldmohr location: A BMO Automation Platinum type robot cell was recently installed there for the automatic workpiece loading of an existing DMG Mori CNC machine.

The combination of both machines allows MiniTec to produce aluminium components such as shaft support blocks, linear slides and traverses, fully automatically in series. A Yaskawa 6-axis robot removes the workpieces from grid drawers and places them in the machine. The cell has eight pallet slots for provisioning the clamping devices. This means the robot automation first inserts the required clamping device into the machine automatically and then

TURNING AND MILLING IN PERFECTION AT THE WALDMOHR SITE



equips the device with the blanks from the storage drawer. If it is necessary to use a different clamping device due to different part dimensions, the pallet is exchanged automatically.

Aluminium components such as shaft support blocks, linear slides and traverses can now be produced fully automatically in series.

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FAST SHAFTS

*You receive the shafts you need within the shortest possible time from us. Our consultants will assist you with any questions you may have:
Contact: Phone +49 (0) 63 73 81 27-629, waldmohr@minitec.de*

*Configure shafts easily with our free online tool:
www.minitec.de/produkt/konfiguration-von-wellen*

Works manager Stefan Geyer is delighted by the new possibilities: "Thanks to the robot cell, we are now able to increase our output of aluminium components significantly – and therefore

ensure even greater security of supply. MiniTec is now also living in its own Industry 4.0 machine park – to the advantage of our customers!"



Recently put into operation: A robot cell for loading an existing CNC machine with workpieces automatically



A Yaskawa 6-axis robot assists by loading the CNC machine.

NEW ICAD ASSEMBLER VERSION

With the iCAD Assembler design tool, MiniTec provides the logical addition to its modular profile system. You can use the free software to create your designs with MiniTec profiles conveniently in 3D on the screen before moving onto the implementation.

The user simply selects the parts required from an electronic catalogue and joins them together. An integrated plausibility check ensures that everything is compatible. As a result they receive a true-to-scale design drawing including the corresponding bill of material. And therefore, a reliable basis for their assembly or order. Another interesting function is a deflection calculator for aluminium profiles.

The intuitive layout of the graphic user interface ensures that the user can use the tool easily after a short familiarisation period.

The new version 3.3.5 of the iCAD Assembler is now available. It replaces the previous version 3.3.4. iCAD Assembler 3.3.5 now includes a completely updated database, this means that



The practical design software, iCAD Assembler, is easy to use even without prior knowledge.

all product innovations of the last two years are now also in the electronic catalogue, as well as direct interfaces with all common CAD systems. Users therefore have an up-to-the-minute and reliable basis for their designs.

It can be downloaded free from www.minitec.de/icad-assembler

TRADE FAIR CALENDAR 1ST HALF-YEAR 2023

This year, MiniTec will again be presenting itself the most important trade fairs of its industry. All dates are also available at www.minitec.de/service/messen-events

werkstätten:messe

Workshops: Trade fair for vocational rehabilitation, Nuremberg
19 to 22 April 2023,
Hall 12.0, Stand 404
 Ergonomic workstations and assistance systems for workshops for the disabled and for industry.



Abenteuer & Allrad, Bad Kissingen,
8 to 11 June 2023
 The off-road trade fair
 MiniTec presents its modular aluminium profile system for vehicle fitout.



Logistics & Automation, Hamburg,
14 to 15 June 2023, Stand D08
 Regional trade fair for intralogistics and materials handling.



Intersolar, Munich, 14 to 16 June 2023, Hall A2, Stand A2.413
 The worldwide leading trade fair for the solar industry.
 MiniTec informs about its solar technology solutions.



112 rescue, Dortmund,
14 to 16 June 2023
 Trade fair for fire safety, rescue and civil defence.
 MiniTec shows products and fitout solutions for vehicles and workshops.



SUSTAINABLE CAMPERS FOR THE TRIP

NuA Holz-Alubox builds different camper shells with MiniTec aluminium profiles and larch wood. A sustainable design and healthy interior climate were the focus of the project planning. At the end of its life, the camper shell can be completely dismantled and all components added back into the raw material cycle.

Whether as a camper, tiny house on wheels or for short weekend trips – with the MiniTec profile system there are no limits to vehicle customisation. The northern German company NuA Holz-Alubox also uses the aluminium profiles for its designs. It creates camper shells with a frame construction of aluminium profiles and larch wood.

The idea for this came from a project of the company that absolutely had to be made of wood. Due to a lung disease of the subsequent vehicle user, it was important to achieve a healthy interior climate in the camper. Sustainability was also important. At the end of their life, the camper shells

can be completely dismantled – and all components added back into the raw material cycle or reused.

“We came into contact with MiniTec at the **Abenteuer & Allrad** trade fair in Bad Kissingen (see trade fair notice on the opposite page). Together we designed the skeleton frame and developed the corner connections and connection blocks. The great thing is that the intermediate frame is included, so that the weight of the camper shell is not significantly heavier than a GRP shell”, emphasise the project participants. Mitre connectors were used for the sloped rear of the camper to produce a clean round edge.

Well insulated for cold nights

The idea with the camper shells has been met with plenty of approval on the market: “We are often asked about cold bridges, but with correct insulation they are not a problem at all. In our campers we worked with Almaflex on the aluminium construction”, revealed the fitout specialists. Of course, cork or other materials could also be stuck on and there are many more possibilities. The topic of tightness is solved with a vapour barrier, which is as breathable as in a house and is attached to the wood. The camper is then insulated with wood wool. But in general, the customer can decide for themselves.

At the customer’s request, however, NuA Holz-Alubox also insulates the camper shell. Furthermore, additional options can be selected, for example, a pull-out patio or a lowerable motorbike and spare tyre carrier. Each camper can be created individually for the customer.

Further information is available at www.nua-holz-alubox.de



Campers with flexible fitout possibilities and a stable aluminium frame.



MORE EFFICIENCY IN MANUAL ASSEMBLY

MiniTec is specialised in ergonomic workplace systems.



The greatest challenges in manual assembly are the ergonomics and the cost efficiency of the processes. MiniTec has addressed this topic for many years and combines its ergonomic workstations with an assistance system as well as conveying technology and handling components. This results in precise fitting economic solutions for manual assembly in industry and in workshops for the disabled. The workstation range is supplemented by the MiniTec iCAD Assembler software for fast and easy planning.

Today's industry is typified by automation and efficiency. Nonetheless, manual workstations are indispensable in many areas, as especially in assembly, not all processes can be automated. An important task here is to integrate manual workstations into production workflows ergonomically, effectively and cost-effectively. This requires special assembly workstations as well as conveying technology and handling components. MiniTec not only offers partial solutions but also complete solutions in this area, which are based on the company's own modular system of profiles and linear units as well as a large number of components. The offer is supplemented with a workstation and worker assistance system as well as sound advice from experts in these topics.

