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be top

MAGAZINE OF THE FRIEDHELM LOH GROUP

THREE DIGITAL TWINS

TO TACKLE TOMORROW'S PRODUCTION NEEDS

How can we achieve a quantum leap on the road to smart production? Three digital twins are key, and so is their integration into ecosystems that ensure end-to-end data consistency.

The big picture

Dear readers,

We are currently all preoccupied with a large number of questions. What does the future hold? How can our company come through the crisis? There are new, unexpected developments on an almost daily basis.

We need to reposition ourselves in many areas. The war in Ukraine has placed supply chains under further pressure and requires us to offer a new kind of flexibility for global business practices. There is a new urgency to expand power grids and cut energy consumption. Action is also needed when it comes to the digital transformation.

What should take priority, though? What is most important and most pressing? The challenges we face cannot be taken in isolation. They are all connected, and digitalization will help us meet them. After almost a decade of Industry 4.0, however, large sections of industry are still only just getting started with the digital transformation of factories. There is so much yet to be done.

This calls for an understanding of overarching ecosystems – the big picture in the industrial context. Only if we make use of these ecosystems and network them intelligently can we talk about smart manufacturing and work together to make it happen. In this issue of be top, we show you how Rittal, Eplan, Cideon and German Edge Cloud are linking the three key ecosystems for smart production – automation, products and production.

The companies of the Friedhelm Loh Group will help you with their respective domain knowledge. Eplan and Rittal are working with panel builders and switchgear/machine manufacturers to advance the development of the digital twin of machines and systems (automation), and are enabling the data to be used at an operational level. Cideon is improving digital continuity in the digital product twin context with its CAD/CAM, PDM/PLM and product configuration expertise. German Edge Cloud is using this data to speed up system networking and visualise processes in the form of a digital production twin. IIoT-assisted production management with the ONCITE Digital Production System then makes manufacturing smarter.

Stahlo is demonstrating how supply chains for green steel can become smarter, too, by using carbon tracking throughout the supply chain. Last but not least, LKH is also helping to optimise entire value chains with its specialist plastics expertise.

Read on and allow yourself to be inspired!

Kind regards,

Prof. Friedhelm Loh

Prof. Friedhelm Loh
Owner and CEO of the Friedhelm Loh Group

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CONNECTING ECOSYSTEMS

TWIN BY TWIN

After nearly a decade of Industry 4.0, factories are still at the very start of the digital transformation in many areas. So, what is needed to drive the progress of smart production? An understanding of overarching ecosystems is the answer. This all revolves around three digital twins and their networking in ecosystems geared towards digital continuity.

Dr Carola Hilbrand
Director Corporate Communications
Friedhelm Loh Group

What do you think of be top?

What are we doing well and what could we make even better? Your opinion is important to us and we'd love to hear your ideas. Maybe you'd even like to see a fascinating article from your company featured in be top.
The editorial team is looking forward to your feedback!

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NEWS UPDATE

COVER STORY

INNOVATION

EXPERIENCE

COMMITMENT

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NEWS

CIDEON

New Managing Director at Cideon

Rolf Lisse was appointed as Managing Director of Cideon Software & Services on 1 July 2022. Prior to his appointment, the mechanical engineer was Vice President for Software Development & Customer Support at Cideon for several years. He is now working closely with Sebastian Seitz, the CEO of Eplan and Cideon, to expand the company's range of CAD, PDM and SAP integration solutions. "I want to continue to develop the foundations of our company's success," says Lisse, who is aiming to seize on new trends in software development and in services ranging from consulting and customer care through to training. Seitz has every confidence in the new Managing Director: "Rolf Lisse is an experienced business management specialist who understands the practical needs of our customers extremely well and has the vision to take our evolving solutions business to the next level."

GERMAN DATACENTER ASSOCIATION

Power for the IT infrastructure

IT expertise. Rittal has joined the German Datacenter Association (GDA) to help intensify the rapid expansion of a high-performance and energy-efficient IT Infrastructure. This kind of infrastructure will need to deliver ever higher performance while safeguarding availability and security with lower energy consumption. Within the GDA, Rittal will contribute its expertise to think tanks for edge computing and energy efficiency/sustainability.

EPLAN

Software expertise expanded

Poland – a good place to do business. On 1 June 2022, Eplan established Eplan Software & Services Sp. z o.o. in Kattowice, Poland, to take over the Eplan business formerly handled by reseller AB-Micro. The new Polish branch and its 20-strong sales and consulting team is now taking care of all tasks relating to its customers' solutions business. Following the opening of the branch and with the addition of the software expertise brought by the recently acquired company Digital Technology Poland (DTP), Poland has become the second-largest software location in the Friedhelm Loh Group, after Germany.

RITTAL

New CTO at Rittal International

On 1 October 2022, **Philipp Guth** took over responsibility for product system development at Rittal. He will be driving forward innovation in relation to mechanical product and software development and digitally supported processes. "We're really pleased to have secured such an experienced top-flight manager as Philipp Guth," says Markus Asch, CEO of Rittal International and Rittal Software Systems. "He has outstanding expertise and experience in expanding innovation leadership through digitalization and in establishing international development networks." Guth has spent the last ten years in senior management roles at Bosch Rexroth AG and Wittenstein AG, most recently as Project Manager Digitalization in the corporate department at Bosch Rexroth and, up until 2021, as CEO of the Automation & Electrification Solutions business unit. He studied mechanical engineering at the University of Stuttgart.

Profitable cooperation: Andreas Matthé, CEO Electrical Products at Siemens Smart Infrastructure (right), and Sebastian Seitz, CEO of Eplan.

OPTIMISED WORKFLOWS

Siemens and Eplan enter strategic partnership

Siemens Smart Infrastructure and **Eplan** want to coordinate their products even more closely so they can offer switchgear manufacturers and electrical engineers optimised solutions. The Electrical Products business unit at Siemens has therefore become a new strategic partner in the Eplan Partner Network. The aim is to create a plug-and-play structure for electrical engineers.

Both companies are entering a strategic partnership covering the industry and infrastructure market segments so they can deepen their cooperation on software solutions. As part of this move, the Electrical Products business unit at Siemens is joining the Eplan Partner Network as a strategic partner. The goal is for both companies to coordinate their products more closely so they can offer switchgear manufacturers and electrical engineers optimised solutions. The corresponding agreement was signed by Sebastian Seitz, CEO of Eplan, and Andreas Matthé, CEO of Electrical Products at Siemens Smart Infrastructure.

"The overarching aim of our partnership is to create a plug-and-play structure for electrical engineers. We want to open up our tools for both parties in both directions and thus simplify and accelerate working steps," explains Matthé. Seitz also highlighted the potential that can be harnessed for shared customers: "Particularly in switchgear production, utilising Eplan Pro Panel enables us to optimise processes and extend automation. In addition, we will address the growing segment of power distribution more directly and work with Siemens to create end-to-end solutions for integrative and more efficient workflows."

While the industry segment encompasses products and offerings for control cabinet production, the infrastructure segment is aimed at switchgear production for power distribution. In the industry market segment, Siemens and Eplan are intensifying their already long-established and successful collaboration to make Eplan data consistently available for configured Siemens products, for example. When it comes to the infrastructure market segment, Eplan and Siemens have decided to work together to optimise and automate customer processes, for example, in the Sivacon and Alpha environment (power distribution systems) by integrating Simaris (planning tools) and the Eplan platform.

Both parties are pooling their expertise for the benefit of their combined customers – to deliver more efficient workflows for switchgear production and power distribution. The Electrical Products business unit at Siemens offers products for safe, reliable and efficient low-voltage electrical infrastructure in buildings and industrial applications. Examples include safety and control products, measurement and monitoring devices, switches and sockets. The business unit's portfolio also incorporates communication-capable software tools that can be used to link power distribution to building and industrial automation and to open, cloud-based IoT systems.

Digital learning: Video conferences are part of everyday school life in Hesse. German Edge Cloud is making them secure and stable.

