



Connect

01

March
2024



INNOVATIVE JOINING TECHNOLOGY

Hybrid joints for permanent joining

___ page 18



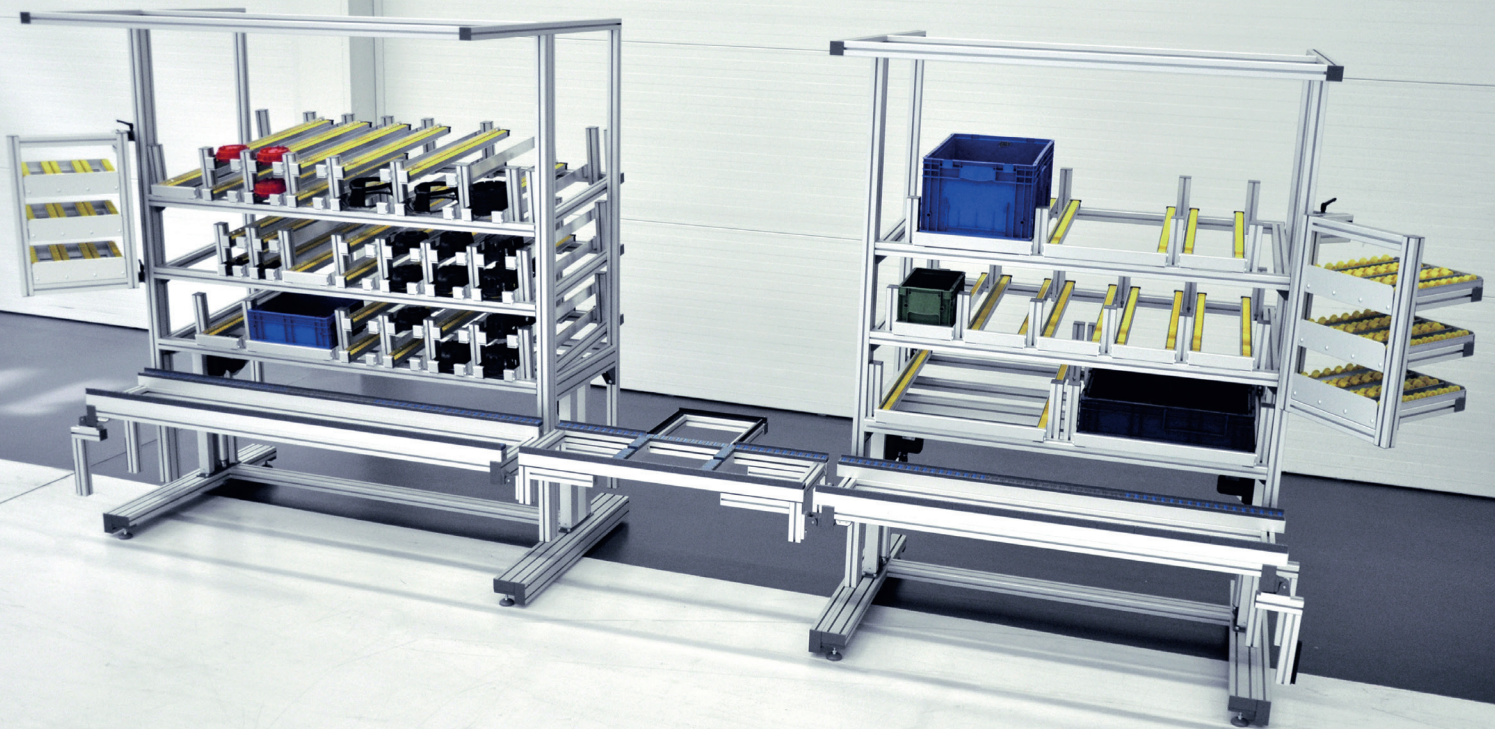
HEIGHT ADJUSTMENTS AND LIFTING COLUMNS

Better ergonomics in the workplace

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SMART LEARNING BY ASSISTANCE SYSTEM

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Simply more productive: **Optimize material flow with MiniTec**

When it comes to speed in production and assembly, your internal material flow plays a central role. Any problems here have a direct impact on throughput times and productivity.

MiniTec supports you in decisively optimizing your material flow. The first step is to analyze your existing processes. On this basis, we then create a customized concept and implement it together with you. This starts with the ergonomic design of the workstations and ranges from Kanban

systems to suitable conveyor technology. Your benefits: Shorter throughput times, lower costs, more efficiency!

**When will you discover
the art of simplicity?**





DEAR READERS,

Innovations drive our economy. Many MiniTec products and solutions are based on clever ideas. Yet we do not rest on our innovative developments, but instead work continuously on improvements and new solutions. To do this, we also form cooperations, for example, with universities and partners in industry.

In a research project with MiniTec and multiple partners, one topic, for example, was the future of joining. The efficient joining of metal fasteners on thermoplastics has many advantages that can now be implemented in practice – the areas of application are manifold. In this issue you will find an article on this interesting topic from page 18.

We will also be presenting this new technology to you at our InHouse trade fair on 25 April 2024 at our company headquarters in Schönenberg-Kübelberg. Other highlights will be our new production cells and the current Version 2.9 of the MiniTec SmartAssist worker assistance system.

As a result of the large interest last year, we will also again be setting up an exhibition area on the topic of vehicle fitout. From emergency services to campers, many customers use our modular system.

These are only a few of the topics (more about these on page 6) that await you in April. You should not wait too long to register, as last year we had to limit the number of visitors due to the huge demand.

We look forward to your interest and your visit!

A handwritten signature in blue ink, appearing to read 'A. Böhnlein'. The signature is fluid and cursive.

Yours sincerely

Andreas Böhnlein

Director of Engineering

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A progress report.



HYBRID JOINTS FOR PERMANENT JOINING

The future of joining was a topic in a research project with MiniTec and multiple partners. The efficient joining of metal fasteners on thermoplastics has many advantages that can now be implemented in practice.



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Height adjustment can provide better ergonomics in many work areas and thus increase productivity too. MiniTec offers different solutions for this.

The Series M electrical height adjustment is new.

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MINITEC INVITES YOU TO ATTEND ITS INHOUSE AND FUTURE DAY

MiniTec InHouse comes around again:

The popular in-house trade fair will again be held at the company's headquarters in Schönenberg-Kübelberg on 25 April 2024. This year in combination with the Future Day for junior employees and trainees.



Further info and free registration:



www.minitec.de/inhouse-2024



www.minitec.de/minitec-future-day

Since 2010, MiniTec has held its "InHouse" trade fair at which the diverse possible uses of the profile and linear system are demonstrated by practical solutions. On 25 April 2024, from 9.00 am, we will be opening the gates of our headquarters in Schönenberg-Kübelberg in the Western Palatinate region to our customers and anyone interested.

Everything in view

Alongside various established and new products such as our production cells and the current Version 2.9 of our MiniTec SmartAssist worker assistance system, we will be presenting innovative technologies for connection techniques (welding and soldering) and hybrid joining technology as well as fitout options for campers and solutions for fire services. We will, of course, also be showing many examples of material flow and assembly technology solutions.

A look behind the scenes

In spite of the wealth of information and products, the InHouse also provides the opportunity for a tour of the company and to hold technical discussions with the specialists in various fields and to make new contacts.

New: Future Day – Training Day

Numerous opportunities are opened up for qualified young people at MiniTec: Whether in the technical environment as a mechatronics technician, industrial mechanic, cutting machine operator or technical product designer or in the commercial area. Talented young people can find out what the occupations entail at the Future Day from 14:00 to 17:00. It is possible to find out about the different training routes offered by MiniTec. Straight from the horse's mouth, as the current trainees will be actively involved and will pass on their experiences directly to anyone interested.

FLUX-FREE SOLDERING AT THE TUBE

For MiniTec, its attendance at the Tube trade fair (Hall 06, Stand 6H11) from 15 to 19 April 2024 will be all about customised soldering machines. As an example, visitors to the stand will find a compact soldering machine with inductive heating.



What MiniTec soldering machines have in common is that they all operate with flux-free methods. These are not only good for health and the environment, but also have many other advantages. MiniTec offers machines

COMPLETE SOLUTIONS FOR FLUX-FREE SOLDERING

with inductive heating and those that operate according to the diffusion or resistance soldering principle. Which is the more suitable for the respective task mainly depends on the geometry of the workpieces.