The challenges for manual assembly are enormous: Cost pressure, an increasing variety of version, high sickness absence rates due to ergonomically unsuitable workplaces and a lack of skilled personnel are only a few reasons for industrial companies to target this topic.

Solutions to these problems mostly have to be developed individually, as there are no ergonomic workstations "off the peg", as the demands are very different. Worker assistance systems, which can be adapted not only to the assembly tasks but also to individual needs, are extremely helpful.

When it comes to efficiency and cost-effectiveness, interlinking assembly stations and seamless integration in the intralogistics are essential.

Ergonomics at the workstation

Apart from preventive industrial safety and preventing permanent health damage, decisive economic aspects protection also speak for ergonomics in the workplace. The requirements in production are becoming increasingly more individual. Ever-smaller lot sizes necessitate greater flexibility of the systems. At the same time, the high standards of economic efficiency and quality must also be met. An ergonomically optimised working environment in the assembly department demonstrably ensures higher performance, efficiency and machining quality. The topics range from height adjustment to assistance systems through to protective measures.



The possibilities for arranging MiniTec workstations are enormous – and also include the MiniTec SmartAssist assistance system.

Ergonomic assembly workstations have been one of MiniTec's core competencies for many years. The experts for workplace design develop workplace systems to the latest findings.

This begins with practical aspects such as the spatial design of a workstation. Not only body measurements are important here, but also the reach envelopes, standing and sitting dynamics as well as the correct lighting and noise protection. Assistance systems which support the worker during assembly are also important.

The customers of MiniTec benefit from its long experience and numerous applications of the workplace system in all branches of industry. The extensive product range includes height-adjustable workstations for interchangeable working in a seated or standing position, individually designable overhead features for part and tool provision and the positioning of the correct lighting as well as energy-saving LED lights. Electrically or hydraulically driven lifting equipment for the optimal working height avoid large stresses and strains. Pneumatic lines and cable routing integrated in the profiles ensure tidiness in the workplace. A large number of useful

accessories, which are optimally adapted to the profile system complements the whole system to form an economic and ergonomic unit.

Worker assistance at the workstation

With MiniTec SmartAssist, completely new possibilities for interactive employee support open up for companies. The assistance system of MiniTec ensures faster learning of workflows for the assembly and individual support during the work.

As particularly with multi-variant production, companies are increasingly faced with the task of how to quickly train their employees in the respective assembly activities and support them during their work. This is where the digital worker assistance system offers valuable help. MiniTec SmartAssist guides the worker through the assembly process by displaying the respective required tasks on the screen with the help of texts, graphics, photos or videos. There are various options available for process support and interaction, as the system is modular and allows the activation of all kinds of different hardware components, for example, PickToLight lighting strips, touch monitors, laser projectors or hand-held scanners.

The advantages are diverse and range from a reduction in the learning time for the assembly of new products to an increase in productivity and quality through to more flexible use of available employees and seasonal workers.

CLEVER ASSISTANCE FOR ASSEMBLY: MINITEC SMARTASSIST

A central component of the MiniTec assistance system is the intuitively operable editor, MiniTec SmartEdi, which allows the user to easily design and store the workflows for the assembly of new products themselves. This means more flexibility and independence. The system does not require any knowledge of programming and is almost self-explanatory.

Assembling in a line

Efficiency and quality assurance in assembly in accordance with cost-effective production – enabled by assembly and test lines, which MiniTec also offers. The systems are designed for one piece flow production and thus support flexible production concepts. The systems are predestined, for

example, for multi-shift operation or frequently changing operating personnel. As a solutions provider, MiniTec also takes care of automatic documentation of all production data and smooth material flow. Industry 4.0 concepts can also be implemented easily and support the economic implementation of manual assembly activities.

The layout of an assembly line can open up a large number of advantages: Higher productivity with simultaneously shorter throughput times. Multiple workstations can be interlinked and therefore large quantities can be achieved by incorporating manual assembly tasks.

MiniTec offers flexible concepts that, for example, also enable the subsequent integration of workstations into an assembly line. A wide range of conveying technology is available for this. Pallet transport systems play an important role in these areas. They are used whenever machining, marking or testing of workpieces takes place at defined stations. They also combine conveyor technology and the workplace and are used to set up assembly and machining lines for assemblies.

Conveying technology and handling

Bringing workpieces to the right place, in the right position and at the right time so that they can be machined, assembled or equipped; the conveying and handling technology sets itself this task. MiniTec has a broad portfolio, which enables the seamless integration of workstations into the intralogistics. Among other things, transport belts, roller conveyor systems, pallet transport systems, segmented chain conveyors, spiral conveyors through to automated guided vehicle systems (AGV) are used here. MiniTec also offers a large number of devices for handling, such as trolleys, lift trolleys or lifting equipment.



Manual workstations can be seamlessly integrated into assembly lines.



In combination with the MiniTec SmartAssist assistance system, workshops for the disabled can adapt workstations specifically to the needs of their employees.

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MINITEC WORKSTATIONS LIVE!

You would like to take a look at the possibilities with MiniTec workstations yourself, including MiniTec SmartAssist? Then visit us from 19 to 22 April 2023 at the Werkstätten Messe in Nuremberg in Hall 12.0, stand 404.

We look forward to your visit!

www.minitec.de/werkstaettenmesse2023



Plan and design

As a plant builder, MiniTec assists its customers with the planning and design, optimisation and implementation of projects. Besides which, companies can also plan and implement their assembly workstations and lines themselves with the modular system and the workstation and conveying technology components included. The iCAD Assembler is a practical tool for this. With the system-neutral, free 3D planning tool for design, work preparation and assembly, components can be very easily configured independent of the CAD software and assembled via insertion points – through to larger assemblies or whole systems. The integrated component library is very extensive. The autonomous CAD tool has interfaces with all commonly used CAD systems as well as export functions.

INNOVATIVE PRODUCTION OF SOLAR COLLECTORS

MiniTec specialised in production technologies for solar collectors many years ago. Innovative laser welding technology is used here, which is economic and forward-looking technology for the industrial mass production of solar thermal absorbers.

Solar thermal energy generally describes the conversion of solar energy, for example by thermal solar systems, into usable thermal energy. Laser welding technology in solar technology is the economic and forward-looking technology for industrial mass production of solar thermal absorbers. Aluminium sheet is joined to copper and aluminium tubes by using modern laser welding units. This material combination holds many advantages for the production of high-quality absorbers for solar thermal energy. Laser welding has almost completely displaced the use of ultrasonic welding and soldering for

joining sheet metal and the tube coil heat exchanger. The reasons for this are not only technical and economic; laser technology is also way out in front when it comes to environmental compatibility.