GERMAN EDGE CLOUD

GEC wins contract for schools video platform

Although remote teaching is commonplace at schools in Hesse, there has been no standardised and secure software solution – until now. **German Edge Cloud (GEC)** is changing all that. The **Hessian Ministry of Higher Education, Research, Science and the Arts** has commissioned the cloud experts from Eschborn to embed the BigBlueButton video platform into the federal state's digital schools portal.

Video lessons have become an integral part of school life these days, just as much as in-person lessons. In Hesse alone, that applies to more than 600,000 children and young people. The technology involved needs to be at the very top of its game if teaching conducted via live video streaming is to make it into homes without a hitch and without jerking, buffering or, worse still, crashing completely as thousands of pupils log on. The video platform needs to be stable even under high traffic and be easy to use for both teachers and pupils. However, what matters most is that it is secure. The personal data of children, young people of school age and teachers must be given the strongest possible protection. So far, many pupils in Hesse have used software tools such as Teams or Zoom for remote lessons, but data protection officers in the German federal state have complained about weaknesses when it comes to using these tools for educational purposes. That led the Hessian Ministry of Higher Education, Research, Science and the Arts to issue a Europe-wide invitation to tender for the operation of a data-protection-compliant videoconferencing system. In August, GEC won the contract from the Ministry to integrate the proposed open-source software BigBlueButton into the state's schools portal. The experts from GEC are already responsible for the portal's cloud architecture.

UP TO TWO MILLION PUPILS AND TEACHERS A DAY

Dr Sebastian Ritz, CEO Cloud & Edge at GEC, explains why the solution was picked: "BigBlueButton is an open-source solution that can be freely used and mod-

ified and incorporates useful administration options for schools and teachers. This was backed up by the load and functional tests that GEC carried out for the Ministry as part of the tender process." Additional plus points are that GEC is ensuring the system is run in compliance with ISO 27001 in terms of data security and the software satisfies the General Data Protection Regulation (GDPR). It is being hosted in European or German data centres and is especially robust. Up to 200,000 pupils and teachers can communicate with each other over the video platform simultaneously. "Over the course of a day, as many as one to two million users can access the platform, provided they don't all try to use it at exactly the same time," adds Supriyo Bhattacharya, Director Sales Cloud & Edge at GEC. "The administrators don't need to acquire any special new expertise and we are supporting the Ministry through every step in the cloud implementation process," explains Ritz.

Dr Sebastian Ritz,
CEO at German Edge Cloud

LEARNING A LOT FROM HESSE'S SCHOOLS PORTAL

BigBlueButton has been available to pupils and teachers in Hesse since the end of September as part of a step-by-step process tailored to demand. However, the contract is certainly not done and dusted for GEC – quite the opposite, in fact: "We are continuously enhancing the standard solution to meet the Ministry's needs," points out Bhattacharya, emphasising that, "This is only the start. The platform is being developed so it can be turned into a cloud-native solution for school administration software and a basis for digital teaching and learning options." The benefits are clear, with continuous updates and maintenance, scalable storage technology for platform data and backups making life a whole lot easier for administrators. The Ministry has known that GEC makes digital learning possible since the first day of school in 2021, when 100,000 users logged into Hesse's schools portal simultaneously at 9 a.m. – without a hitch. GEC supplied the scalable cloud architecture that made such high user numbers viable while ensuring ease of use. That was all the more important during the lockdowns, when the state's schools portal had to cope with enormous user traffic. "We've learned a lot from the COVID pandemic," explains Ritz. "Our experience with the schools portal project fed into the tender process for the video platform." To balance out sudden load spikes and ensure up to 2.5 million users can be handled, GEC implemented Hesse's schools portal on the basis of dynamic resource expansion. As the Ministry itself explains: "The platform, which has been hosted by German Edge Cloud since 2020, has proven itself to be stable even at times of very high demand." The BigBlueButton videoconferencing system promises the same performance.

BigBlueButton

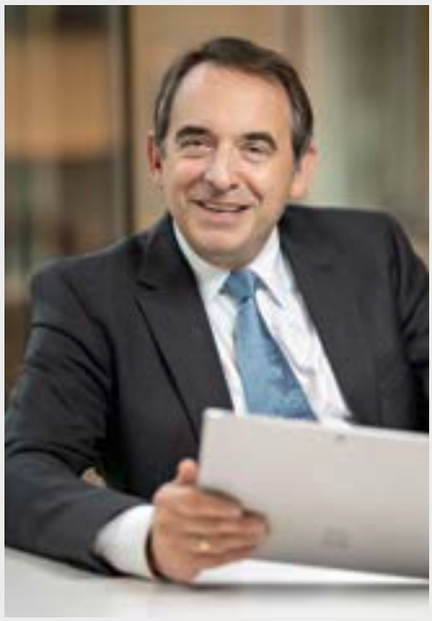
Interview with Prof. R. Alexander Lorz, Hessian Minister for Higher Education, Research, Science and the Arts:

Ensuring digital learning is fun

Do you think it's an advantage to be working with a Hessian company on the new videoconferencing system for Hesse's schools?
The geographical location of bidders in the tender process for the new videoconferencing system was neither an advantage nor a disadvantage. German Edge Cloud won the contract because its data-protection-compliant solution impressed us. All user data is kept on European servers. Naturally, as a politician for the region, I am pleased that a Hessian company won the contract. Hesse has an excellent reputation for digital innovation.

What were your priorities when deciding between bidders?
Data protection naturally came first and foremost. That's where GEC won us over completely. The open-source solution is in line with the General Data Protection Regulation (GDPR) and is being run on European or German servers. That guarantees a high level of security.

What was the most important criterion besides security?
That the new videoconferencing system should be easy for pupils and teachers to use. I see that as a crucial prerequisite for ensuring digital learning is fun. Most importantly, GEC has the expertise to take users with little prior experience up into the cloud. Pupils and teachers using Hesse's schools portal are already benefiting from that. Despite high user traffic, it is running smoothly.



Connecting ecosystems

TWIN BY TWIN

DESTINATION SMART FACTORY

After nearly a decade of **Industry 4.0**, some factories are still at the very start of the digital transformation. So what is needed to really drive the progress of smart production forward? A genuine understanding of ecosytems is the answer and that in fact depends on the synergy between **three digital twins and their interaction** in seamless networked digital continuity – the system twin, the product twin and the digital twin of the manufacturing process.

Text: Ulrich Kläsener and Hans-Robert Koch

Digitalisation and industry: In the innovation lab “Future Work Lab” of the Frauenhofer-Gesellschaft, research and industry have come together to further develop the digital twin.

Interview

THE RECIPES HAVE BEEN CREATED AND WRITTEN DOWN AND WE HAVE ALL THE INGREDIENTS NEEDED.

Three digital twins and the **smart factory** in times of volatile global markets – **Markus Asch,** CEO of Rittal International and Rittal Software Systems, and **Prof. Oliver Riedel**, Director of the Fraunhofer Institute for Industrial Engineering IAO and Managing Director of the University of Stuttgart's Institute for Control Engineering, outline and evaluate the current situation, pinpoint challenges and identify the opportunities of the digital transformation of the manufacturing industry through the **networking of ecosystems.**

Univ.-Prof. Dr.-Ing. Oliver Riedel, Institute Director Fraunhofer IAO and Institute Director of the Institute for Control Technology at the University of Stuttgart.

Industry 4.0 has dominated discussions in industrial circles for ten years now. Is it mission accomplished?

Prof. Oliver Riedel: Let me use a cooking analogy with regard to industry 4.0 and the smart factory. The recipe is there, the ingredients are freely available and there are even a number of chefs who can make the dish.

That sounds encouraging.

Riedel: There's just one problem – the vast majority of factories are brownfield sites that have been in existence for years, or even decades, and have long-established structures. These are not yet fully depreciated. Take the example of a paintshop with a 30-year depreciation period. If you drop in to see the owner and request a completely new design concept, you will immediately be sent packing by the financial controller, if not sooner.

What's the answer, Prof. Riedel?

Riedel: With regard to a brownfield site, only a gradual approach will work. I recommend step-by-step implementation, with a corresponding evaluation of the economic benefits. This issue doesn't arise in greenfield projects, where it should be Industry 4.0 all the way.

Are you aware of any flagship projects that are already in line with Industry 4.0 criteria?