High quality, fast cycle times

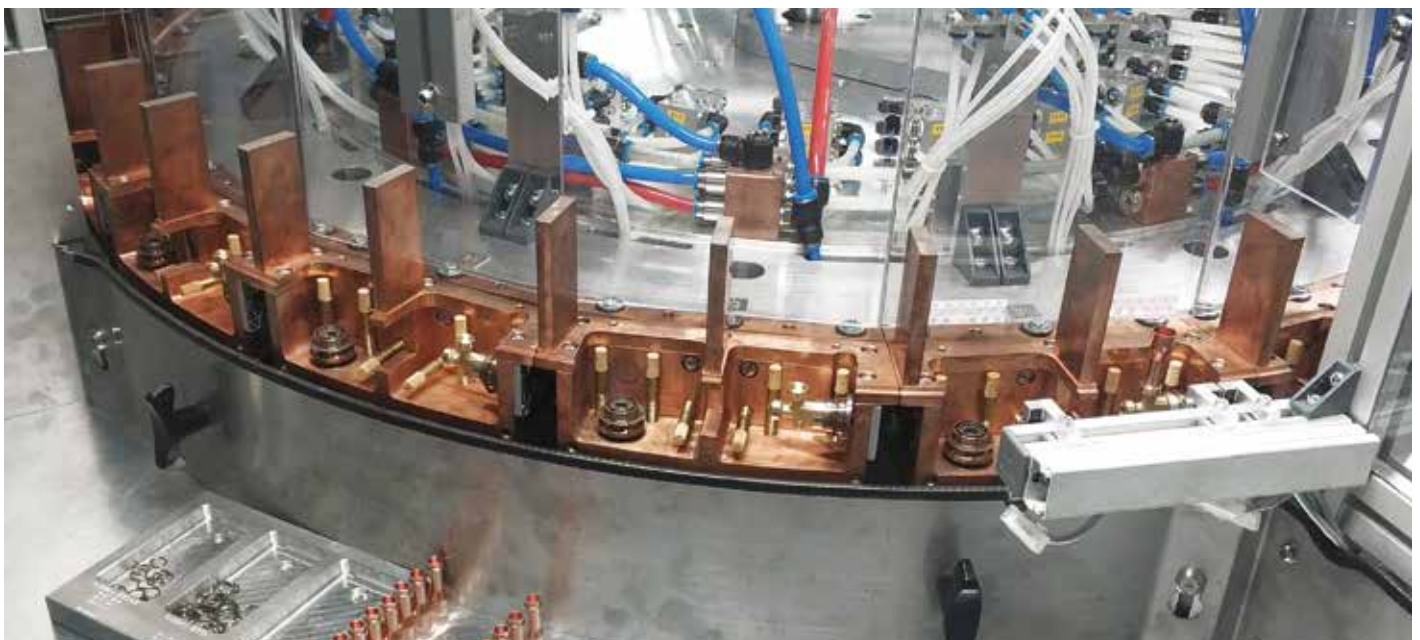
In addition to the methods, visitors also find out how the soldering tasks with MiniTec machines can be partly or completely automated. And how they therefore achieve a uniformly high quality and fast cycle times. Here customers profit from the generally high automation know-how of the MiniTec experts. In a fully automatic installation, for example, the workpiece can be guided by a rotary indexing table through the complete machining process – from the assembly to the actual soldering process through to the cooling. The solder is also added automatically. Robots or multiaxis systems are used for the handling.

One stop solution

As a full-service provider, MiniTec also supplies the machine control and software – with maximum user-friendliness. Part-specific soldering recipes can be saved and simply retrieved. Job-specific production is also possible. At the start of the job, a barcode is used to determine the quantity of workpieces to be produced with which quality. The corresponding recipe is retrieved automatically and the process is started. The project is signed out automatically as soon as the required quantity is reached.



Further info:
www.minitec.de/tube24



MINITEC AT TRADE FAIRS IN THE FIRST HALF OF 2024

In 2024, MiniTec will again be represented at the most important trade fairs of its industries and at its own events at which it will present its solutions.

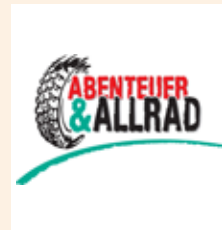


RETTmobil 2024, Fulda

International leading exhibition for rescue and mobility. We will be presenting solutions for the fitout of vehicles or the equipping of buildings

based on the MiniTec modular system.

15 to 17 May 2024, Messe Galerie Fulda



Abenteuer & Allrad, Bad Kissingen

This trade fair is all about individual vehicle fitout.

MiniTec presents the possibilities for campers based on the MiniTec aluminium profile system.

30 May to 2 June 2024, Off-Road

exhibition site, Bad Kissingen



Tube 2024, Düsseldorf

At the Tube trade fair, MiniTec will be presenting solutions for customised welding and soldering machines.

15 to 19 April 2024, Messe Düsseldorf, Hall 06 on Stand 6H11



MiniTec InHouse

Our in-house trade fair in 2023 was the most successful one to date. This year, we want to continue this momentum with everything worth

knowing about new products and solutions, technical talks, practical demonstrations and tours of the premises.

25 April 2024, MiniTec company headquarters in Schönenberg-Kübelberg



New: MiniTec Future Day – Training Day, with plenty of information for everyone who is interested in an apprenticeship or a “dual” (sandwich) degree course with the practical part at MiniTec.

25 April 2024, MiniTec company headquarters in Schönenberg-Kübelberg



112 rescue, Dortmund

Trade fair for fire safety, rescue and civil defence. MiniTec will be presenting its firefighting technology industry solution for the fitout of vehicles or

the equipping of buildings and workshops based on the modular system.

5 to 8 June 2024, Messe Dortmund



Intersolar, Munich

Worldwide leading trade fair for the solar industry. MiniTec has longstanding expertise as a systems producer for photovoltaics. Visit our stand and find

out everything about our modular and flexible production solutions for PV modules.

18 to 19 June 2024, Messe Munich

An up-to-date overview of all trade fairs can be found at www.minitec.de/service/messen-events



NEW COMPANY FILM: MINITEC AT A GLANCE

New products, new solutions, new systems: The MiniTec range of products and services has expanded significantly in recent years. Reason enough to make a new company film, so that customers, partners and anyone interested can get a quick overview of all that “The art of simplicity” entails. The film is already available to watch on the MiniTec website and different versions of it will be used at trade fairs, in presentations and on social media.



Click here for the film:
www.minitec.de/service/videos

NEW: LABELLING THE PRODUCT STATUS



With immediate effect, the items on the MiniTec website have a marking indicating whether they are new, due to discontinue or already discontinued. If a product has only limited availability or is no longer available at all and there is a suitable alternative, this is also shown so that the user can select it instead. Equally, if they have any questions, they can contact their customer consultant directly from the product by email form.

The new feature offers customers improved transparency about the life cycle of products and opens up faster options for them to act in case of discontinuing or discontinued items.

You can find examples here:

www.minitec.de/produkt/fusstuetze-eco-esd

www.minitec.de/produkt/schraubverbindung-45-st

www.minitec.de/produkt/abdeckkappe-270x19-alu



NEU Neues Produkt

! Dieses Produkt ist bald nicht mehr verfügbar

Sofern es ein Nachfolgeprodukt gibt, wird dieses weiter unten angezeigt. Bei Fragen steht Ihnen Ihr Kundenberater gerne zur Verfügung.

! Dieses Produkt ist nicht mehr verfügbar

Sofern es ein Nachfolgeprodukt gibt, wird dieses weiter unten angezeigt. Bei Fragen steht Ihnen Ihr Kundenberater gerne zur Verfügung.

[Zum Nachfolgeprodukt →](#)



SMART LEARNING BY ASSISTANCE SYSTEM

MiniTec SmartAssist is used in completely different areas. Apart from workshops for disabled people, especially in industry, there are many useful applications such as manual assembly or order picking. The knife manufacturer Martor uses the assistance system for the qualification of its employees. A progress report.

Martor is an internationally leading partner for safe cutting solutions. For over 80 years, the family business in Solingen has been combining quality with innovation to produce premium cutting tools for industrial and professional purposes. Today the Martor brand is present in more than 70 countries worldwide through its partners and traders.

The Martor safety knives are as diverse as the customers' requirements: Around 300 different types are on offer. They are all assembled at the headquarters in Solingen – by hand. Some knives are very simple and have only three parts, others are significantly more complex.

Manual assembly as instructed

In order for the assembly to function smoothly, Martor invests much time and money in training its employees. Until now, this was done by issuing the employee with assembly instructions and a team leader showed them the individual steps. The employee then tried to carry out the assembly by themselves. Their boss looked over their shoulder continuously and gave them tips. This procedure proved to be not particularly efficient and also no longer contemporary. The employee frequently became nervous and the line manager was unable to do their actual tasks during the training phases.

MiniTec SmartAssist for employee qualification

Martor became attentive as the offer came from MiniTec to function as a pilot customer for the new MiniTec SmartAssist assistance system. It quickly agreed to the proposal and had an appropriate table designed. Its central purpose consists of the interactive training of employees in knife assembly. However, it is not in a separate training room, but instead is located together with the "normal" workstations in the middle of the assembly area.

To familiarise itself with the assistance system, in the first step Martor focussed on a selected product as a "test object", the Secupro 625. This is a squeeze-grip knife with extensive features such as a lever for releasing the blade, fully-automatic blade retraction and convenient blade changing. The high-end tool is made

MINITEC SMARTASSIST PROVIDES STRUCTURED GUIDANCE THROUGH THE ASSEMBLY PROCESS

up of 16 components in total, some of which are joined together in complicated assembly steps.

However, in future, other knives are also to be trained on the assistance system, says Kevin Kowalsky, production shift supervisor at Martor and at the same time, the person in charge of the MiniTec SmartAssist project: "For example, we



An ergonomic assembly workstation and the interactive assistance system form a functioning unit at Martor.

want to also use it to assemble the MegaSafe. Or our latest model, the 610 XDR. And the plan is to extend it to include other models – all our products with many parts, which have somewhat more complex work operations."

Use of different modules

The assistance modules used include a touchscreen, a button and pick-to-light light strips, partly with intervention monitoring sensors. The individual work steps are displayed to the worker with corresponding tools (texts, arrows and images) via the monitor. They can confirm completed tasks directly on the screen or via the buzzer and move on to the next step.



The worker is guided through the assembly process step-by-step via the touchscreen.



With MiniTec SmartAssist, Kevin Kowalsky explores new avenues for employee qualification.

The various components of the respective knife are in boxes, which are arranged within reach of the worker. The pick-to-light light strips signal to them the compartment into which they must reach next. The intervention monitoring enables the system to identify whether they have done so and acknowledges this internally, so that the next assembly step is displayed. The sensor is not activated for certain components, in which case the employee presses the buzzer to signal removal of the component and to move to the next step. 22 such pick-to-light modules are in use at Martor. Several of the components are assembled to form assemblies in advance. Therefore, 16 components and thus work steps remain for the assembly at the MiniTec SmartAssist table.