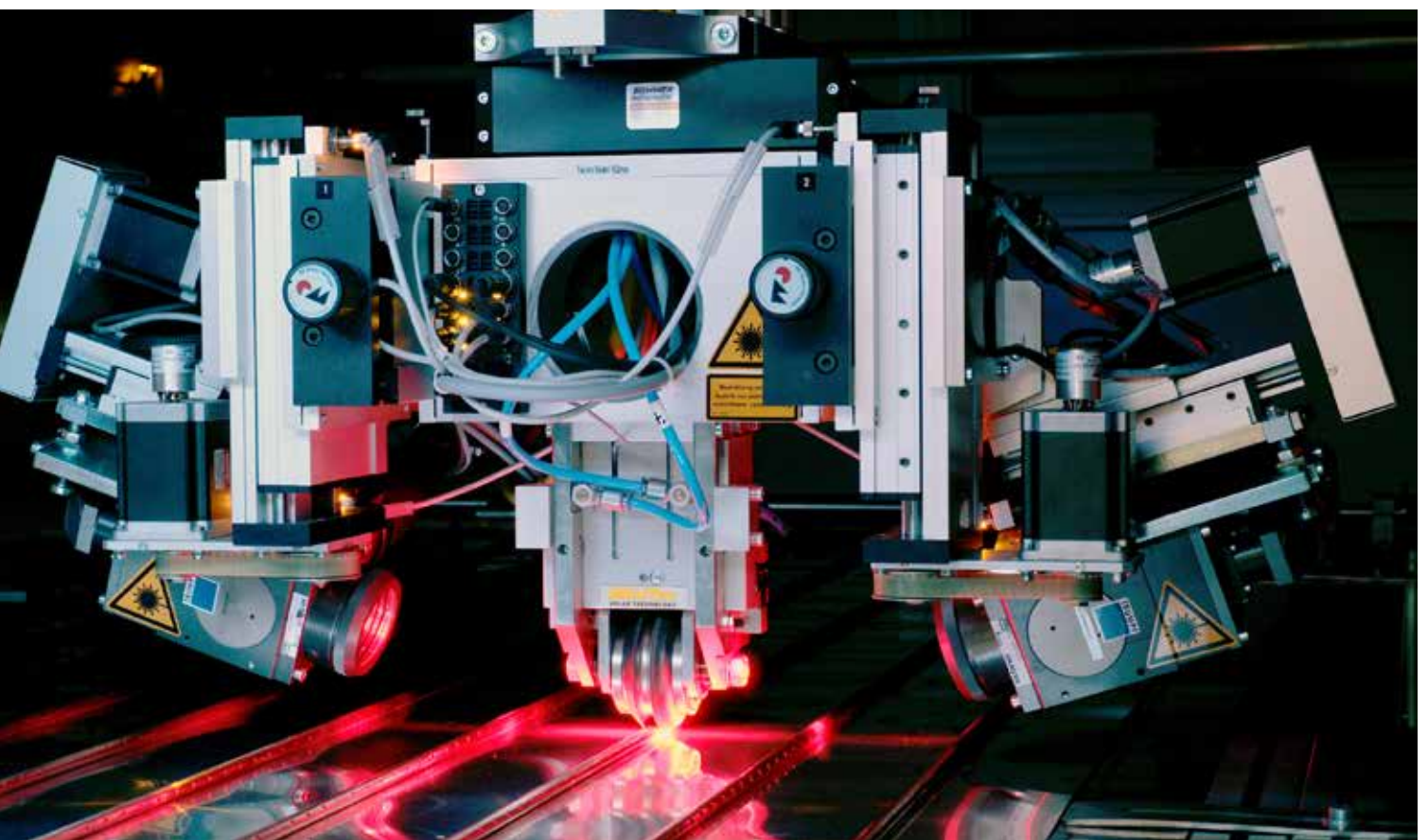
Apart from laser welding, there is hardly any method for joining aluminium sheet with copper or aluminium tubes that is more suitable for industrial production and at the same time meets all the usual quality requirements.

In addition, the advantages of the method also benefits joints made of other materials. Alongside good heat



MiniTec offers its customers turnkey projects with application guarantee.

transfer, the positives also include the high strength of the joints and, as the method is relatively insensitive to dirt, a high degree of process reliability.





The laser welding machine enables efficient, safe and reliable and cost-effective absorber production, including in multi-shift operation.

In addition, there is increased energy efficiency in the application, as the selective coating of the absorber is not visually damaged by laser welding. No mechanically worn parts in the machining, no additional material, no emissions whatsoever and no noise – all this speaks in favour of laser welding technology

Lower material stress due to laser welding

A pulsed laser melts and alloys small areas of tube and sheet. The precise laser beam heats the absorber in very controlled doses at the welding point



The laser welding unit is a fully-automatic machine with modern CNC control.

only, as a result the heat-affected zone can be kept very small. The absorber layer remains intact.

The latest generation of the MiniTec laser welding unit (LSA) is used for increasingly broader applications in the production of full-surface absorbers for flat thermal collectors.

Systems for multi-shift operation too

With worldwide leading laser welding technology, MiniTec customers, i.e. the manufacturers of solar thermal collectors, are able to produce high-quality and durable joints with optimum heat transfer. In addition to very high process reliability, the laser welding unit 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 tube diameter between 8 and 22 mm. By welding aluminium/copper absorbers, the laser welding machine enables the user to achieve efficient, safe and cost-effective absorber production, even in multi-shift operation.

Modern controls

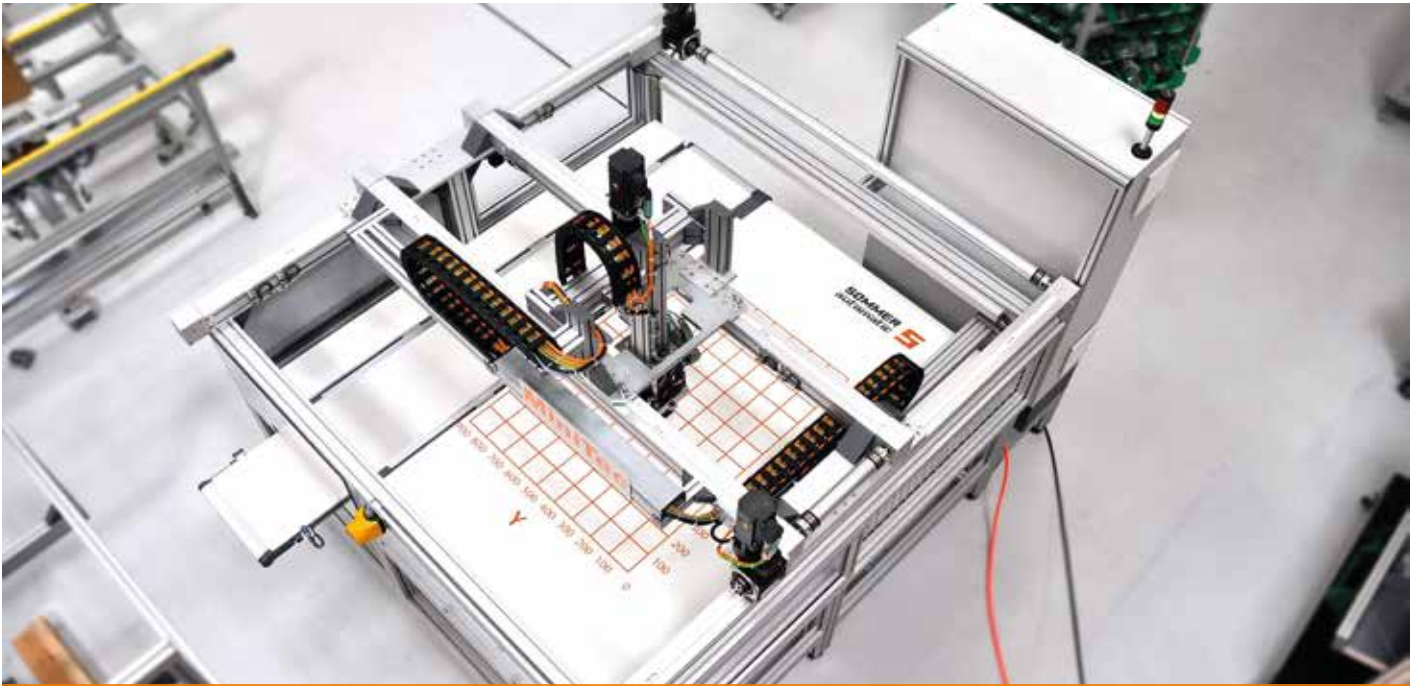
The MiniTec laser welding unit is a fully automatic machine designed and built to state-of-the-art standards with modern controls. This also allows customers to set their own configuration. Following brief instruction, qualified personnel is able to program the controls themselves and to configure to your own wishes. This reduces unnecessary costs and effort. MiniTec offers its customers turnkey projects with application guarantee as well as a first-class service, including remote maintenance and online support.