"There are three digital twins that need to be connected in a seamless and meaningful way – automation, product and production twins."

Markus Asch, CEO of Rittal International and Rittal Software Systems

Riedel: There are certainly some distinct manufacturing processes where it already works today: with simple structures, with low product variation, production on modern equipment and consideration of data consistency.

A serious market player recently made a bold statement that we're 80 per cent of the way towards the fully fledged smart factory. Do you share this assessment, Mr. Asch?
Markus Asch: No, that isn't the case. We're a long way from being in a situation where the factory optimises itself. However, I believe we've tapped into nearly a third of its full potential.

What do we have and what don't we as yet?
Asch: The first step was to create smart components. These are now available. The next step was to create uniform data standards. These, too, are now largely in place. What we don't have yet is compatible content at critical data points. If you compare the error messages of 20 automation systems, it's an absolute jungle.

What do you conclude from that?
Asch: What we need to do now is create transparency regarding digital twins and understand how these are interlinked. In the most advanced factories, we are currently in a position to use transparency to find out exactly what we can optimise. We can gain new insights first and foremost by matching the data from the digital twins.

Which digital twins are you referring to?
Asch: As we see it, three digital twins need to be connected in a seamless and meaningful way to achieve smart production. In the manufacturing context, you see, there are three ecosystems that should ideally generate a digital twin – systems, products and manufacturing processes. The more effectively companies are able to usefully connect and link the data from these three digital twins in the manufacturing process, the faster their progress towards the smart factory will be.

What do you consider to be the major hurdles during the digital transformation?
Riedel: Proprietary systems are toxic – non-open standards are the biggest obstacle. In other words, it's all about the end-to-end availability of data, and this digital continuity must be based on open standards at all levels. If we look at ▸

how machines currently communicate with each other and how data is shared, this is often primarily used to compartmentalise ecosystems rather than to open them up.

Asch: Digital continuity is one thing, but data also needs to be contextualised – all the more since digital twins from all kinds of areas contribute to production. If you feed production data into an AI engine at the moment, you'll get nothing out, nothing at all. You might as well save yourself the bother. You can't do anything without domain knowledge, without assigning data to a logical ecosystem. Our plant in Haiger generates 18 terabytes of data every day. The big challenge is knowing which two terabytes are actually important in which process.

You are assuming we will see far greater progress towards the smart factory over the next five years than we did in the previous ten. Why is that?
Asch: For one thing, besides the data itself, we now have the relevant understanding of the digital twins, the data points and the ecosystems. For another, change will put us under unimaginable pressure. We are gradually heading for a perfect storm. Without digital continuity in our production operations, we won't have any hope of successfully meeting the various challenges.

18

TERABYTES OF DATA

is the daily output at the Rittal plant in Haiger.

Can you make the idea of a perfect storm a little less daunting by explaining what exactly we are talking about?
Asch: Urgent necessities such as energy efficiency. Not one single production operation is being managed on this basis at present, because gas and electricity have always previously been available and affordable. In terms of flexibility – and in response to scarce resources, component shortages, ever more frequent factory reorganisations and volatile order behaviour – we also need to take another look at processes that have become ingrained over decades. All this pushes companies relying on conventional approaches to their limits.

Why are businesses that operate a smart factory in a better position than more traditional or conventional companies to cope with this new market volatility when it comes to things like energy?
Riedel: Knowing not just how much energy my process consumes in total, but also exact details about where and when, means I can shift production to periods when energy is cheaper and more available, for instance. That marks a transition from open-loop to closed-loop control, because the parameters involved in production are, as a whole, becoming high dimensional. Companies very quickly need to introduce smart management of things such as energy, skilled personnel and materials. All that currently costs an awful lot of money. Incidentally, data-assisted prior simulation and the playing out

of processes with profiles that can be modified as required in the digital ecosystem provide a very effective decision-making tool for the management team. Conventional or standard regular statistics are no longer adequate.

The apparent urgency is rather like the debate surrounding the guiding principle of "resilience through adaptability", isn't it?
Asch: What does resilience actually mean? It means starting by understanding the world in which we are living. If we do that, if we accept the reality and draw the right conclusions, the perfect storm is also the perfect basis for solutions. You need the ability to understand how things are interlinked and to adapt accordingly.

Which industry sector is most likely to make the quickest progress?
Asch: The production industry – from SMEs to large corporations. It uses huge amounts of energy.

What is the best approach right now?
Asch: Essentially, looking for the right partners and making a start on automating production, because that's where the efficiency gains are greatest. The next steps are to create data spaces and to learn.

You recommend learning fast.
Asch: In general terms, we recommend not starting any initiatives with megaprojects that will take two years to produce initial findings. You need to restructure anything that won't produce findings within the next six months. It's what you learn from implementation, not the concept, that matters. Instead of having people spend months considering which data might be relevant, let them learn instead by actually working with the data.

How do you get people on board with the digital transformation?
Riedel: Complexity isn't necessarily a bad thing, but don't make life complicated. The important thing is that everyone involved, from ordinary workers to shift supervisors, needs tools that are really easy to access.
Asch: That's exactly how we see it, too. People – especially those with process experience and expertise – should be given the right tools, preferably also based on no-code or low-code approaches.
Riedel: Make it very simple for workers to access a database via an interface, without having to log in or use complicated language – that enables them to spontaneously ask questions such as how many quality problems have there been with a particular product over the past fortnight, broken down according to shifts and systems. I'm certain they will ask questions - the right questions - and so much quicker. You can use incentives or concessions to give the whole thing a push, as has previously been done with CIP.

All that remains is to gaze into the crystal ball – when will the smart factory be an industry-wide reality?
Riedel: When production data can reveal the cause of problems, whether that's production planning errors, overlooked details or gaps in product development. I can guarantee that the issue as a whole will be occupying us for the next 10 to 15 years. It may take another ten years to achieve full virtual commissioning, and twelve for the digital factory – in other words, digital process planning and design – to become a reality. The digitalization of manufacturing depends to a great extent on investment behaviour. What takes the most time is getting product data back from the field and into the product development department. ■

Thank you very much for the interview!

"Proprietary systems are toxic – non-open standards are the biggest obstacle."

Univ.-Prof. Dr. Ing. Oliver Riedel,
Institute Director Fraunhofer IAO and Institute Director of the Institute for Control Technology at the University of Stuttgart

Connecting ecosystems

THREE DIGITAL TWINS

Rittal, Eplan, Cideon and German Edge Cloud help create a smart production operation with their domain knowledge in the three key ecosystems – automation, products and production. The **creation and networking of digital twins** achieves a quantum leap on the journey towards smart production.


TWIN
customer specification to
PRODUCTION TWIN
Data consistency and transparency in the manufacturing process with in-built data management from edge to cloud.
Domain knowledge – German Edge Cloud

1.

THE AUTOMATION TWIN

Digital continuity and consistency in electrical automation planning – from planning and design through to production and operation.

Twin one – the automation twin

FROM TWIN TO DATA HUB

In actual fact, the solution pre-dates the problem. To be precise, it dates back to 1984, when the first ever digital wiring plan was created on a standard PC using **Eplan electronic planning software** – not in Silicon Valley, but in the German town of Langenfeld, near Düsseldorf. Today, the **digital twin** is becoming a **digital hub** in every smart factory.

Connecting ecosystems

"The Friedhelm Loh Group is a partner for our customers operating in this world – with Eplan for electrical planning and design, Rittal for systems engineering and machining, and Cideon for the mechanical part of the engineering process," says Markus Asch, CEO of Rittal. If you also add edge and cloud solutions, which represent the core competence of German Edge Cloud, you get a consistent big picture of the possibilities – the "connecting ecosystems" guiding principle – digitalized and networked ecosystems as a smart factory enabler.

The first Eplan solution was effectively a pared-down, rather static early form of the digital system twin. Looking back, it's immediately obvious. The Eplan wiring plan worked rather like the DNA of a new approach to information handling. Nowadays, every smart factory desperately needs the digital twin of panels and switchgear – and thus of all electrical engineering components in the entire system – as a time machine, knowledge store, simulator and central data hub. How it actually gets into the factories and their digital ecosystems, how it grows and is of benefit, is easily explained. You simply need to follow the value chain – from planning and design, production and operations and through to servicing.