For the future, the plan is to integrate videos into the screen instructions, which is possible with the new version 2.9 and higher. Kowalsky said: "Especially when the work steps become somewhat more complex, images are often insufficient. Such as hooking in spring eyes. Or how to avoid overstretching the springs. In the future, we want to support all this with videos."

Autonomous learning with top results

The training process with MiniTec SmartAssist is now completely different. Instead of being under the permanent observation of their line manager, the employee now operates fully autonomously. They sit alone at the training table, without an overseer, and simply begin. The system guides them through the assembly process in a structured way, showing them each individual step. They therefore learn, stress-free and single-handedly, how to assemble the knife and their team leader has more time to spend on other tasks.

"The result is therefore a classic win-win situation. And last but not least, Martor also saves an enormous amount of time and money", emphasised Kowalsky.

The system is also very popular with the employees, he said: "We assigned a woman without previous knowledge the task of assembling the complex 625 knife and said, simply give it a try – and it worked outstandingly well straight away!" His colleague was able to complete the work very well and quickly and was absolutely enthralled by it. It is also a practical result for the company that she learned the assembly so quickly, as she was able to be assigned to the right workstation almost an hour later. And she did so as if she had never done anything else. "The user-friendliness is very good, even for people who do not sit in the production every day. As we occasionally also have new employees in other areas, for example, in the sales department. And we have also assigned them to the task and they also coped extremely well. The feedback was very positive."

Creating simple instructions in the editor

MiniTec SmartAssist enables the company to create the instructions itself with the Editor. At Martor, Kevin Kowalsky takes care of this task, in the future two colleagues will assist him. The experiences with the tool to date have been entirely good, Kowalsky said: "I create the recipes not only at the workstation but also via the Teamviewer access. At the beginning there was a short familiarisation phase in which I learned the meaning and use of the various controls. But once you get started, it is very intuitive and self-explanatory." This concerns all areas – regardless of whether it is pasting and manipulating images or the configuration of the pick-to-light. "Here we can use

EMPLOYEES LEARN AND ASSEMBLE FULLY AUTONOMOUSLY



Kevin Kowalsky takes care of creating the instructions in the Editor.

two positions in each of the stations. The colours can also be changed. Equally, it is also possible to set whether it is lit continuously or should flash, the variety is very large.”

Kowalsky also evaluated the Editor very positively in general: “I definitely see it as an advantage that we can create the instructions ourselves. We are autonomous and far more flexible. Also, for example, if there is a change to a knife component, we can make this ourselves, quickly and easily.”

Assisted training as the future basis

Due to its good experiences, Martor wants to use the system in future as the key element of its qualification matrix. In it, each employee is assessed as to whether they can assemble a product, package it or whether they can work at or on a machines. That is to say, their know-how status. Here the idea is to equip two to three tables with MiniTec SmartAssist and to have the qualification matrix run on them. If an employee has learned the assembly of a specific knife with the assistance system, they are then given a corresponding entry.

Many ideas for further expansion

Besides use in the training environment, Martor can also envisage using the assistance system for quality assurance, Kevin Kowalsky said: “For example, after completion the 625 knife must be placed in the SLC with the screw facing upwards so that the employee can check whether it is in the knife. If this check were to take place via a camera, this would be an advantage. Such a quality check would also be useful for the final functional test.

This is done by operating the knife three times and smoothing it on a cutting mat. The checker extends the blade, positions it and looks to see whether the blade retraction works. Here it would be great if a sensor would check whether the employee has done this or not. In addition, the assistance



What you see is what you get: The view in the Editor is already very much like the subsequent display in the player

system could then also be used to document when a knife fails, i.e. is NOK – combined with the instruction to place it in a corresponding container.”

The project participants at Martor also already have numerous other ideas and input on how the assistance system can be expanded in future to include other functions and features. And thus fall on sympathetic ears at MiniTec Smart Solutions or rather the developers, as this is an effect that MiniTec wanted to achieve among pilot customers.

Conclusion: Easy training, higher quality

Based on the experiences in the pilot, Kowalsky comes to an extremely positive conclusion: “MiniTec SmartAssist is a very useful system for industrial companies. It is an asset and simplification for Martor and it makes sure that fewer errors happen. By the way, it also improves our image. Major customers who have visited us have frequently approvingly remarked on our use of such modern instruments for the training and qualification of our employees – and thus for assuring quality.”



MINITEC SMARTASSIST WITH IMPORTANT ENHANCEMENTS

The MiniTec SmartAssist worker assistance system now provides even better support in assembly and intralogistics. Version 2.9 enables the integration of videos and external tasks.



For many years, MiniTec has offered individual, ergonomically optimised workplaces and workstations for assembly, order picking and other areas. These are supplemented with MiniTec SmartAssist. The worker assistance system provides support in assembly processes as well as order picking and instructing employees. Version 2.9 now offers interesting new features: mp4 format videos can now also be used in the display module. In this way, the understandability of instructions for the worker can naturally be improved significantly.

The “External tasks” module is a completely new function block. It allows external processes to be integrated into a MiniTec SmartAssist recipe. The result of this program execution can be

evaluated by the assistance system and subsequent steps configured for success or failure. The module is therefore not limited to a specific function, but instead can be used extremely flexibly.

For example, the activation of a printer can be integrated at a defined point within assembly instructions, which creates an individual label including barcode for the component that has just been assembled. When the label is ready, corresponding feedback is sent to the system so that the next step of the instructions can begin. Another application example is the triggering of test software, which performs certain functional tests on the assembled component and returns the result (OK/NOK).

Use in MiniTec preassembly

The advantages of the assistance system will also be used in future by MiniTec itself. The preassembly department is predestined for its use. This is where individual parts are assembled by hand to form larger components. Especially for more complex products, there are often only a few skilled personnel who have complete command of the assembly. A Quattro linear unit is used as a pilot object. It is a complete linear component for use in all kinds of different designs. It is made up of 68 individual parts in total, some of which require sophisticated operations to assemble them into a functioning whole.

Among other things, the newest features of MiniTec SmartAssist are used for the recipe, i.e. the use of videos in the screen instructions as well as the integration of external tasks. The latter involves a checking process to determine whether the correct screws have been used.

Anyone interested can see the system live and in practical use at the InHouse on 25 April.

FURTHER INFO:

www.minitec.de/minitec-smartassist



HEIGHT ADJUSTMENTS AND LIFTING COLUMNS

Height adjustment can provide better ergonomics in many work areas and thus increase productivity too. MiniTec offers different solutions for this. The Series M electrical height adjustment is new and has numerous special features.

Time and again, studies verify just how important ergonomics in the workplace is. The possibility of individual adjustment of the working height is very important here, as it can prevent fatigue and even physical harm. The MiniTec modular system offers numerous possibilities for making workstations and other constructions vertically adjustable. Various electrical, hydraulic, pneumatic and manual lift systems are available to choose from.

Electrical height adjustment

Electrical height adjustment is the most convenient. Here the working height can be individually adjusted at the press of a button – quickly, easily and as often as you like. MiniTec offers two different lifting column types: The 1G electrical lift systems and the new series M. This has several special features: There are grooves on all four sides – which is advantageous if you want to fasten something on them. Furthermore, these systems are inherently electrically conductive. With the MiniTec ESD components, establishing ESD suitability is therefore child's play. And they have a comparatively low installation height.

The new electric lift system is available with stroke lengths of 300 or 400 mm. Depending on the requirement and load, up to three lifting columns can be synchronised and therefore raised and lowered simultaneously at the press of a button. This option can be extended to up to twelve columns.

The areas of use are tables in the workshop or office, as well as larger work levels, complete packaging, assembly and production installations and also material provisioning or other fixtures. Even transport trolleys can be equipped with it, by using rechargeable batteries for the power supply.

The alternatives: hydraulic, pneumatic or manual

Hydraulic height adjustment is advisable wherever a power supply is not available. It is therefore frequently used especially for mobile applications. The height adjustment is made with a fold-down crank handle– and for all lifting columns simultaneously, as they are connected to the pump via a hydraulic hose.

Another option is pneumatic height adjustment. It enables a certain degree of convenience and is comparatively inexpensive. The height is adjusted via a lever, similar to the familiar mechanism used for office chairs. Pneumatic lift systems are more suitable for lighter constructions, as their load capacity is moderate.

The simplest and cheapest option is manual height adjustment. In this case the lifting and lowering or adjustment is made by undoing the screw connections.



Electrical height adjustment:
New Series M with numerous special features.

FIND OUT MORE:

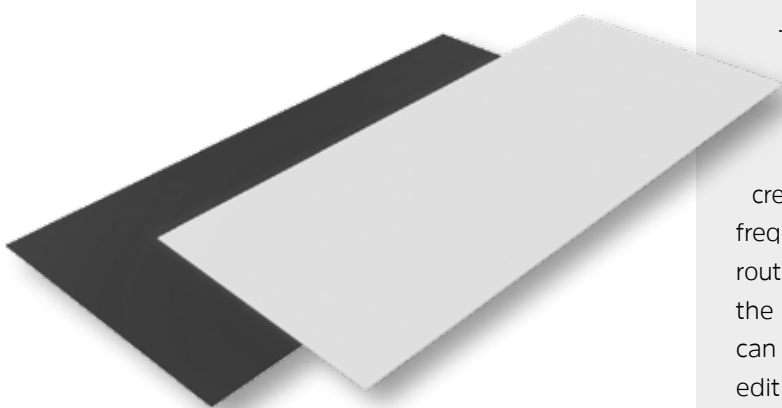
www.minitec.de/hoehenverstellungen



PU BOARDS PROVIDE DOUBLE PROTECTION

MiniTec work tables are used in many areas, for example, in manual assembly. To protect sensitive components from damage while they are being handled, it is advisable to attach a protective board made of polyurethane (PU). The rubber-like material is elastic and dampens the impact if components fall. It also protects, for example, against scratches during normal work. Conversely, a PU board also protects the table itself against impacts and all kinds of damage – and does so permanently, as the material has a high wear resistance with a hardness of 75° Shore. It is resistant to impacts, etc. and has excellent abrasion properties. Its temperature range extends from -30°C to +80°C.