MiniTec also offers optional test equipment for testing the strength of the weld. In addition, automatic change to welding two different tube diameters and optical image capture for fault analysis are also possible.

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ECONOMIC AND FORWARD-LOOKING

Competitive pressure is increasing in the growth market for solar systems. Ever-larger production capacities are being created worldwide. European manufacturers of collectors must counter this development with more efficient production engineering in order to withstand the price pressure – especially from the Asian markets. Economic production methods and securing high quality standards are the key here to successful operation in the market.



SOLUTIONS FOR PRECISE LINEAR GANTRIES

Linear systems are essential for all kinds of different tasks. Many tasks require the combination of different linear axes to form multi-axis systems. With the help of high-precision adapter plates, MiniTec linear actuators can be combined to form linear gantries, XY-gantries (2D) or 3-axis gantries (3D). Thereby opening up all the advantages of the linear system.

Skilled worker shortages and supply chain disruptions demand new solutions for production. One approach is the MiniTec worker assistance system, which supports and informs the employee step-by-step through their tasks, in individual production or in variant production. This means that demanding tasks can also be carried out by employees with a disability and new employees can be integrated very quickly. In combination with the MiniTec automation solutions, flexible production is also possible economically in small lot sizes. The MiniTec modular linear system is an important component for this. Linear systems are essential for all kinds of different tasks. Many tasks require the combination of different linear axes to form multi-axis systems. The exact connection of multiple axes to form a system requires quite

some experience. With the help of the high-precision adapter plates, MiniTec linear actuators can be combined without any great effort to form linear gantries, XY-gantries (2D) or 3-axis gantries (3D).

The axes of all gantries have a modular layout, based on the MiniTec profile system. Through strict adherence to the modular system, all axes can be combined with each other.



Linear axes can be combined with adapter plates (orange in the image).

This applies to the whole range of LR6 compact with 45 mm installation dimension through to heavy-duty axis LR 180 with 285 mm width. All the advantages of the linear system are not opened up fully until axes are combined to form systems. With the help of adapter plates, secure connection of the axes can be achieved quickly and easily, without time-consuming aligning.

Linear gantries: Diverse possible uses

Linear gantries are used for labelling, sorting, connecting conveyor belts and so on. They can also be used to bridge large distances. A particularly interesting application for a gantry based on the linear axis LR 12 45x90 F was implemented for the Uffizi gallery in Florence for the digitalisation of large-format paintings.

2D gantries are assembled from an X-axis and a Y-axis with the help of fastening kits. With the fastening kit 90 S-S, the axes are mounted at 90° slides on slides. With the fastening kit 90 S-A 90°, the X-axis is fixed on the linear slides and the Y-axis on the support profile. The precise execution of the fastening kits ensures simple connection at exactly 90°, reliably without time-consuming aligning.

Already implemented applications for the 2D gantries are screen printing as well as cutting, testing, measuring, sorting, bonding and marking.

Adapter plates for 3D gantries

Adapter plates are available for 3D gantries. With them, gantries can be assembled for easier applications from the compact linear axes LR6 or LR6 compact. 3-axis gantries for higher loads are also assembled from the linear axes LMS, LMZ or LR 12 and the fastening kit 45 S-A 180°. Applications for 3D gantries made from this series are, for example, large 3D printers, assembly stations, labellers, handling equipment and laser machining.

The positioning accuracy of the systems depends on the drive used. Timing belt drives are particularly suitable for handling tasks with an accuracy of ± 0.05 mm, axes with recirculating ball screws and $\pm 20 \mu$ tolerance are used for higher requirements.

Suitable solutions for every application

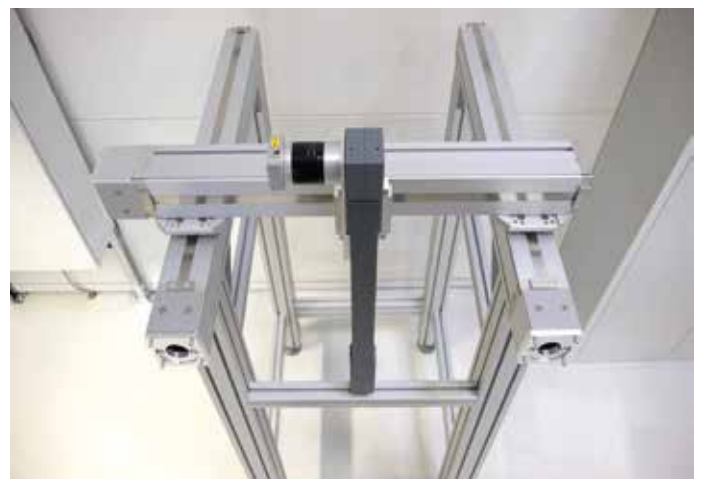
The axes can be delivered individually assembled in the required length according to the customer's wish. From the simple linear axis to the ready to use multi-axis gantry with drive and control, we deliver the right solution for all tasks.



5-axis loading station



Pick & Place by means of a 3-axis gantry



MiniTec linear axes are fully compatible with the modular profile system.