External design offices or the the planning and engineering departments of mechanical and engineering companies normally prepare the wiring schematic, complete with parts list, using Eplan Electric P8 – the ECAD standard. The design team selects the necessary components for the system from the industry's most

"In IIoT use cases, more and more people are realising that the wiring plan is a key element for putting data from actuators and sensors into context. It all becomes that bit more relevant."

Sebastian Seitz
CEO of
Eplan and Cideon

"A QR code on the enclosure gives users access to the system documentation, including the digital twin, in the Eplan Cloud."

Uwe Scharf
Chief Business Unit Officer
at Rittal

extensive product catalogue, the Eplan Data Portal. The job data then goes to the external panel builder and switchgear manufacturer, whose task is to design the 3D model for in-house production using Eplan Pro Panel. Once the switchgear has been manufactured, its virtual representation is also made available in the form of Rittal ePocket, a digital wiring plan pocket.

RITTAL ePocket

"A QR code on the enclosure gives users access to the system documentation, including the digital twin, in the Eplan Cloud," says Uwe Scharf, Chief Business Unit Officer at Rittal, explaining how the entire process is handled. Sebastian Seitz, CEO of Eplan and Cideon adds that, during manufacturing and when servicing is required, it's ultimately all about being able to pinpoint the problem as quickly as possible. "If Eplan is used for all the automation and electrical design documentation, I can see straight away what is where. All the linked electrical engineering connections are shown, so the physical location of components in the enclosure or on the machine is clear," he continues. This is exactly what large OEMs want. "All machines and systems are documented in a standardised format, which minimises the effort involved in rectifying faults. The wiring plan acts rather like a spelling or grammar book," says Seitz. The ePocket has the advantage of being a dynamic solution. Information is removed and new details are also added during the switchgear's lifecycle so that it is always up to date. And that's not all. "In IIoT use cases, more and more people are realising that digital machine and system documentation is a key element for putting data from actuators and sensors into context. It all becomes that bit more relevant," emphasises Seitz. Adding the carbon footprint of components to Rittal ePocket is also on the cards.

THE GREAT INTEGRATOR

The integrative capacity and potential of the digital system twin is enormous, and all stakeholders benefit in their own way – from designers, panel builders and switchgear/machine manufacturers through to factory operators and service technicians. The panel building and switchgear benefits are plain to see. "Once you have created the enclosure in the digital world and know all the dimensions and which components are located where, it's easy to drill holes in a mounting plate and use automated machining, and also to automate wiring, wire processing and so on," says Seitz. At this point, Uwe Scharf mentions Rittal's Perforex range of enclosure and switchgear machining centres. "If Eplan is used for switchgear designing, then no further CNC programming is required. That represents a huge saving, as all the data for the CNC program is already available anyway," he explains.

A GLIMPSE INTO THE FUTURE

The Eplan project – a kind of navigable, digital information container – is capable of much more. Seitz offers a glimpse into the future. "In the panel building and switchgear context, machines can also be controlled directly from the virtual twin. This is very exciting when it comes to proactively tackling energy management in manufacturing. There will be an urgent need for this if new paradigms become established. Maximum output can easily become maximum output with minimum energy consumption," he says. There are good reasons for panel builders and switchgear manufacturers to go all out for digitalization. System operators, too, benefit from the system twin. Besides helping with maintenance, having all system data available also ensures there is a valuable source of information for networking during the digital process of creating a smart production operation. ■

Twin two – the product twin

WHEN THE TWIN LEARNED TO FLY

Strangely, although the precursor of the digital twin was many things, it wasn't digital. In the 1960s, NASA used physical replicas of spacecraft for simulation, training and study purposes. But what about in 2022? That's right, we now have the **digital twin in the form of a product idea and CAD model**, a work instruction and quotation drawing, flying through space and time.

A number of digital twins are orbiting manufacturing operations around the globe, and the product twin is one of the true stars of the show. It has one marked difference from its NASA predecessors – nowadays, the product twin is created long before its physical counterpart, which is obviously manufactured on machines and systems that themselves originated from a good idea and took shape in the digital system twin. In total contrast to the top-secret NASA structures of some 60 years ago, to which only selected specialists had access, the motto today is that the product twin is available to everyone, and why not?

END-TO-END DATA

"Customers are already very demanding when it comes to product personalisation options. To ensure cost-effective production, it must be possible to use the custom configuration data for manufacturing and add all the necessary information. That's where the product twin comes in," says Markus Asch, CEO of Rittal International and Rittal Software Systems. He goes straight on to highlight the best way of obtaining a valuable flow of information from the twin. "This data must run throughout the entire process – from configuration by the customer through to manufacturing and delivery," he explains.

The principles behind this are a little stroke of genius. After all, although browser-based configuration tools are deemed to operate smoothly in the consumer segment with somewhat simple variation patterns, real-life industry practice throws up very different challenges for everyone involved. Without a complete, high-quality digital data set for each and every highly specific product – in short, a product twin – there is no hope whatsoever of

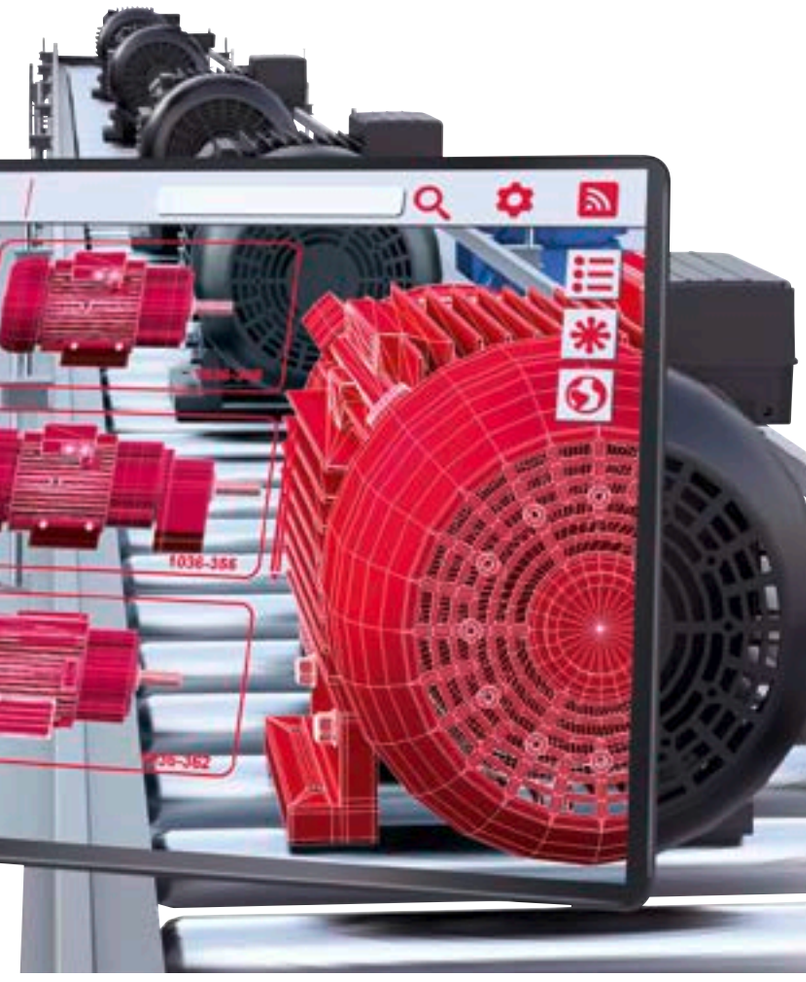
Rolf Lisse, Managing Director of Cideon

Interview

Automating CAD data integration in manufacturing

A configuration solution that Cideon designed for a leading material flow supplier has proved very popular with customers. Why is that?
Lisse: First of all, because it's very simple and works extremely fast. Customers order roller conveyors via the website. They enter the length, width and height, along with the conveying speed and throughput, and specify angles for changes in direction.