MiniTec offers PU boards in black and grey. They are 4 mm thick and can be individually cut to size – up to a maximum size of 3030 x 980 mm. Fastening the board on the tabletop is very easy and is done using double-sided adhesive tape (ideally ordered at the same time).



More info and order:

www.minitec.de/produkt/pu-board-4-mm-grey



www.minitec.de/produkt/pu-board-4-mm-black

DESIGN EASILY LIKE PROFESSIONALS



With iCAD Assembler, MiniTec offers a convenient and free design table suitable for both beginners and professionals and with which the number of expensive CAD licences in the company can be reduced significantly. It ensures significant cost and time savings in the design and helps to avoid errors in the planning process.

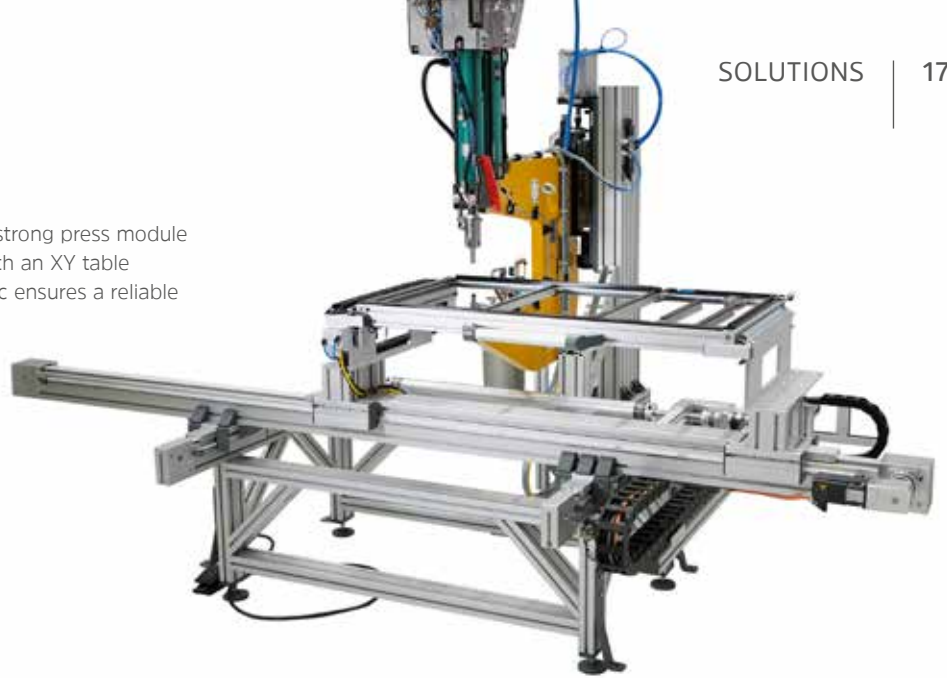
The standalone program can be used to design complete installations quickly and straightforwardly, as it includes the complete library of the MiniTec profile and linear technology product range. The software creates parts lists automatically and contains configurators for frequent applications. The program uses automated planning routines to calculate, design, change and list parts and checks the plausibility of the inputs. With iCAD Assembler, the user can combine components via insertion points (anchors) and edit them directly on the screen. A 3D preview allows the design to be viewed by selecting the snap point to be used.

Further info and free download:

www.minitec.de/icad-assembler



The type TZ machine tongs (yellow) and a 50 kN strong press module (green) from Tox Pressotechnik in combination with an XY table including baseframe and safety fence from MiniTec ensures a reliable clinching process for galvanised metal sheets.



RELIABLE CLINCHING OF GALVANISED METAL SHEETS

The collaboration between the machine building company Tox Pressotechnik and MiniTec paid off: By using efficient machine tongs with press module from Tox in combination with a special XY table from MiniTec, a customer in the electrical industry is able to clinch galvanised metal sheets in a reliable process. A major plus: the operator does not have to change any tools.

“We recommend clinching for the connection of galvanised metal sheets”, explained Marco Unger, field service employee at Tox Pressotechnik in the Swabian town of Weingarten. “The zinc layer can be incorporated in the joining process, reglvanising as in spot welding is unnecessary and no corrosion site results”, he explained. An end customer wanted to optimise their processes and precisely specified the machining sequences: The worker places the component on an XY table, leaves the monitored danger zone and presses the start button. The PLC now starts the joining program. The table is first moved into the required position. The compensating slide then moves the tongs upwards so that the die is positioned with positive fit under the metal sheet. The punch of the Tox machine tongs is aligned from above

and joins the metal sheets. The tongs are then moved downwards and the table is aligned for the next joining point.

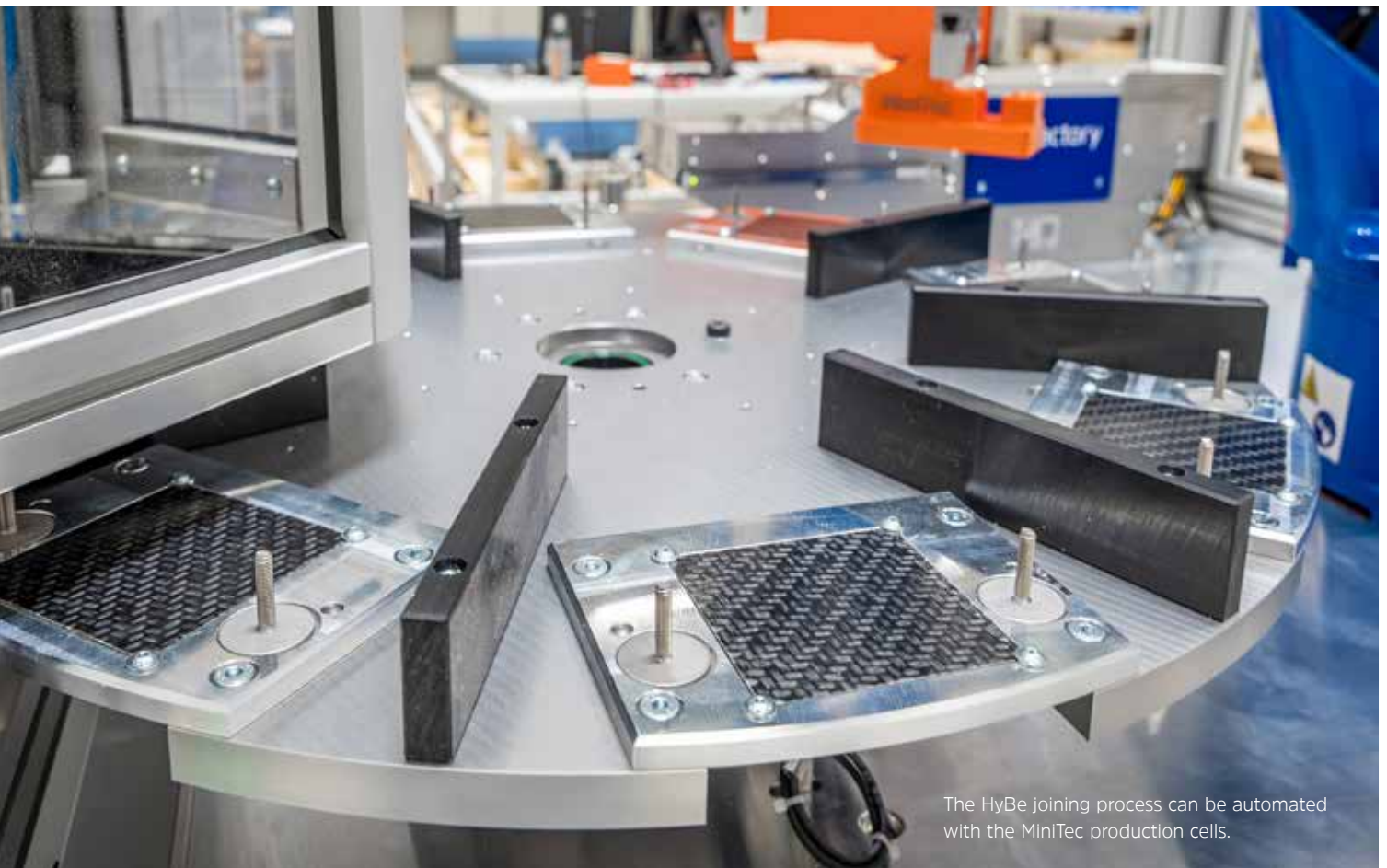
CLINCHING WITHOUT TOOL CHANGE

One stop solution

“In this case, two experts in their respective field have developed a one-stop complete solution”, is how Frank Stattaus, customer consultant at MiniTec in the Rhineland-Palatinate town of Schönenberg-Kübelberg, describes the cooperation. Tox supplied type TZ 07 machine tongs with compensating slide and internal control for the clinching. The

TOX RZK power package is used as the drive. In this project, MiniTec’s role is that of general contractor and it developed an XY table with flexible baseframe. A safety fence with light curtain ensures safety. A higher-level control controls the start-up and movement of the various components and joining points.

The combined solution has proven to be worthwhile for the end customer. The metal sheets can be clinched reliably and permanently in the process, without corrosion problems occurring later. Components with 14 different sizes and a varying number of clinch points are currently joined on the machine. Furthermore, the end customer has become more flexible: The machine can be quickly and easily programmed for new components.



The HyBe joining process can be automated with the MiniTec production cells.