INCREASED PRODUCTIVITY IN 4/4 TIME



Bizerba in Meßkirch – precision cutting equipment from here is delivered throughout the whole world

How to manage a big order – this precisely sums up the situation at Bizerba in Meßkirch in the summer of 2021. In itself a positive result, it was necessary to increase production capacity sixfold in the shortest possible time. MiniTec was brought on board to make sure of success.

Bizerba SE & Co. KG based in Balingen is a classic German medium-sized company. Family-run with a history reaching back more than 100 years and a high quality standard, but at the same time innovative and also internationally oriented. Bizerba is particularly known for its shop scales, which is also the origin of the company. However, Bizerba has also developed into a solutions provider for the food industry – which includes packaging machines, labellers and in particular, slicers. The latter are produced in its Meßkirch location. These are machines of different sizes for cutting cold meats – from slicers for the shop counter for bistros and chain butchers

through to industrial slicers. Bizerba's innovational strength can be seen, for example, in the SmarterSlicing technology for networking and providing user support for the slicers. The vertical range of manufacture is enormous and ranges from the aluminium blank to the machining through to the final assembly.

Large order from the USA as a challenge

Word about the quality from Meßkirch has long since spread on the American market. In the summer of 2021, this led to a customer in the USA placing an order with Bizerba for the supply of a five-digit quantity of slicers, to be delivered by the summer of 2023. The order was specifically for type GSP machines ("gravity slicer premium") – so-called inclined slicers, which are particularly popular in the USA. Due to the inclined arrangement of the carriage, the food to be cut does not have to be pressed against the blade by hand but is already positioned by gravity. This makes work easier for the operator, especially when handling heavy pieces to be cut and also always ensures uniformly thick slices.

**SIXFOLD
INCREASE IN
PRODUCT VOLUME**

The order from overseas was naturally also an organisational challenge – after all, it involved a sixfold increase in the normal GSP production volume and doubling the total turnover at the Meßkirch location.

To achieve this, says the production planner Jochen Lude: "We had to increase our production capacity enormously and do so as quickly as possible. Also taking on new employees, as well as expanding the assembly areas. We have our own fixture and toolmaking department, but this was already busy elsewhere, for example, with renovation work and dismantling the existing production facilities. We therefore decided to buy in finished assembly workstations from MiniTec."

The decisive factors were on the one hand the aluminium profile system, which convinced us as a stable and equally versatile construction basis. On the other hand, Bizerba has already worked successfully with MiniTec for many years at its headquarters in Balingen.

Changeover to specialised assembly (division of labour)

In general, it was necessary to also become faster here during the course of the expansion of the final assembly. Until now, one employee assembled a complete slicer. Apart from an enormous space requirement, this also implied other disadvantages. Collisions frequently occurred because each employee worked at a different speed and the jointly used tool was never positioned ideally. In future the assembly is to take place over 4 cycles by 4 employees working in assembly cells. As part of the changeover, the walking and gripping distances are to be optimised for the employees



Clean cut: Bizerba GSP HD slicer with inclined arrangement of the carriage

New assembly cells at turbo speed

The project started in October 2021. It quickly became clear that the new assembly cells would have to be implemented without automation initially in order to remain reasonably on schedule. Everything then happened very quickly, says Lude: "We ordered in December and were able to install the first two lines at the end of February, even if without automation – that was an enormous achievement! Together with MiniTec, we then set up further lines, successively at 6-week intervals and added automation to the already existing assembly cells. So in July we already had the complete assembly line up and running, including automation."



The assembly cells ensure more teamwork and productivity
(3D model of the design)

Thanks to this procedure, Bizerba was able to start up the assembly capacity with new manpower very early, albeit without automation. Jochen Lude praised the flexibility and willingness to cooperate of MiniTec: "It was of course rather atypical for us to have purchased partially complete assembly systems initially and we were glad that MiniTec went along with this". A floor renovation project coincided with the project schedule and we continued to produce completely as usual. This means that the MiniTec fitters had to set up the new line within this area during normal production. This meant more difficult conditions, great praise for the MiniTec installation team!"

To enable the tight timetable, Bizerba's project team could contact the MiniTec design team directly at any time. On this, Lude said: "The response times were always very short. If we had a question in the morning, in most cases we had an answer and a proposed solution by midday, the next morning at the latest."

Everything in progress: Today's work sequence

In the GSP HD final assembly, 350 components must be assembled in four substeps. Due to the limited space available, the assembly cells had to be designed as a U-line – instead of as an I-line, in which all four workstations would have been in a row. The U-arrangement also has the advantage that it gives the employees somewhat more "room" and they can also talk to each other occasionally during their work, because they stand opposite each other.

IMPLEMENTATION IN TWO PHASES

At the beginning the aluminium housings from the preassembly were brought to the first workstation by transport trolley. The trolley is pushed onto a fork and is raised to the required removal level by means of a lifter. From here the employee pushes the housing to their assembly area on a roller strip and lifts it, including the workpiece carrier, pneumatically to their required working height – Bizerba attaches great importance to ergonomics. After they have carried out their assembly tasks they lower the housing again and push it on to phase 2, where the next employee continues with the assembly.

MiniTec has installed an automatic transferrer to then take the slicer to the other side to employee 3. The employee in phase 2 pushes the slicer to the right. In doing so they trigger a sensor, due to which the slicer is placed on a conveyor section. The employee in phase 3 can now request it by pressing a button. After their assembly work they lower it again and hand it over to phase 4. When the assembly is also finished there, the finished assembled slicer is placed on an older roller conveyor, which runs along the wall to a central machine lift.

Here there was a further special feature to be considered by MiniTec, because it was not to intervene in the control of the old conveyor. An automated outlet belt was therefore developed. When employee 4 is finished they push the slicer to the right, a sensor responds and timing belts start to convey the slicer out. At the same time, the main conveyor belt is blocked by stoppers so that the slicer can be ejected

onto it. On the main belt, the machine is then fed to the final tester or the upstream laser to create the nameplate. It is then carried by the machine lift to a floor lower, in the dispatch department.

Kanban principle for the material supply

A micro logistician ensures that the required material is always available at the assembly cells in the GSP production area – i.e. not only the preassembled machine housing, but also screws and other components. The latter are brought to them by employees from the central stores to a temporary area, from where they collect them up by transport trolley and distribute them further.

Bizerba opts for Kanban control for the material supply. In the case of the preassembled machine housings this is done by sight – as soon as the micro logistician notices that the trolley at one of the assembly cells is becoming empty, they replace it with a full one. All other components are provided via bin kanban. The material number is married with the bin, a barcode and a bin location. If the first box becomes empty, the worker packs it in a return from MiniTec. The second box slides into place and the worker works from the second box. The micro logistician removes the first box and takes it to the central transfer station. From there the empty box goes to the main stores, is refilled and provided to the micro logistician again at the transfer station.

The transport trolley including the special trolleys for the machine housing also come from MiniTec.