What happens behind the scenes with the data entered?
We use this specification as a basis for the automated generation of CAD data that is used for the quote and the manufacturing process. It takes just five minutes to create the 3D geometry and present it to the customer, who can try out the component's product twin and determine whether it fits into their scheme. The quote is sent within an hour. The entire process used to take around two weeks or more, so this is a huge advantage in terms of performance.



2. THE PRODUCT TWIN

Product configuration – from the customer request through to manufacturing.

achieving a batch size of 1, at least not cost-effectively. "Appropriate production-relevant data in the right format, such as part lists for each product type or even each individual product, is required for manufacturing operations. In addition to the customer's configuration information, component details or design updates can also be fed in from the PLM system," explains Asch.

CAD – PDM/PLM – ERP

This is a perfect task for Cideon, part of the Friedhelm Loh Group, with its market-wide domain knowledge and industry-proven modular solutions. "CAD, PDM/PLM and ERP in one integrative process." That's how Rolf Lisse, Managing Director of Cideon, sums up the company's portfolio. "Our customers utilise our solutions to make both the product itself and the machinery that is used to manufacture it," he adds. The Platinum partnership with Autodesk is one Cideon mainstay and the Platinum development partnership with SAP the other, with business based firmly on an integrative approach. "For SAP, we develop the CAD integrations for AutoCAD, Inventor, Solid Edge, SolidWorks and Eplan, which are then marketed worldwide in collaboration with SAP," says Lisse.

He describes the objective as maximising efficiency and value creation for customers. "To give an example, when using SAP for production, I need design data for procurement and manufacturing. I can manage the design data directly in SAP, without any further installation, and map the PDM functionality there," continues Lisse. He goes on to explain that a single system such as this represents the "single source of truth" that is so coveted by industrial SMEs in Europe in particular, that is to say having all design and production data integrated and available in the same place. Add design guidelines and logic, and this then represents the perfect starting point for the product twin, which uses configurators to control the customised manufacturing operation. ■

"The data can then be passed on directly to manufacturing at the push of a button."

Figuratively speaking, the finished product twins pour out of the configurator. Why is the process so fast now?

We use a variety of solutions to achieve this – the appropriate CAD system and the associated design guidelines. Obviously, the CAD models need to be specially prepared prior to the configurator's go-live so they can be automated and restrict the variation pattern to key applications. The data generated is automatically transferred to the logistics systems so it they can be used for the downstream processes.

After the dry-run and the customer is satisfied and places an order. What happens then?

The data can then be passed on directly to manufacturing at the push of a button. After all, complete 3D models are available that can be used as a basis for drawings and the automated generation of CAM data.

What used to be different?

Almost everything. On receiving the request for a quotation, someone or other copied an existing project and worked on the design until it met the customer's requirements. Quotation drawings were then prepared as a basis for the costings and, ultimately, the quotation itself, which was sent to the customer along with the drawings.

Thank you for talking to us.

Twin three – the production twin

THE KING OF TWINS

When determining whether new machines can deliver optimisation, the worlds of business and science work in percentages. In the case of processes, on the other hand, the focus is on the factors that can be improved. In the ultra-dynamic world of digital transformation, that means it's time for the king of the digital twins – **the production twin** – which can be used to plan, measure, automate and control production lines. And what do you know? You can just about make out the shape of the **smart factory** on the horizon.

The Rittal plant in Haiger: Every day, around 8,000 compact enclosures are manufactured here using highly automated processes.

Launched in 2022 by German Edge Cloud (GEC), the ONCITE Digital Production System (DPS) is a platform for the agile management of manufacturing processes using flexible software architecture. The concept is as follows: During operation of the manufacturing process, master data is compared with dynamic data from production, matched with IIoT sensor data and analysed in its entirety to derive well-informed decisions at all levels – from workers to management – to improve process efficiency. In this way, the ONCITE DPS represents the glittering prize of the factory: the production twin.

500 FACTORIES DIGITALIZED

You need experience to tackle something like that. According to Dieter Meuser, CEO Digital Industrial Solutions at German Edge Cloud, the company has built up practical know-how from 500 fully digitalized factories worldwide. In summer 2022, the market analysis and consultancy company PAC also rated GEC "Best in Class" for its combination of factory expertise and IT. In the "Open Digital Platforms for Factory-edge-centric Industrial IoT" category, only GEC and IBM/Red Hat achieved this rating. "We are delighted with this top spot," says Meuser, who is fully aware that the smart factory can't function without the digital production twin. It is an intelligence driven system or force that reveals things which previously would have been hidden by comparing and contrasting the device history record (how the product has been produced) with the device master record (how the product is to be produced). Markus Asch, CEO of Rittal International and Rittal Software Systems, agrees. "Manufacturing processes only achieve maximum efficiency if they can be mapped as transparently as possible. The depth of data needs to increase further still if manufacturing based on the principle of "batch size 1" is to be possible. Most importantly of all, a totally unique data set must accompany each and every product. In addition to agile software systems, this is the fundamental prerequisite for ultimately being able to provide IIoT-supported production management - and so become truly 'smart'." he explains.

The ONCITE DPS therefore takes primary data such as the bill of materials and extracted work schedules from the ERP systems, along with additional PLM, MES and Scada details. In this way, production can be run efficiently from the first steps of digitalization through to digital production optimisation. "The system is the data hub and delivers flexibility for IIoT applications," says Meuser. The ONCITE DPS supports system networking, the visualisation of processes, and applications – from track & trace through to agile, IIoT-assisted production management. The software services can be used in parallel with existing IT/OT infrastructures and operated in a variety of environments. A gradual migration of existing MES/PCS/Scada content to ONCITE is also possible.

3.

THE PRODUCTION TWIN

Digital continuity and data transparency in the manufacturing process, with integrated data management from edge to cloud.

A CLICK HERE AND A CLICK THERE

One hardware option GEC uses is highly scalable factory edge infrastructure directly on the shop floor. That means it is possible to react quickly, with low latency, a minimal load on the network in terms of data streams, and a high level of data sovereignty. When it comes to UX and usability, the new partnership with Scheer isn't all that surprising, because GEC adopted the "best-of-breed" approach to develop the ONCITE DPS, using independent "best of" software tools for each and every task on a flexible platform. Scheer PAS has developed a leading platform that enables users to click their way through a graphics-based process to put together their own business processes and models for all parts of the company. Standardised modular systems are frequently provided for this purpose. Such concepts, which require no text-based programming languages, are called no-code or low-code solutions. Given the speed of change, Meuser is certain that this approach is the future. "Even at the commissioning stage, it can reduce outlay by up to 70 per cent. The ability to adapt software solutions to your own requirements yourself and react to changes is a key success factor for companies," he says. ■

"The ONCITE DPS supports system networking, the visualisation of processes, and applications – from track & trace through to agile, IIoT-assisted production management."

Dieter Meuser
CEO Digital Industrial Solutions at German Edge Cloud

Digital twin at the Haiger plant

The Rittal plant in Haiger shows how GEC uses the digital manufacturing twin to make a smart factory that little bit better every day. At one of the world's most cutting-edge enclosure manufacturing facilities, more than 250 networked high-tech machines and system components spread across 24,000 square metres produce around 8,000 AX compact enclosures and KX small enclosures every day using highly automated processes. The data analytics solution for the production lines is based on the ONCITE DPS, a core product of GEC. This integrated platform, which also includes the 3D production model, acts as the central data hub, collects the masses of data from all kinds of sensors, harmonises this data and makes it available in a circuit comprising analytics, alerts and live dashboarding. As the learning curve rises, so too does productivity, and the more you know about the future, the more logical and effective predictive maintenance scenarios become.