HYBRID JOINTS FOR PERMANENT JOINING

The future of joining was a topic in a research project with MiniTec and multiple partners. The efficient joining of metal fasteners on thermoplastics has many advantages that can now be implemented in practice.

Connections between metal and fibre-reinforced thermoplastic composites (FR TPC) are highly relevant in numerous applications in industry, mobility and sport. Advanced jointing techniques and optimised connection approaches are necessary in order to use the inherent properties of these materials efficiently. Unlike techniques such as drilling or

clinching, positive firmly bonded thermal joining allows a connection without damaging the fibres in the FR TPC. A screw connection on the fasteners is used, for example, for the integration of the FR TPC lightweight structure with the thermally joined fasteners in a higher-level assembly. In this way, an extraordinary strength can be

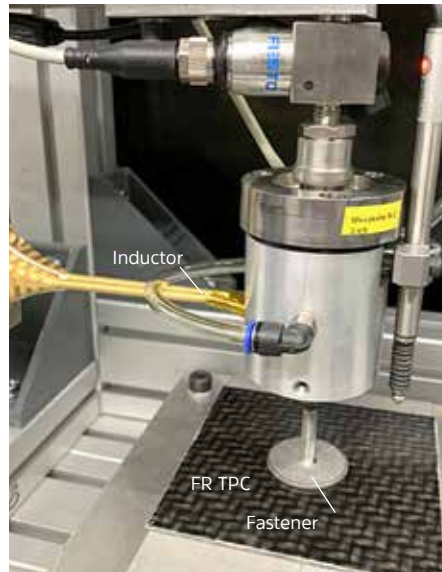
achieved within a few seconds in a fully-automated process environment. Another advantage: The fasteners can be easily detached from the FR TPC by heating and reattached if necessary. This is particularly advantageous for recycling and repair.

Combination of established technologies

A unique, innovative industry-oriented research project was created by combining technologies that have been established on the market for decades but until now have had nothing in common. The starting point for the so-called HyBe project (automated hybrid joint technology for the joining of metal fasteners on FR TPC) and the new type of joining technology is the combination of adhesive systems from continuous coil coating with metallic fasteners, (fibre reinforced) thermoplastics and induction welding.

In continuous (metal) coil coating, an organic coating is applied to so-called coils. This is done in a continuous process for coating one or both surfaces of steel and aluminium sheets. The resulting material is a composite of a metallic substrate material and an organic coating.

The usual coating materials are paints, plastic powder, functional coatings and plastic films. Adhesive systems for permanent connection of the plastics with the metal are used for the latter two coatings. The reactive coatings are storage-stable for twelve months and longer, before the joining with plastics takes place. In coil coating, industrial plants that completely fill industrial



sheds continuously coat metal strips by the kilometre – the adhesive systems optimised for this process are very

FUTURE MATERIAL COMBINATIONS NEED NEW JOINING METHODS

efficient and effective to use. However, until now there has been no other application for these adhesives, as special parameters are required for the application and curing process.

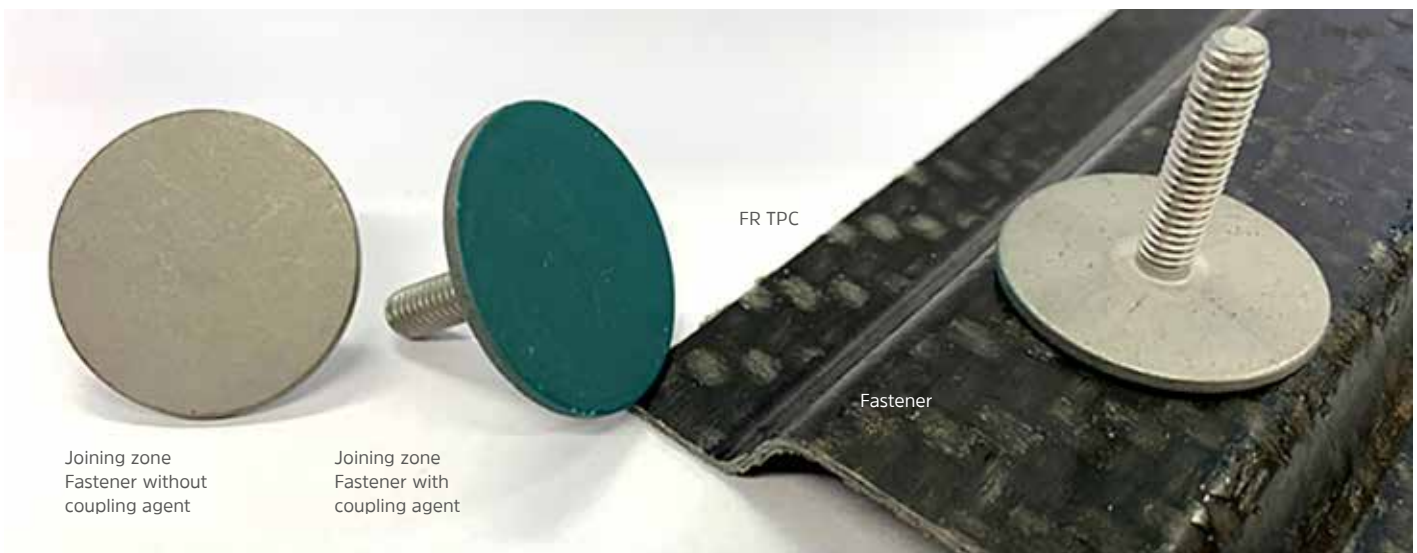
Durable joint

All kinds of different technologies can already be used for metallic fasteners such as screws, bolts, bushings or other anchoring systems, to make a permanent connection with almost any material without welding, drilling or screwing. Among other things, single or multicomponent, pasty or liquid, inert or reactive adhesives are currently used for this.

To this end, the adhesives are either mixed and applied by the user, which requires correct handling of the adhesives (possibly dangerous goods) and appropriate equipment for mixing an application on the user side. Or the adhesive is already preapplied on the metallic elements and must be cooled along the supply chain and in the warehouse before the highly limited shelf life is reached.

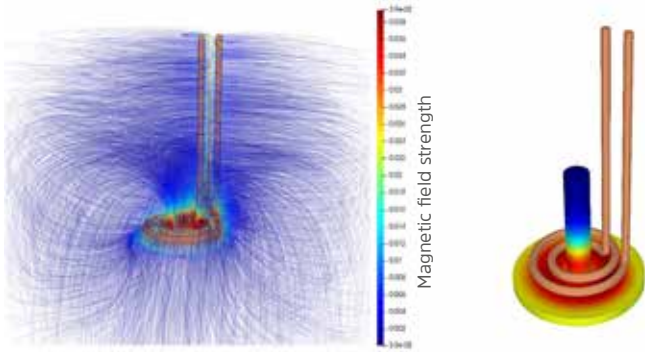
Lightweight and easily recyclable

Apart from their fast workability and low weight, fibre-reinforced thermoplastics (FR TPC; fibre-reinforced thermoplastic composites) are also characterised by good recyclability and they are thus an important alternative to duroplastic TPC. These properties qualify the FR TPC for a large number of lightweight applications, including in the automotive industry.



Joining zone
Fastener without
coupling agent

Joining zone
Fastener with
coupling agent



Visualisation of alternating electromagnetic field

Temperature distribution as a result of the alternating electromagnetic field

One possibility for optimising the properties of FR TPC components in application terms is to combine them with metals. In this way, for example, metallic load-bearing elements can be used in FR TPC components by using suitable hybrid joining methods. In particular, hybrid joints that allow homogeneous force application lead to higher overall stability of the component at a higher level, which in turn enables the total weight to be reduced as a result of synergy effects.

Inductive welding or sealing method

Induction welding or sealing is a form of welding in which electromagnetic induction is used for controlled and precise heating of the workpiece. An induction coil, which is fed with high-frequency and possibly pulsed current, produces a high-frequency electromagnetic field which acts on an electrically conductive or ferromagnetic workpiece.

In an electrically conductive workpiece, the main heating effect is resistance heating, which is based on induced currents, so-called eddy currents. Compared to non-electrical methods, inductive heating offers large advantages for inductive welding or sealing processes – the energy is only introduced to the conductive layer or conductive component; and the required process heat is only generated there. This means that potentially disruptive thermal effects in the surrounding and adjacent materials can be avoided. At the same time, the energy is dosed in a controlled way, which also means that surplus residual heat cannot have a negative effect on the component after the actual sealing process.

Project partners and project goal

The HyBe project was a research project focussed on the development of a fully-automatic joining process for fast and quality-assured connection of metallic fasteners on FR TPC components. To achieve this the four key technologies

named above are combined. The objective of this project was to develop an enabling technology, which enables automated, digitalised and energy-efficient inductive hybrid joining. In addition to the process development, the characterisation of the hybrid joints based on material examples and studies on their long-term resistance also played an important role in the HyBe project. The process time, energy input and adhesives were further optimised during the course of the project. Through the close collaboration of the project partners IVW, MiniTec, Himmelwerk and H.B. Fuller/Kömmerling, an innovative new hybrid joining method was produced, which can be applied across different industries.

The possible areas of use are manifold and range from production cells to automation solutions in general and robots directly in assembly lines through to joints in ship hulls.



THE PROJECT PARTNERS:

IVW – Leibniz Institut für Verbundwerkstoffe

The IVW was mainly responsible for the project planning and concept and carried out the testing and parameter optimisation in its laboratories.

*At **MiniTec** the concept for an automated production cell, including all the peripherals was worked out and a prototype for fully-automatic series production with process and quality monitoring was developed and set up.*

*Himmelwerk **designed and adjusted** the high-frequency generator and induction coil.*

***H.B. Fuller/Kömmerling** optimised the coil coating adhesives for use as a precoating for the metallic fasteners and carried out some of the long-term weathering tests.*

The HyBe project was funded under the funding code (KK5329301FF1) of the Central Innovation Program for SMEs (ZIM) of the Federal Ministry of Economics and Climate Protection (BMWK) - R&D cooperation projects.