Order well in hand, productivity increased

The expansion of the production and accompanying change in the working principle to assembly cells were a complete success for Bizerba, says Jochen Lude: “Due to the fast and flexible implementation of the assembly cells with MiniTec we can manage the order from the USA adequately. Moreover, by changing over to specialised assembly we were able to accelerate the output of slicers per shift considerably. There are now hardly any standstills or backlog phases. This is also due to the improved ergonomics, of course. The tool is now always in the same position. The employee achieves a certain routine. By dividing up the whole work content it is also easier to qualify new personnel, because the scope of work for the individual is no longer so large – they now only have to handle a section of the slicer. This is a major advantage for us in the current situation where we need 25 percent more personnel.”



Production planner Jochen Lude was able to increase production significantly due to the assembly cells



The material flows by kanban control

Due to the positive experiences with MiniTec the production planner is already considering further joint projects. They will mainly concern digitalisation in the assembly, with topics such as the MiniTec SmartAssist worker assistance system and the integration of RFID tags.

Bizerba also plans to successively change its own fixture and toolmaking department over to MiniTec, says Jochen Lude: “We have had very positive experiences with the MiniTec profile system in the current project. It offers an amazingly broad range of design options due to the large number of components. Which is why we will only be using MiniTec in new projects. This also has advantages for simpler stock keeping as a side effect. What is more, we are also more flexible due to the ingenious connectors, which make do without machining. In addition to that there is the know-how of MiniTec and knowing that we have very competent people to hand, who can also supply us with ideas.”



PROTECTIVE ENCLOSURE FOR ELECTRICAL SHIELDING

ACKERMANN Anwendungstechnik & Vorrichtungsbau built a system for checking submarine cables for a customer in Sweden. The system with considerable size was encased in a Faraday cage. Instead of steel, MiniTec aluminium profiles that offer several advantages were used.

A Faraday cage is an envelope closed on all sides made of an electrical conductor (for example, wire mesh or sheet metal), which acts as electrical shielding (EMC). Many of us are familiar with this construction in the context of thunder storms: If lightning strikes a car or aircraft, the persons in the interior are not in danger, because the electrical field strength in the interior

is considerably lower than in the exterior. This also applies in reverse: if an electrical discharge is generated inside a Faraday cage, observers on the outside remain safe.

ACKERMANN Anwendungstechnik & Vorrichtungsbau in Weinstadt (Baden-Württemberg) works (among other things) with Faraday cages as well as

THE MINITEC MODULAR SYSTEM OFFERS A GREAT DEAL OF FLEXIBILITY

test equipment for high-end products up to 550,000 volts. The company recently built a system for checking submarine cables for possible damage for a customer in Sweden. This also had to be encased in a Faraday cage. The objective of the project was to model a shielded test cage, which has a basic disturbance level of <math><1\text{pC}</math>.

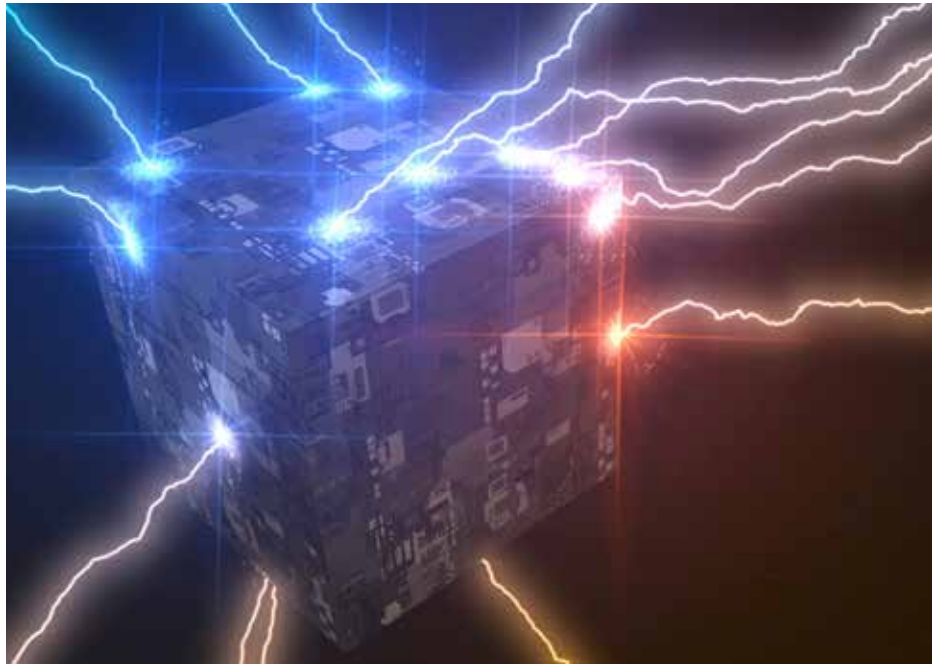
Lighter and more flexibly changeable

While in previous projects, steel was used as the design basis, this time they opted for MiniTec aluminium profiles. There were good reasons for this according to the managing director, Daniel Kurz: "On the one hand, aluminium is lighter than steel. Above



From the MiniTec modular system: XXL protective enclosure for a system for checking submarine cables for possible damage.

Faraday cages provide electrical shielding.



all, however, the MiniTec modular system offers considerably greater flexibility, because the constructions are much easier to change again or extend.“

Accordingly, the managing director recently ordered an enormous size protective enclosure from MiniTec. The length and width are each 13 m, the height of 5 m is also considerable. A fine wire mesh was used for the shielding, not only on the sides but also at the top. The floor was built up of multiple layers, with a 5 mm thick insulation mat and with corrugated metal sheet above it. Within the enclosure an operating room was also provided, as well as separate deep earthing / earth rods.

Realised in a short time

The realisation of the cage by MiniTec occurred with enormous speed – following an initial enquiry in October 2022 and subsequent designs, the order was placed in the same month. The assembly in Sweden took place in the same year and was completed

at the beginning of December – also thanks to the excellent cooperation between the assembly teams of both project partners.

The highly complex test device was initially set up at ACKERMANN, tested extensively and accepted by the end customer. Finally, at the beginning of 2023, the system was delivered to the customer in Sweden, finally assembled in the protective enclosure and prepared for the final acceptance.

The complete test cage was integrated in the whole safety circuit of the test field and accepted by the Swedish TÜV.

A good example of the interaction of processes and the intertwining of industrial branches to produce an unprepossessing product.

MiniTec protection systems are based on the tried and tested modular profile system and can be designed extremely flexibly and individually. The system and machine protection can be exactly adapted to the customer's wishes, to high safety standards as well as visual effect standards.

You can find extensive information on this at www.minitec.de/schutzeinrichtungen





MINIBEES READY FOR THE OFF

Together with the beekeeper “BeeGreat”, MiniTec is making an active effort to stop the insect’s decline. Around two years ago, busy bees moved onto the MiniTec company site and collect nectar for the MiniBee honey. After the winter they are now waiting in the wings for the new season.