NEWS

INNOVATIONS FROM THE
FRIEDHELM LOH GROUP

EPLAN ESTOCK

Managing **article data** centrally

Cloud-based article management. Article data is the cornerstone of any project and can really speed up project planning when it is available in full to everyone. Eplan eStock, the new cloud-based article management system for the Eplan Platform 2023, makes it possible to access this data from anywhere and on any device. Companies can now use the system to update and manage article data such as voltages, currents, datasheets and article designations. Project teams can access article data on Eplan eStock from anywhere by simply (and securely) logging into the cloud, whether they're in their home office, at a business premises somewhere or sharing data with business partners. This makes collaboration more straightforward, speeds up coordination processes, reduces breaks in continuity and helps with wrapping up projects quickly and smoothly. Data sovereignty is always retained by the company or user and that company or user determines the quality of the data and access to it. "Companies benefit from centralised access to the cloud in a number of ways," emphasises Thomas Bings, Business Owner Master Data at Eplan. "They can make better use of their personnel resources because they don't have to spend valuable time building up and maintaining their own IT infrastructure. That cuts down on costs." Markus Beirer, Head of Electrical Engineering at Autewe GmbH in Überlingen, has already put eStock through its paces as a beta tester. His verdict is positive: "We expect to boost our productivity with Eplan eStock because we no longer have to repeatedly recreate article data. Working as a team is also becoming much easier."

10x

WIRE TERMINAL WT C10

Faster wire processing

Wire processing. Rittal showcased the Wire Terminal WT C10 at the SPS 2022 tradeshow. The latest version of the fully automated wire processing machine processes wires ten times faster than when working by hand. The solution boasts numerous improvements and new options, such as the infeed and output of wires. However, it is not just fast – it is also an expert at networking. The new software architecture ensures seamless integration into the data workflow of the Ri-Panel Processing Center job management software. This boosts workshop efficiency in more ways than just by speeding things up. Production also becomes an even more integral part of the entire digitally supported process chain, and is centrally planned and managed with data taken directly from the engineering and production ecosystem of Eplan and Rittal.

RIMATRIX MICRO DATA CENTRE

New IT efficiency packages.

A small footprint. They are small, compact and a fully-fledged home for IT applications – only a few square metres smaller. Rittal RiMatrix Micro Data Centers and their coordinated OT components such as racks, power, cooling, monitoring and security solutions ensure that IT is safely stowed and has the smallest carbon footprint it can, no matter where the data centre is located. The new packages make even better use of their combined standardisation and adaptability. The bundles are already preconfigured for various performance classes and applications, can be modified with plausibility checks and can be delivered quickly worldwide.

VX25 RI4POWER

Seaworthy

DNV certification. In shipbuilding, the entire value chain is geared toward speed, safety and efficiency. Now there is another tool for achieving these aims. Thanks to its new DNV certification, the VX25 Ri4 Power design-tested switchgear and energy distribution system from Rittal is making authorisation processes more straightforward for customers. This certification proves that the modular system is fit for maritime applications. This helps shipbuilders comply with the requirements of the maritime sector because shipping classification data is already available in advance. The VX25 Ri4 Power System offers arc fault protection and is certified up to 3840 amps.

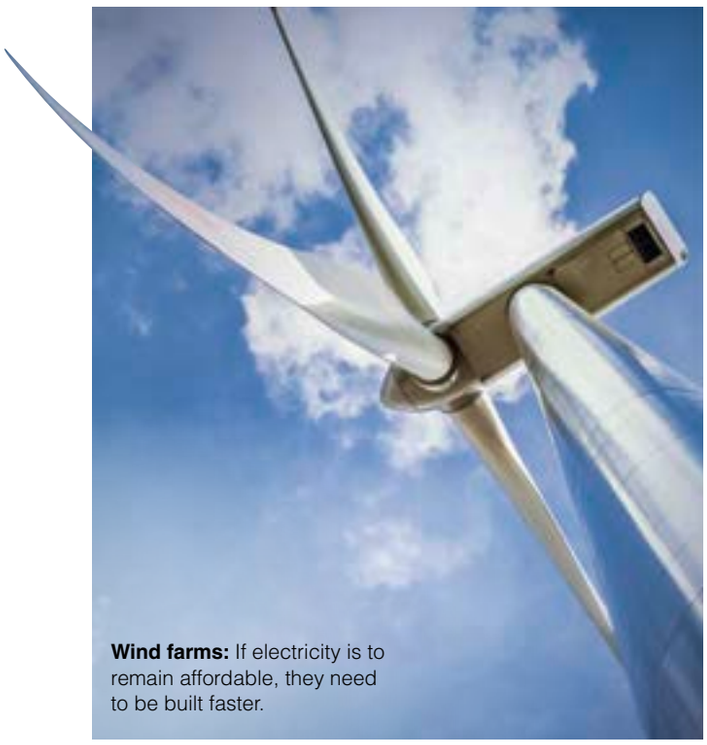
HYGIENIC DESIGN ENCLOSURES

Extra cleanliness guaranteed

Hygienic Design (HD) Two new products in the Rittal portfolio are helping the meat and alternative protein industry keep their plant technology hygienic. Firstly, panel building and switchgear engineers, plant operators and maintenance technicians can now – for the first time – use series-standard enclosures that both satisfy HD guidelines and offer all the benefits of a system enclosure, such as flexible and versatile interior fit-out options. Secondly, they can now also get switch housings (for example, for emergency stop functions) in the usual HD range from Rittal.

WIND POWER

Faster, faster with digital workflows



Wind farms: If electricity is to remain affordable, they need to be built faster.

Energy revolution. The wind energy sector is under massive pressure. It needs to supply renewable and affordable energy fast and stay profitable at the same time. So how do you speed up expansion while saving on the costs of planning, manufacturing and running plants? Industrialising the entire process chain could be a useful tool. Rittal and Eplan are showing how that could work with their end-to-end digitally supported workflows, which cover everything from planning, engineering and manufacturing industrial plant technology to running it, maintaining it and repairing it. “Our experience with wide-ranging industrialisation in mechanical engineering illustrates the potential. We want to make these benefits, which run all the way to ‘automated engineering’, accessible to the energy sector, so that electricity can be kept affordable and companies profitable,” explains Jan Oliver Kammesheidt, Global Vertical Market Manager Energy at Eplan. Eplan already supports the engineering process for wind farms. Its software can be used to enhance a digital twin – e.g. for a cable harness – with electrical engineering information, which makes the whole design process easier. Another example is the Rittal ePocket, the cloud-based lifecycle file for plants. Users access plant documentation via a QR code, while simple updates keep data current and transparent at all times – with every detail covered. If a fault occurs, or something needs to be modified, you don’t have to make the 140-meter climb up to the gondola of the wind turbine any more.

The automation pyramid with ERP, MES, Scada and PLC solutions is being replaced by more flexible IIoT platforms. What does the future have in store?

What is low-code?

Digitalization is achieved faster in manageable steps with an agile design. A low-code approach is ideal for this, paving the way for manageable applications and adaptations without extensive IT know-how. The principle involves modelling the applications on a graphical interface. This can be as simple as using drag & drop, with automatic implementation in program code. As a result, domain knowledge relating to the content of the application – in manufacturing, for instance – leads directly to digitalization, without the need for time-consuming programming.

Scheer PAS and German Edge Cloud

IIoT

Where the future lies

Industry requires new methods. The goal is clear – faster digitalization of manufacturing processes, together with enhanced flexibility and agility when it comes to adapting production processes. At the same time, new applications need to be created directly on the shop floor with next to no programming. This isn't just a futuristic vision – **Scheer PAS and German Edge Cloud** already offer an **IIoT platform with microservices and low-code technology.**

Text: Steffen Maltzan and Ulrich Sendler

Has industry ever been under so much pressure on so many different fronts? Climate protection and sustainability, the pandemic and the collapse of supply chains, the war in Ukraine and the energy crisis, and widespread geopolitical realignment are just the primary examples. Virtually nothing has remained unaffected. Without being cynical, this also has an upside in addition to all the downsides. It forces companies to make changes they were previously not yet willing to consider.

There were good reasons for this caution. Adapting IT landscapes to new challenges and the specific requirements of a manufacturing company isn't simply a question of quickly making a few smart decisions and investments. If product and production data needs to be compiled and processed in a way that enables it to be used for analyses and process improvements – or even for IIoT-assisted management of manufacturing processes – things become even trickier, not to mention the fact that it's practically impossible to find the necessary specialists for such tasks.