70 ESD WORKSTATIONS FOR MAINTENANCE WORK

A major customer who operates in a technically sophisticated and complex environment recently ordered 70 electrically height-adjustable workstations from MiniTec at which maintenance work is carried out for different components.

As the workpieces are electrically sensitive components, all workstations must have reliable ESD protection. MiniTec designs are well prepared for this by default, as they are already assembled to be conductive due to the Power-lock fasteners used. In addition, conductive mounting angles are used with appropriate connection technology. In addition, various special components are used. The tables are thus equipped with hinged ESD feet (for levelling out



Configured precisely to the customer's requirements: ESD workstations from MiniTec.

unevenness in the floor), an ESD tabletop, an ESD-capable (charge dissipating) polycarbonate panel at the back and an ESD shelf. Furthermore, diverse other attachments are installed, such as a monitor support, a maintenance unit with compressed air gun and a spiral hose. There is also a power supply duct



with 230V earthed Schuko sockets, special 24 and 110V sockets and an integrated 6-way earthing box.

Everything is perfectly thought through and optimised for the customer's requirements. This customer has already opted for MiniTec for their workstations for many years.

PARCEL BOX WITH PROFILE



Tindox, the "parcel letterbox" based on the MiniTec modular system.

Relaxed shopping on the internet is only possible if the goods are also easily delivered to you at home. Ideally to the front door, even if you are not at home. With Tindox this is easy and safe. The parcel box works in the same way as a letterbox. The delivery service places the parcel in the tray without having

to open a flap or door first. Whether on rollers or with circular bases, both provide the parcel box with a firmly fixed position.

The parcel box can be equipped with an optional motion detector. As soon as a parcel is inserted, a message can be triggered in various ways. Depending on the configuration, a lamp can be switched on or a text message is sent to a mobile phone.

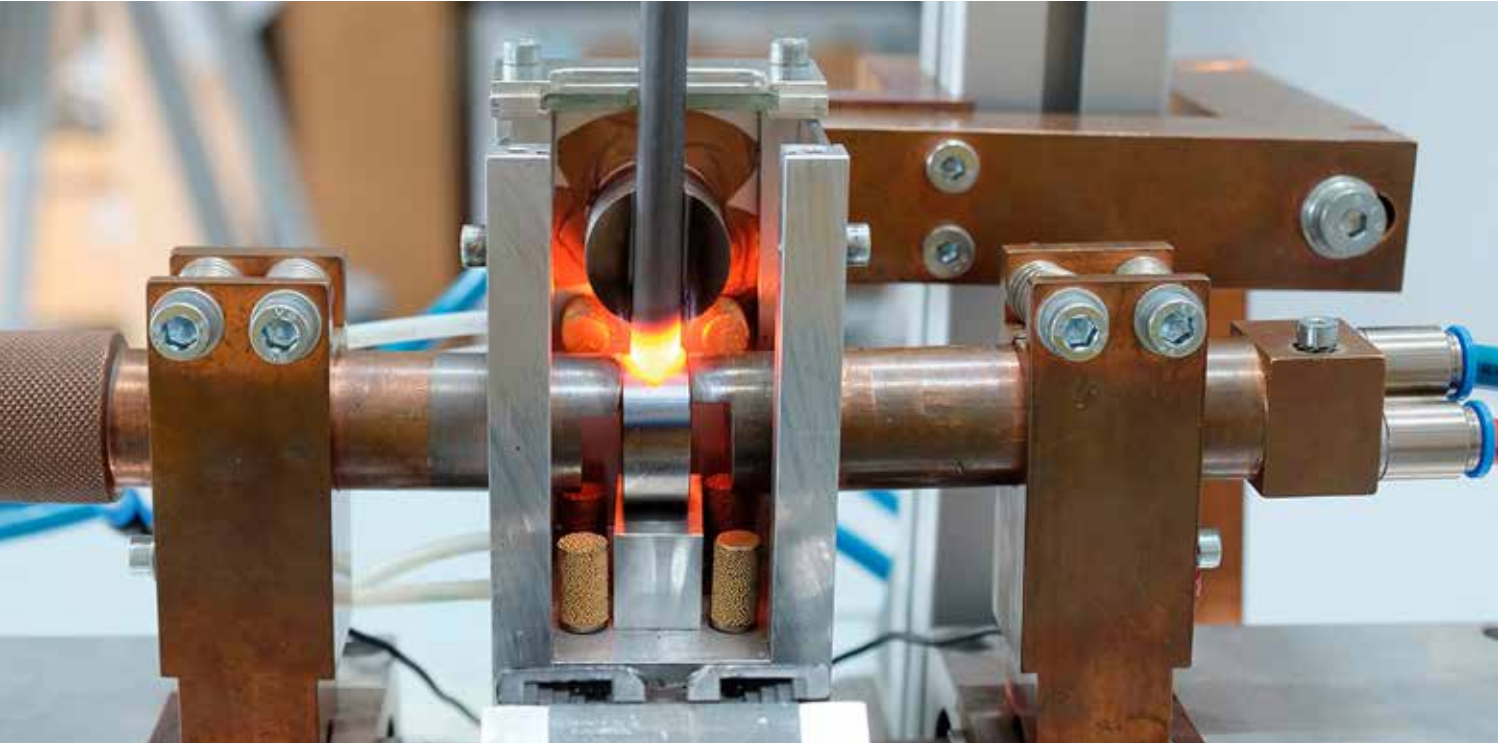
The frame structure of the parcel box is made of aluminium. This makes the parcel box particularly durable and maintenance-free and rust is therefore not an issue. The walls are made of HPL panels, which are known for their impact, scratch and abrasion resistance.

The components are taken from the MiniTec modular system.

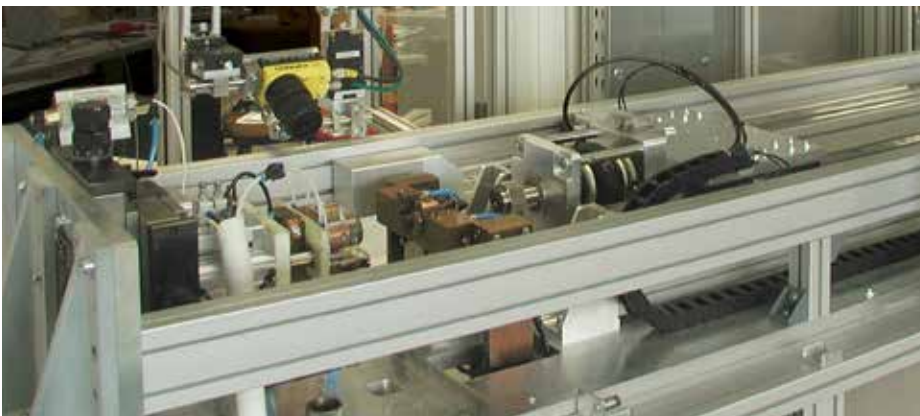


Further info: info@tindox.de

FLUX-FREE SOLDERING



Flux-free soldering of hardmetal-steel joints has many advantages. This is very clear, particularly in the manufacture of hardmetal drill bits.



Equipment for the diffusion soldering of hardmetal drill bits.

The development of semi and fully-automatic workstations for shielding gas soldering continues to gain momentum at MiniTec. The flux-free method offers important advantages for many branches of industry, for example, for the manufacturers of hardmetal drill bits.

Process description

The principle of shielding gas soldering with local heating can be explained as follows: The components to be soldered are heated to the soldering temperature in a shielding gas chamber, by resistance or induction heating in argon 4.6, nitrogen 4.6 or forming

gas with 5% hydrogen. If a solder is deposited near a gap, it is melted and flows into the soldering gap due to the capillary effect.

This distinguishes soldering with local heating from oven soldering or furnace brazing. While in oven soldering/furnace brazing the soldering/brazing process for the production of quality joints can only occur in an extremely dry and pure shielding gas, in the case of local heating a shielding gas with 100 vpm contaminants is also used. With such a shielding gas, quality soldering/brazing of Cr-Ni steels can be achieved with solders made of copper, copper-silver, copper-silver-zinc, copper-manganese-cobalt, copper-manganese-nickel, copper-nickel, silver-manganese, nickel-chromium and iron-nickel-chromium.

Diffusion soldering of hardmetal-steel joints

Diffusion soldering of hardmetal-steel joints is an innovative joining technology with resistance heating. With this joining method, preferably hardmetal drill bits with a solid carbide tip are produced without addition of a solder. The solder is produced at the soldering temperature by the interaction of the solder partners by forming an eutectic. The bottom left image shows equipment for diffusion soldering of the hardmetal drill bits. With this machine, hardmetal drill bits with a diameter of 5 mm to 16 mm can be quality-soldered without the addition of a solder.

Avoiding decarburisation and carburisation

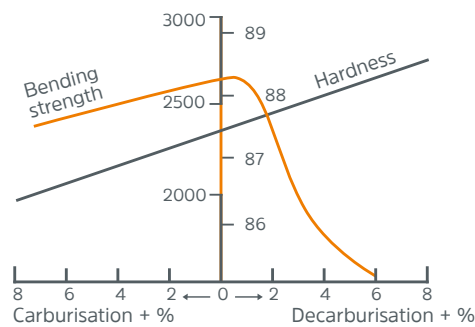
Two phenomena can be observed in the soldering of hardmetal-steel joints. If the carbon fraction in the joint is increased at the joining temperature (carburisation) then graphite is produced in the fusion zone and the joint fails early. If the carbon fraction is reduced (decarburisation), the dreaded η phase occurs, which also leads to premature fracturing of the joint on loading.