A delicate early morning fog and a cloudless blue sky, in which the winter sun rises above the fields in front of the MiniTec branch in Schönenberg-Kübelberg. This would also have been the backdrop that the busy “MiniBees” would enjoy, if it hadn’t been for the icy temperatures, which prevent the in-house honey bees from venturing out in front of their hive entrance. The buds on the willow trees all around the site in the natural landscape in which the MiniTec plant is directly located are on the verge of offering their bright yellow pollen, if it wasn’t for the still looming “March winter”. So until the spring properly starts, the bees must for now wait for a short while. For us a suitable moment to think about the bees and their wrestling with the current climate – and to look back on the past bee season.

Withdrawn in the winter

“From October, the cover remains closed for the bees.” So it says in almost every relevant beekeeping textbook written for our latitude. At this time the feeding should be ended and the laying performance of the queen should decrease gradually – in short, the bees prepare for winter. Many beekeepers still base their operating practice on these “cornerstones” of the season, whose rules, if at all, should be confirmed by exceptions. Yet the voices in beekeeping are increasing who, after five turbulent years in succession, are talking about the exception becoming the rule. Yet what precisely changes for the bees?

Searching for nectar

With an initially very warm April 2022 and then almost continuous “high summer” from May to August, the German Meteorological Service confirms: The ninth “too dry” spring in succession and the “sixth driest” summer since 1881. All in all, a very fitting summary of the bee season 2022. Even though, with some beekeeping skill, a very respectable honey harvest was brought in, due to this continuous good



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



weather period, virtually everything had already faded by the beginning of July and very little was available for insects that depend on nectar. And when the October is 3.5° above the long-term average and from the end of the month with daytime highs still above 20° it is more like a second September, then in November the sun also shines and on the first day of Christmas the bees hum and buzz, as if spring had already arrived, then you can say with confidence: something is happening here.

Spring increasingly earlier

For our honey bees, this means that the feed consumption in autumn no longer reduces significantly due to the increased breeding activity and the winter bees – who are built physiologically for “doing nothing and waiting for the spring” – still have to expend plenty of energy in the autumn on collecting and parental care. For beekeepers this “new situation” means that the season not only on the one hand tends to begin earlier due to an early spring, but also last significantly longer due to an autumn that doesn’t want to stop. Where previously rules of thumb such as “12 kg of feed are sufficient from 1 October” were still valid, some beekeepers with 15 kg no longer lie on the safe side. Depending on the type of bee dwelling, many a beekeeper reaches their capacity limit purely in terms of volume when the honeycombs, wax, bees and all the feed have to fit into the box.



Things turn out differently to expected

And now this February 2023 is the exact opposite of its predecessor: Instead of a warm early spring as in recent years, it remains still for the time being at the hive entrances in our latitudes – as an exception to the exception to the rule, so to say? For the honeybees, a renewed albeit other type of impact: Due to the mild temperatures in December and January, many honey bee colonies have likely taken up their breeding activity again, whereby the core of the breeding nest must have a constant 35°C or so – even if the thermometer outside now drops back down to -10°C again. This results in an increased feed consumption and the risk of something

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

going wrong in what is already the most critical season in the bee calendar, the so-called “Durchlenzung” or spring work period, continues to increase. As a beekeeper you often stand powerless to the side because the quality of the work in the late summer of the previous year now determines success or failure. And especially here it is now seen that

it is increasingly the case that rules of thumb and empirical values can no longer be relied upon and we have to prepare and equip the bees for a larger range of climatic fluctuations.

In short: The colony’s path through the bee year is becoming more volatile, the microclimate and respective year must be dealt with more individually, which makes bee care not only more demanding technically, but also more intensive in terms of time needed. In the long-term, the beekeeping will therefore be forced to reconsider its old ways of working in order to accompany the bees successfully and above all sustainably when dealing with the changing climate conditions.



NEW SALES PARTNER IN SOUTH AFRICA



Dave Cawood (middle) on a visit in the MiniTec headquarters with Sebastian Stein, Benjamin Renno, Sandra Geyer-Altenkirch, Andreas Böhnlein (from left to right, all MiniTec).

With DC Auto-Motion, MiniTec has a further sales partner in South Africa. The company is based near Johannesburg and since it was founded in 2010, it has supplied industrial companies in all kinds of different branches in South Africa and the African continent with linear technology and rotary movement control components. DC Auto-Motion is a distributor of various renowned manufacturers and offers

comprehensive know-how in all the named areas. Apart from the pure supply of products, the company also increasingly supports its customers with tailor-made solutions.

Dave Cawood, founder and Managing Director of DC Auto-Motion, appears definitely pleased about the new partnership: "The MiniTec modular profile system and its diverse accessories complement our product portfolio in an ideal way. In addition, we are also able to realise complete turnkey automation projects for our customers."

MiniTec sales manager Benjamin Renno was similarly positive: "South Africa and the African continent overall have growth significance for us. German and Japanese motor vehicle manufacturers produce in South Africa. Numerous supplier companies have also established themselves in the country. With DC Auto-Motion we have managed to acquire a strong partner and further improve our presence in this growth market."

At the start, DC Auto-Motion already installed an automatic saw to be able to adjust the profiles precisely to the wishes of the customers. Thus equipped, the company wants to increase the market share of MiniTec significantly in this upcoming part of the world.

UK: MORE SPEED IN CONVEYING TECHNOLOGY



An assembly conveyor as an essential part of a continuous handling system.

Bringing parts and components to the right place at the right time, so that they can be machined, assembled or equipped, can be a logistical nightmare, especially when several production lines are involved.

MiniTec UK has developed a conveyor system that meets all the requirements of a European motor vehicle manufacturer. The special conveyor system is designed for the automatic

along a belt for the assembly. The belt is equipped with pegs, which enable our customer to attach their own "nests" for their specific components.

The assembly conveyor is designed as an essential part of a continuous handling system. The length of the assembly conveyor was set at six metres, but it is also available in four and five metres and can also be extended to 12 metres.



15 YEARS' MINITEC SLOVENIA

The MiniTec Slovenia team – bottom right, kneeling Peter Žagar

2022 was a special year for MiniTec Slovenia as the subsidiary celebrated its 15-year existence. Founder and managing director Peter Žagar remembers.

The beginnings of our company go back to 2007, and after the modest initial steps the scope of business grew quickly. We expanded and moved into our present day location in Celje, where we now have 24 employees.

During these years we have built up a considerable customer base, with whom we realise all kinds of different projects, not only in Slovenia but also in Croatia, Serbia, Macedonia and Bosnia and Herzegovina.

High-quality sales and customer services as well as the professional attitude of our employees have been our most important guiding principles for 15 years. But for us, these first 15 are only the beginning!