A FUTURE WITH COMPOSABLE SOFTWARE

However, the time has now come to act. According to a study by the analysts at Gartner in May 2022, no fewer than 60 per cent of all new manufacturing execution systems (MES) will already be made up of modular components (composable software) by 2025. The end of an era dominated by monolithic systems that can only be adapted with a great deal of effort appears to be in sight. The traditional automation pyramid with its IT levels based on industrial manufacturing – such as ERP, MES, Scada, PLC and sensors/actuators – is gradually being replaced by more flexible IIoT platforms. A far higher degree of flexibility is required for the IIoT applications of the future.

In most cases, however, the reality right now is these very pyramids – dominated by systems that have been in use for some time – and the question is whether to keep these or replace them. When it comes to the manufacturing industry's digital transformation, there is good reason for the current largely brownfield ▸

Smart manufacturing: Rittal rigorously implements Industry 4.0 standards at its production plant in Haiger.

approach – that is to say, optimising factories while operations continue. The key questions in this context are how progress can be achieved without losing investments already made in the IT architecture, and which digitalization steps are both realistic and cost-effective.

STRATEGIC PARTNERS FOR IIOT

An unrivalled partnership has the answers. Two industry and IT pioneers – Prof. Friedhelm Loh and Prof. August-Wilhelm Scheer – have joined forces. They both run highly successful family-owned businesses that, time and again, have produced innovations to keep industry moving forwards. In the case of the Friedhelm Loh Group, the primary focus has been on the industrialisation of panel building and switchgear, and on the supply of system solutions for enclosures, power distribution, climate control and IT infrastructure. The Scheer Group, meanwhile, is a pioneer in IT-based process integration and the professionalisation of service-oriented software architecture. To be more specific, the IIoT experts at German Edge Cloud (GEC), part of the Friedhelm Loh Group, are collaborating with the integration and software specialists at Scheer PAS.

An initial result of this partnership is being applied in the GEC IIoT platform – the ONCITE Digital Production System (DPS). Scheer PAS is becoming part of this system as an application composition platform with its low-code and integration functionality.

EVERYTHING INTEGRATED

The ONCITE DPS thus combines previously separate core components of a digital production environment in one integrated system – intelligent management of manufacturing with MES and MOM functions, IIoT as a database, and low-code capabilities for simple application development. On top of this, edge computing meets all demands regarding sovereignty during data processing. The result is platform and application functionality in an integrated solution with modern, flexible architecture.

The technology is just one aspect, though. Experience, including in-house at the Rittal plant in Haiger, shows that nothing works without the domain knowledge

GEC is “Best in Class”

Industry expertise is in demand. Pierre Audoin Consultants has rated German Edge Cloud (GEC) “Best in Class” in Europe. In the “Open Digital Platforms for Factory-edge-centric Industrial IoT” category, only GEC and IBM/Red Hat achieved this rating in the PAC Innovation Radar 2022. According to PAC, the unique capabilities of GEC derive from its merging of domain know-how in both manufacturing and IT. Synergies with the experience of its sister companies Rittal, Eplan and Cideon also played a role in this.

that comes from decades of work in the field of industrial automation. After all, even 30 years after IT first started being used to help control industrial processes, the necessary networking of all machines is still incredibly difficult with the technologies available at this point. The flexibility and agility that are currently in widespread demand are even more elusive, and the tight budgets available, especially at small and medium-sized companies, present a further challenge. GEC is using its industry experience and Scheer PAS its flexible software to tackle this task for their customers.

MICROSERVICES ON AN OPEN SOURCE PLATFORM

Gartner sees huge potential once software systems old and new are no longer linked via programmed interfaces but can instead communicate via their application programming interfaces (APIs). Amongst IT specialists, word has it that a backend era is dawning, with open source platforms such as Kubernetes providing the backbone for "containers" that share and supply data independently using microservices. That is the basis for low-code or no-code solutions – the customer and users can make changes, create applications, and turn entire business functions and processes into composable (modular) applications without having to do any programming.

This is at the very heart of the new partnership. German Edge Cloud is using its ONCITE DPS to take analytical and management power directly onto the shop floor and, if required, into the cloud with inbuilt data sovereignty. A growing library of ONCITE Industrial Suite applications is available for immediate use. GEC automation expertise comes into its own where specific connectors to the machines are required for the Scheer PAS API management solution to work effectively. For its part, Scheer PAS then enables rapid adaptation of the installation thanks to its very own low-code platform, which reduces programming to the dragging and dropping of icons.

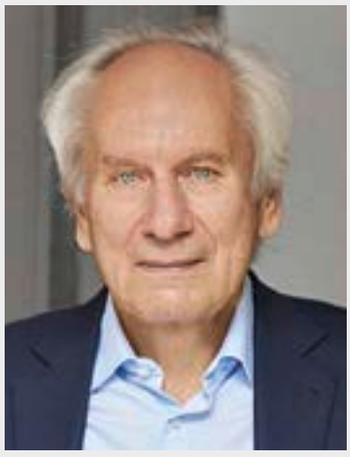
LOW-CODE FLEXIBILITY

As a result, new application services can be adapted flexibly and introduced on the shop floor during the production process, without the intervention of the IT department and without stopping the production line (zero downtime). An industrial engineer or an experienced machine operator can generate modular (composable) software by independently creating and integrating custom apps, dashboards and new data sources.

It's exactly this speed and flexibility that are needed for industry's digital transformation to take off, for SMEs to keep up with large businesses such as car manufacturers, and for the creation of resilient supply chains in which all the players can react with agility to new situations. ■

"Our family companies share a passion for innovation."

Prof. Dr. Friedhelm Loh
Owner and CEO of the Friedhelm Loh Group

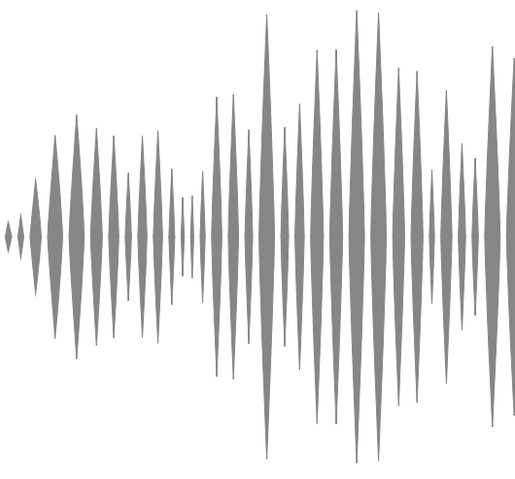


"We are delighted to have found a highly innovative industry partner for Scheer PAS."

Prof. Dr. August-Wilhelm Scheer
Founder and owner of Scheer Holding

GEC and Scheer PAS – a strategic partnership

German Edge Cloud and Scheer PAS are collaborating to speed up the digitalization of manufacturing processes. This strategic partnership brings together two digital transformation pioneers. "Our family companies share a passion for innovation. In industry, the speed and flexibility of digitalization are what matter most right now – especially given the current and future economic and social challenges," says Prof. Friedhelm Loh. "We are delighted to have found a highly innovative industry partner for Scheer PAS. GEC and the Friedhelm Loh Group have in-depth knowledge and practical experience of industrial automation processes, while Scheer is contributing its application development, integration and process automation expertise. Together, we are making it easier for the manufacturing industry to achieve added value with IIoT," adds Prof. August-Wilhelm Scheer.



Want to keep an eye on your data centre IT and OT? Thanks to Paessler and Rittal, you can now get accurate, live data for both.