The diagram shows the effect of decarburisation and carburisation on the bending strength. It can be clearly seen that the effect of decarburisation is more serious than that of carburisation. The bending strength reduces more with decarburisation than with carburisation. The occurrence of graphite formation and the undesirable η phase in the fusion zone is prevented by suitable technological measures.

Process advantages

Shielding gas soldering with local heating has the following advantages compared to traditional torch soldering/brazing:

- Shorter joining times
- Lower power requirement as only the joint is heated
- Low thermal loading of the components and no warping of bent tubes after soldering



Bending strength of cobalt alloyed hardmetals depending on the carbon balance Schedler, W. Hartmetall für den Praktiker, VDI-Verlag GmbH, Düsseldorf 1988, ISBN 3-18-400803-7

- Complicated joining tasks (e.g. austenite-ferrite connectors, hardmetal-steel joints without the addition of a solder) can be solved.
- Cost-effective equipment for multiple soldering by using PLC or industrial PC for simple equipment operation
- Recording and evaluation of parameters while soldering for self-testing of the soldering equipment with regard to the quality of the solder connection

Summary

The flux-free shielding gas soldering with local heating presented is not only an effective joining method but is also an environmentally-friendly method for solving complicated joining tasks. Effectiveness and environmental awareness can therefore be combined in modern industrial production.



Soldered hardmetal drill bit with solid carbide tip.



INNOVATIVE JOINING TECHNOLOGY

With flux-free soldering and welding, an innovative joining technology is available from MiniTec, which is particularly applicable where components with small dimensions are used. Direct electrical resistance heating or induction heating are always used as the heating methods. The special soldering and welding equipment can be used for gas-shielded flux-free soldering or diffusion welding of components made of steel, Cr/Ni steel, copper, brass or hardmetal, either of the same materials or in combination.

AROUND THE WORLD BY TINY HOUSE ON WHEELS / PART 2



The camper project of Sonja and Klaus is on the home stretch. In the last Connect we reported on an old army truck with MiniTec components to create a campervan fit for a world trip. Find out what happened next after the work in-house at MiniTec .

If you're going to have an adventure, then do it right! After retiring, Sonja and Klaus want to travel around the world in a motorhome – not in a purchased finished vehicle, but in one that they have fitted out themselves. After the groundwork had been completed in the MiniTec production sheds, in November 2023, the vehicle then went to a campervan service provider which installed the heating. This has a total output of four kilowatts and consists of one component for the living space and a second one for the cellar space in the rear area. The same firm then also milled the wood panels for the table, the kitchen unit, the benches and other furniture elements.

Special firms for electrics and water supply

The next stop was a special firm that took care of the electrics. Klaus said: "It involved the complete power supply for the cab. This started with the installation of two large batteries, each weighing 56 kg and with several kW output. Eight solar modules were mounted on the roof. Two frequency inverters and several converters were added. While the vehicle is moving, these receive electricity from the generator for charging the batteries. If necessary, the electrics in the cab also supply the truck's starter battery with electricity, if it is too weak."

The work continued with details such as openings for the water pipes and for the air supply to the heaters. Some of the MiniTec frames also had to be anchored on the walls for the subsequent water fitout – partly in confined conditions. The vehicle was then taken to another specialist for the fitting out of the water supply.

Live presentation at the InHouse

The "homelike topics" included a kitchen unit with electric cooker and fridge and power sockets. The sanitary area with fans and cable ducts for the dry toilet were next and the external lighting, efficient USB sockets and three water pumps – one for freshwater, one for rinsing water and one for shower water.

There is still plenty of other work to be done in the next few weeks. Whether the assembly of the frame for the flooring and bench, installation of the shower tray, the attachment of wood panels or installation of the indirect lighting. The two aim to have their long-distance travel truck largely completed by the InHouse on 25 April so that it will be on view to visitors.



More info on Instagram: [FrankenOnTheWay](#)



The complex energy supply.



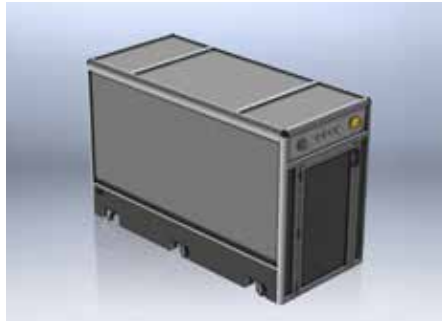
The kitchen unit is taking shape.



Installation of the water system.

SAFETY COMES FIRST

MiniTec France is also a guarantor for complex and unusual projects. The most recent order is for an installation for the security check in a railway station in Paris. Together with the customer, a device was developed on the basis of the MiniTec modular system that is to be installed in the Gare du Nord in Paris. The special installation is to be used to disinfect plastic containers. This will be used as part of security checks of passengers in the Eurostar train, which travels



MiniTec France develops a safety system for the Gare du Nord railway station in Paris.

from Paris to London. A world first, it disinfects the containers with a series

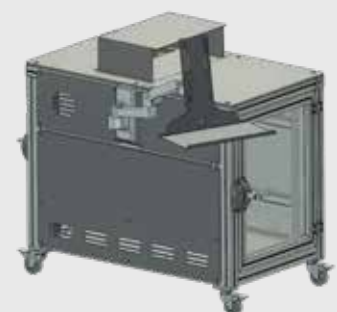
of UV disinfection lamps, which cleans particles by up to 99.99%.

TEST CABINETS FOR SWEDEN

MiniTec is represented in Sweden by its partner company Aratron. The company based near Stockholm supplies the Swedish production industry with high-quality mechanical and electromechanical components

and modules. Aratron sees itself as a complete supplier and supports its customers in every aspect, from the idea through to the finished solution. With its own production and customised adaptation and assembly, Aratron ensures efficient and high-quality processing of customer orders.

Interesting projects are consistently created with the help of the MiniTec modular system. For example, a setup with MiniTec products was recently implemented for a customer specialised in electronic test cabinets. Parts of a competitor have been used until now. True to "The art of simplicity" slogan, the test cabinets were quickly designed and built and the customer was so satisfied with this solution that further orders followed.



The Swedish partner opts for the MiniTec modular system for the construction of test cabinets.

The models show the top and bottom layout of the cabinet.

MINITEC TAKES OVER SCHULZ FÖRDERTECHNIK

MiniTec has acquired Schulz Fördertechnik GmbH in Waldmohr. This opens up new conveyor system opportunities and access to attractive markets.

For almost 30 years, Schulz Fördertechnik GmbH has been operating in the conveying components and systems segment. The company based in Waldmohr/Rhineland-Palatinate focuses on the supply and installation of conveyor belts and the design of individual conveyor systems with steel and stainless steel frames. While looking for a suitable business succession, they turned to MiniTec a good year ago. After a thorough comparison of the Schulz range of products and services with its own portfolio, the MiniTec management decided to respond to the enquiry positively and to take over Schulz Fördertechnik GmbH with effect from 1/1/2024.

Extended portfolio and new industries

There were several reasons in favour of this step. For example, Schulz has also been supplying customers in the food and pharmaceutical sectors for many years – industries that MiniTec could only service to a limited extent to date due to the particular hygiene requirements, said Managing Director Sandra Geyer-Altenkirch: “In this environment, stainless steel is more suitable than aluminium. Through the acquisition, we are therefore expanding our range of industries to include extremely interesting target groups.” However, she also sees important synergy effects in general for the MiniTec conveying technology products and services: “The Schulz range extends from all kinds of different

conveyor belts to diverse conveying systems. We clearly benefit from the longstanding know-how acquired here. On the other hand, we can contribute our automation expertise.”

Apart from the system construction advantages, interesting prospects also result for MiniTec with regard to products and services. For example, all kinds of different conveyor belts can be implemented and installed to customer specifications at short notice thanks to the extensive inventory.

The company name “Schulz Fördertechnik GmbH” and its headquarters in Waldmohr will remain for the time being. The longstanding Managing Director, Wolfgang Wasemann, will also retain this role and will share the management of the company with Sandra Geyer-Altenkirch as Co-Managing Director. He considers the fact that he and his company now belong to MiniTec as the ideal solution: “With its know-how, range of products and services and its internationality, MiniTec offers



Schulz Fördertechnik is now part of the MiniTec group of companies with Wolfgang Wasemann and Managing Director Sandra Geyer-Altenkirch.

top prospects for our customers and employees.” Sandra Geyer-Altenkirch added: “With the takeover of Schulz Fördertechnik, significantly extended product and solution opportunities result for MiniTec as well as access to new markets. We look forward to our new colleagues and a successful shared future!”



The Waldmohrer company is specialised in conveyor systems with steel and stainless steel frames.

GERMANY'S ORDER OF MERIT FOR BERNHARD BAUER



The Rhineland Palatinate Minister of Economic Affairs, Daniela Schmitt, presented the Cross of the Order of Merit of the Federal Republic of Germany to Bernhard Bauer.

On 31 January 2024, Rhineland-Palatinate Minister of Economic Affairs, Daniela Schmitt, presented the Cross of the Order of Merit of the Federal Republic of Germany to Bernhard Bauer, founder and long-time Managing Director of MiniTec.

Bernhard Bauer founded MiniTec in 1986 in its present day location in Schönenberg-Kübelberg in the Western Palatinate region and developed the company continuously into what is now a leading and internationally operating technology and machine building company. MiniTec had already received the entrepreneur prize for “innovative SMEs” and “attractive employer” prize in the past. The company is also one of the Hidden Champions of Rhineland-Palatinate, as verified by a “Hidden Champions in Rhineland-Palatinate” study of the SME research centre (FZM) of Trier University.