Our goal is to be a recognised supplier respected by our customers. As well as a good, fair and innovative business partner for our partners and competitors. We are aware of

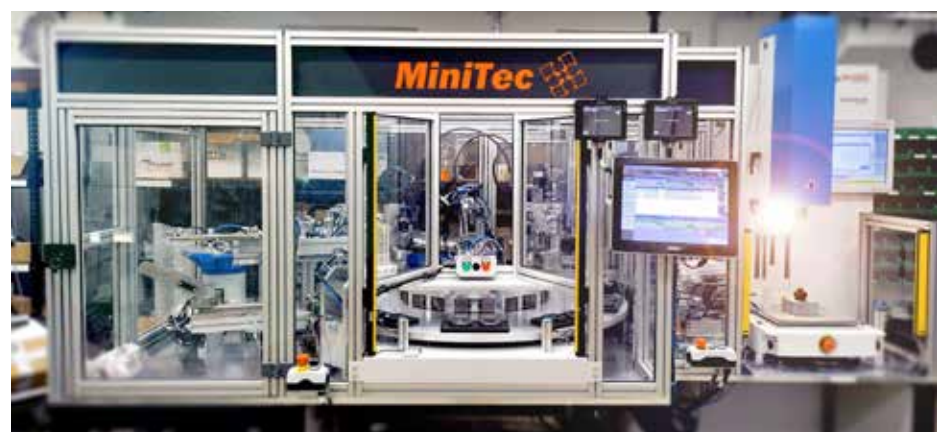
the importance of innovation and the continuous improvement of our work and our sales and production range, which is why we develop long-term partnerships and strive to improve.

Demanding projects

In our many years of work we have acquired plenty of experience and technical knowledge. We can now look back on complex projects, for example, robot spanners, robot soldering, robot cells for milling, automation of the controls and assembly of PCB circuits. For our customers, we have also produced very sophisticated special

machines, such as a line for the assembly and leak testing of light housings, feed equipment for corrugation ribs, a pallet line for the machining of cast aluminium parts and a line with a rotary module with 12 stations for the assembly of gearboxes. We also produce our own applications for vision control systems.

We at MiniTec Slovenia are also proud to always design our development and our progress with an eye to a sustainable effect. With a committed and networked team, which successfully implements the objectives and visions of the company.



Apart from standard solutions, the technicians also realise very sophisticated applications.

SUCCESSFUL CUSTOMER PROJECTS IN TEAMWORK

Even if international supply chains have very much fallen into disrepute in recent years – within MiniTec locations and partners it functions better than ever, for the good of our customers. Two vivid examples of good teamwork were recently provided by for MiniTec Automation in Clarkston, Michigan. A so-called index conveyor had to be implemented for a customer. It was needed for the loading and unloading of steering knuckles. It was necessary to produce the conveyor slats with holes for the system. The holes are scanned

later to control operation, similar to old pianos or musical boxes. To this end, the customer contacted MiniTec Framing Systems in Farmington (New York State), which was pleased to accept the job.

In another project, the cooperation was across the pond. Namely, an FMS roller chain conveyor was needed for a customer who was supplied by MiniTec Spain and which was installed in an enclosure built by MiniTec Automation. In the system, the workpiece outside the housing is first loaded onto the conveyor.

The safety door then opens and the part is moved inside to be measured by a coordinate measuring machine. After completing the measurement, the conveyor belt carries the part back out of the cell to transport it to the next step in the process. The system has a simple control with four buttons.



An index conveyor was produced in cooperation with the USA.

TRAINING FACILITY WITH FRENCH CHIC

Paris commits – an internationally operating industrial company saw things the same way when it came to the design of its new site near Paris. A facility was to be set up in a showroom on which customers could be trained in the provider's screw systems. Emphasis was placed on an elegant design and high-quality workmanship.

MiniTec France accepted the task and designed a turnkey solution for the demanding customer that was impressive. It was based on an FMS line, which was built for the customer together with MiniTec Spain. The around seven metres long and almost two metres wide system is decidedly aesthetic and at the same time meets the functional requirements. The screw systems can be placed on three motor-driven positionable workpiece carriers on each side and the training participants can then be instructed on them. At the official opening of the new site, the customer was also very satisfied with the solution realised.



MiniTec France fitted out a showroom with an FMS line.

VOLLEYBALL IN KENYA



MiniTec supports the Centre for the Promotion of Talent in Nairobi, which enables volleyball players of the Arnold-Jansen School from the slums of Soweto to play sport together and participate in tournaments.

The Saint Arnold Sports Academy (SASA) is a sports club that was especially founded for girls aged 10 to 16 from the slums of Soweto. MiniTec commits itself here regularly, for example, to enable the girls' participation in training camps.

40 sportswomen took part in the last camp and camped in tents for 22 days. The athletes arrived in such large numbers that not all of them could be put up in permanent accommodation. Even the purchase of food during the event was a problem, as the prices are extremely high

for people with low income. MiniTec helped out here too, for which the SASA volleyball academy gave its warm thanks. Both the camps and the balls, shirts, shoes, knee pads and tracksuits are completely funded by MiniTec. The school education is also supported and therefore contributes to enabling a better life for the girls outside of the slums.

PROMOTING SPORT AND SCHOOL

"Thanks to your support, through volleyball our girls have received academic scholarships in various educational facilities (schools, colleges and universities). We would like to use this camp to improve our excellent performances in various competitions, leagues and challenges", their trainer John Sakonyi wrote to MiniTec.

LONG-SERVICE EMPLOYEES AT MINITEC



"I am proud that I was able to successfully help to shape the success story of MiniTec with my professional experience in automation technology."

Thomas Wolf



"I have worked in catalogue dispatch/marketing for 25 years, I love my work and value very much the family-like togetherness."

Heike Knab



"The secret of success is to understand the standpoint of the other."

Holger Weyand

We are pleased to celebrate with our employees who have work anniversaries this quarter and thank them warmly for their longtime support:

- Heike Knab (Marketing): 25 years'
- Karl-Heinz Rauch (Engineering): 25 years'
- Rudi Reiland (Quality management): 25 years'
- Thomas Wolf (Electrical design): 20 years'
- Silke Schlotthauer (Warehouse): 15 years'
- Holger Weyand (Quality management): 15 years'
- Thilo Emich (Packaging): 15 years'
- Dirk Mayer (Field service): 15 years'
- Arno Weber (Engineering): 10 years'
- Stephan Magdlung (Field service): 5 years'
- Axel Neumüller (Engineering): 5 years'

FIELD SERVICE MEETING: FOCUS ON THE CUSTOMERS

Not only trade fairs are experiencing a revival after the corona pandemic – in-person meetings are also finally everyday events again: At the end of January, the MiniTec customer consultants met in the company's headquarters in Schöenberg-Kübelberg, to discuss current projects, product and market development as well as future strategies at a field service meeting. As ever, the focus was on the requirements, wishes and needs of the customers. All participants were pleased to meet and communicate in person, which no digital meeting can replicate.



Two days in the company headquarters with many topics.



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Plan your individual modules yourself – whether as a practical addition or a complete interior fitout. The flexible structure of our system enables fast design, which can be changed at any time thanks to our intelligent connection technology.

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