For the entrepreneur Bernhard Bauer, the success of the company was never his sole focus, the people and social cooperation were also always important to him. He founded diverse social and cultural initiatives and funds to support children and young people and for the integration of refugees, low-qualified workers and people with disabilities in the job market. His commitment extends far beyond his home region, among other things, he took on sponsorships for schools in Nairobi. To this end, he and his wife Sonja set up the Sonja-und-Bernhard-Bauer-Stiftung many years ago.

Regionally and internationally committed

Bernhard Bauer has already received many awards for his work: He was made an honorary citizen of his municipality of residence, Schönenberg-Kübelberg, and received the Western Palatinate award of the Verein Zukunftsregion Westpfalz for his life's work.

In her eulogy, Minister Schmitt emphasised: “With his outstanding commitment and social initiatives, Bernhard Bauer has campaigned for our society beyond the region, at times even internationally”. And added: “He stands for entrepreneurship that accepts responsibility and does a great deal for society as a whole.”

The Cross of the Order of Merit is awarded to citizens for very special political, socio-economic and intellectual services to the Federal Republic of Germany. It is the highest tribute awarded by the Federal Republic for services to the common good.



Minister for Economic Affairs Daniela Schmitt (left) with Sonja and Bernhard Bauer at the presentation of the award in Mainz.

HEALTHILY THROUGH THE WORKING DAY

Skill shortage and no end in sight. One of the most important solutions is vocational training. Each year, MiniTec not only takes on trainees but also invests in their vocational training and their well-being too. These also include dates such as the trainees' health day.

"Health day – physical checkup – workshops – surprise" was the timetable for the trainees' health day that took place in the company's headquarters in January, in cooperation with a health insurance fund and other experts. All trainees were invited to attend.

Team building in the "escape room"

Everyone knows how important teamwork is in the company. It can also be learned and improved! The idea of the escape room is for the topic to be experienced in an interesting and exciting way. By combining, calculating, estimating and trying out, the participants solved all kinds of

different movement tasks and earned the escape of the others. The experts were there as the "codekeepers", who also help out occasionally so that a sense of achievement was guaranteed.

Brain Fit workshop

Who hasn't experienced the situation? Engrossed in the formulation of a message or in a difficult task. In between an email arrives, then a phone call and a question from the boss. Your thoughts are suddenly no longer on your original task. Special exercises can help to restore your concentration. Our trainees were astounded at what is possible.



Fruit and vegetables should always be on the menu.

Chilling out differently!

Which stress type am I? The participants of another workshop found this out. The relationship between physical wellbeing and individual performance was also pointed out. As the basic requirement for a healthy life is frequently forgotten in stressful everyday life. Changing between tension and relaxation phases. The return to short rest phases and independent reactivation of our performance potential are therefore important topics.

The programme was also supplemented with a recovery check (heart rate variability), physical checkup and an individual consultation for the participants.

Enjoyment should also get its fair share. To this end, smoothies were prepared – by the trainees themselves. They received many tips for this from a nutritional expert.



Learning in a more relaxed atmosphere, the trainees also experienced this on the health day.

VISIT BY THE AKADEMIE DER SAARWIRTSCHAFT

MiniTec has been working with the ASW for many years. The Akademie der Saarwirtschaft (ASW) offers courses in business management, mechanical engineering, business information systems and business administration and engineering. The three-year bachelor

(BA) degree course is characterised by its “dual” (sandwich course) concept with alternating theoretical and practical phases. For the students, the practical periods are an integral part of their course. This also includes a visit to companies such as MiniTec.



Frank Stattaus, Area Sales Manager and Product Manager SmartSolutions (centre) gives an overview of the company and its products.

In November, more than 30 mechanical engineering students visited MiniTec for a tour. After a short talk about the company, the visitors were guided through the works in several groups and were therefore able to find out about the different areas of work “live”. Among other things, the programme was supplemented with a presentation of the new MiniTec SmartAssist worker assistance system.



MiniTec Managing Director Sandra Geyer-Altenkirch (right) also took time for the visit.

The lecturer in work science at the ASW, Jens Kihm, knows that the visits are popular with his students. The event is also important for MiniTec, as it is always looking for talented people. You can't beat a look at the real world in practice!

THANK YOU LETTER FROM AFRICA

Anyone who makes donations and supports campaigns is naturally pleased to receive feedback on their commitment. MiniTec received such feedback from Kenya at the beginning of the year. MiniTec has been supporting the Saint Arnold Sports Academy (SASA) there for several years. It is a sports club that was especially founded for girls aged 10 to 16 who are from the slums of Soweto.

MiniTec commits itself here regularly, for example, to enable the girls' participation in training camps. This often means large financial problems. Most families cannot afford the costs for transport, accommodation and sport clothing. MiniTec provides support here, among other things, for which it receives many thanks from the SASA Volleyball Academy.



LONG-SERVICE EMPLOYEES AT MINITEC



"For 25 years, I have been responsible for the quality of our products and the performance of our organisation. Our successes make me proud and are only possible in an environment such as the one that exists at MiniTec."

Bernd Hoffmann



"Thanks to my interesting and varied job in field service, it feels like the 20 years at MiniTec have flown by."

Frank Stattaus



"At MiniTec I particularly like the informal environment with short decision-making paths."

Benjamin Reinhardt

We are pleased to celebrate with our employees who have work anniversaries this quarter and thank them very warmly for their many years of support and loyalty to the company:

- Reiner Krück (Automation): 30 years
- Alexander Thome (Operations scheduling): 30 years
- Bernd Hoffmann (Management representative): 25 years
- Peter Müller (Systems engineering): 25 years
- Frank Feick (Preassembly): 20 years
- Thomas Gärtner (Engineering/training manager): 20 years
- Michael Häßel (Assembly): 20 years
- Thomas Heinrich (Incoming goods Waldmohr): 20 years
- Johann Schmidt (Preassembly): 20 years
- Frank Stattaus (Field service): 20 years
- Katrin Fell (Quality management): 15 years
- Marcel Morbe (Warehouse): 15 years
- Christian Pfaff (Head of control cabinet construction): 15 years
- Livia Galla (Purchasing): 10 years
- Jessica Rosa Kitto (Project management): 10 years
- Oliver Schulze (Warehouse): 10 years
- Galina Barleben (Administration): 5 years
- Benjamin Reinhardt (Purchasing): 5 years
- Beate Zeuke (Packaging): 5 years

CONNECT READER SURVEY



Click here for the survey:

www.minitec.de/ReaderSurvey2024



Dear Readers,

The "Connect" appeared for the first time at the end of 2020. Since then, registered readers have received the magazine free of charge four times a year. The editorial team makes every effort to find interesting, informative and even entertaining content for each issue and to present it attractively.

Readers' feedback, their opinion, is, of course, an important criterion for this. Indeed the most important criterion there is! We would therefore be pleased if you take part in this reader survey and send us your opinion by 30 April.

It will only take a few minutes and your commitment is worthwhile:

The first 50 submissions will receive a MiniTec tape measure.





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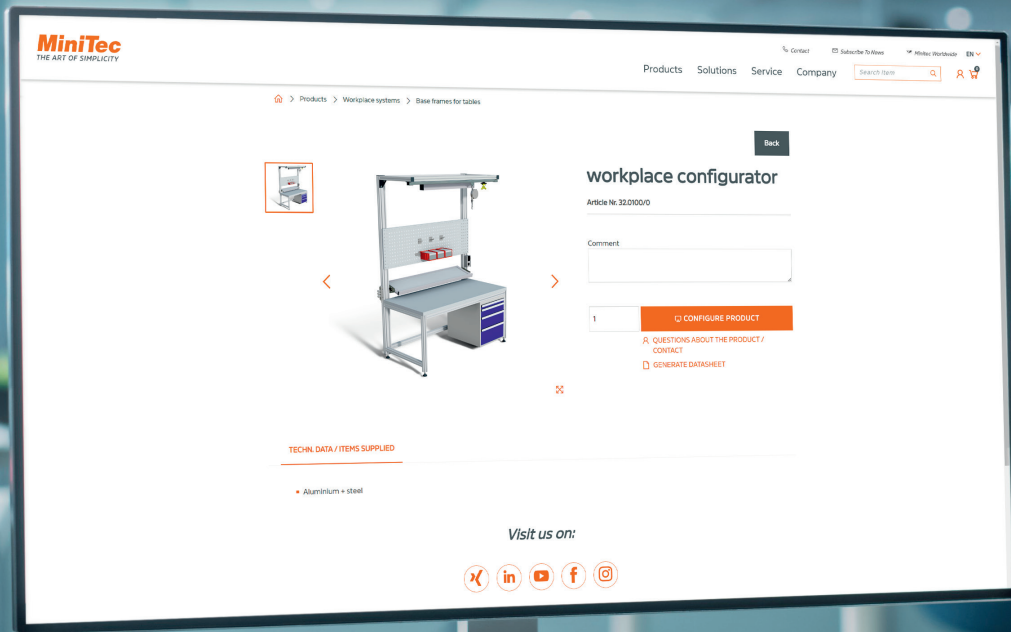
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Reach your goal more easily: **The workstation configurator**

The **MiniTec** modular system offers great flexibility for customizing workstations. Whether height adjustment, gantry structure, lighting, tool holding plates, base cabinets or other add-on parts - the possibilities are virtually unlimited.

To make it easier for you to find "your" workstation in view of the wide range of options, a convenient configurator is available for you on our website. This guides you step by step through the configuration process. You don't need any product knowledge, but can concentrate fully on your requirements and wishes!

Once your workstation has been configured, simply place it in the shopping cart and request it. A

summary in PDF format and the corresponding CAD drawing are automatically available to you. And to save you even more time, previous configurations can be requested again at any time.

**When will you discover
the art of simplicity?**

www.minitec.de/en/product/workplace-configurator