IT and OT monitoring in data centres

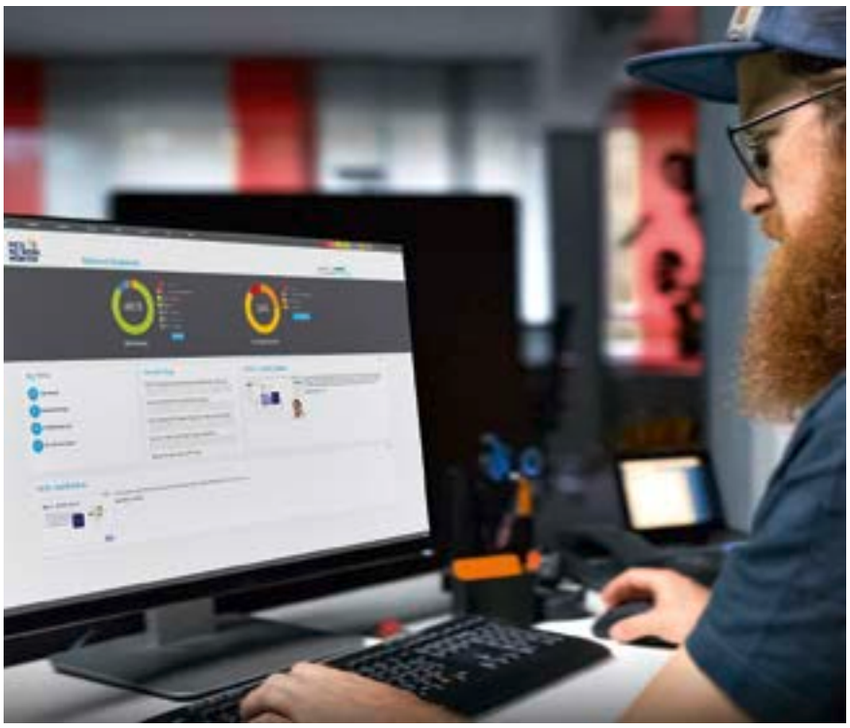
NEW DEPTH OF FOCUS IN MONITORING

A data centre must be reliable. It needs to remain effective, available and safe around the clock, while also being energy-efficient. A good overview of the entire **IT and OT infrastructure's status** is therefore a must. This is now possible thanks to **Rittal** and **Paessler**, who are combining their solutions for IT and OT monitoring.

Text: Steffen Maltzan and Michael Siedenhans

A cable fire or a burst water pipe in a server room is the stuff of nightmares for any data centre operator. After all, data centres are the backbone of the digital transformation and our modern society. They need to operate reliably, also ensuring the appropriate level of safety and availability 24/7. How, though, can the risks referred to above be prevented and any incidents detected promptly, in a way that ensures data centre managers are always kept informed and know everything they need to about the condition of data centre infrastructure? The best solution is a live overview of the overall status in the data centre, from software, hardware and server racks through to cooling systems, power cables and water pipes, along with exhaust air, fire safety and door/locking systems – in other words, from IT to OT. After all, both aspects must be equally reliable to ensure a data centre is available and operates effectively at all times. Is that actually possible, though? IT administration and facility management teams normally only monitor the system for which they are responsible in the data centre, and they work independently of each other. They don't pay attention to all

the systems by any means. Paessler and Rittal are now creating such an overview by combining their Paessler PRTG and Rittal CMC III monitoring solutions under the Paessler Uptime Alliance programme. This high-performance tool now makes it easy for users to simultaneously keep an eye on their IT and OT, in exactly the way they need to for their work. This is all possible thanks to a central dashboard for IT and OT in the data centre. Users can customise the configuration of this web-based tool, accessing it at any time and from any location.



A live overview of the overall data centre status – Paessler and Rittal are now making this possible by combining their monitoring solutions.

EARLY FAILURE DETECTION

A comprehensive overview is particularly important when monitoring IT safety. This is exactly where Paessler's PRTG network monitoring software comes in. Integrating and monitoring IT systems, it can detect failures at an early stage. This is an important function for data centres, especially now that IT environments are growing. Combining this solution with CMC III from Rittal means PRTG users can now also immediately tell whether there is a cable fire in the server room, a burst water pipe or an open safety door. In such cases, they are instantly notified by an alarm message and can take prompt action. This is all thanks to the Rittal monitoring system, which uses sensors to check and measure all relevant safety aspects relating to data centre OT – from temperature, humidity, smoke and leaks all the way through to unauthorised access and vandalism.

MEASUREMENTS FROM THE ENTIRE DATA CENTRE

PRTG software is one of the most popular IT monitoring solutions in the world. There are currently more than 500,000 users in over 170 countries. It's easy to operate, has practical functions and offers numerous interfaces for comprehensive solutions providing an IT overview. Paessler and Rittal have optimised the open interfaces, so it takes just a few clicks for PRTG users to activate the CMC III infrastructure and integrate it into the central monitoring system on the dashboard. In this way, the CMC III sensor measurements from the entire data centre environment are incorporated into PRTG. Building floor plans and server racks can also be depicted graphically on the dashboard. Equipment and the associated measurements are shown clearly, too. A further plus point is that QR codes generated in PRTG make it easier to assign the various measurements locally. As soon as engineers scan the QR code on the actual device, they can use their laptop or smartphone to see the associated measurements and how these have developed over time.

OPTIMISING ENERGY CONSUMPTION

The greater certainty for both hyperscale data centres and data centre containers even contributes to sustainability – using the central dashboard to precisely measure the power consumed by the integrated equipment and systems can help operators minimise their data centre's energy consumption. "This is made possible by combining Paessler's PRTG software with the Rittal components," emphasises Helmut Binder, CEO of Paessler AG. "Customers get a detailed picture of the power consumption in their data centre, enabling them to optimise the entire system's energy usage," he adds. The data overview helps data centre operators save money and energy by optimising the consumption levels of their systems and equipment and replacing these with more energy-efficient solutions if appropriate. This means they can always keep track of both safety and sustainability – based on accurate, live data. ■

"By combining our solutions, Paessler and Rittal are creating added value for our customers in terms of safety and sustainability."

Helmut Binder
CEO of Paessler AG

Stahlo SteelGate

CARBON TRACKING FOR GREEN STEEL

Fossil-free steel is set to transform the markets. Initial quantities have already been announced and will be available in practice in two or three years' time. The market lacks transparency, though, and there are currently still no uniform standards defining what constitutes **green steel**. With a **blockchain application called "SteelGate", Stahlo** is now offering a way of boosting confidence in the new ecosystem of "green" supply chains.

Text: Markus Huneke

There is a great deal of interest in green steel. Car manufacturers and their suppliers – both customers of Stahlo – will be using it in the future, as part of the EU's zero emissions strategy. Even before the recent announcements by steel producers about making a start on fossil-free production, Stahlo was aware of a growing interest in green steel amongst its customers.

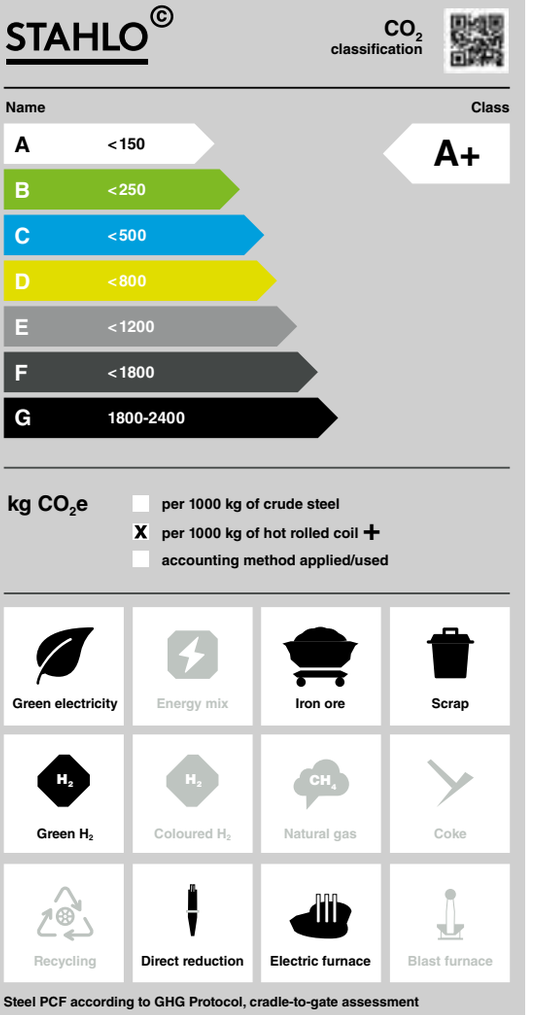
This interest is also a sign of great uncertainty due to a lack of reliable information. After all, there is still no solution in sight that will enable steel processors such as the automotive industry and its suppliers to carry out a valid evaluation of a steel

steel grows, though, so do the calls from customers for additional detailed information about the specific steel products they purchase. What's more, the most important thing of all is for these details to be reliable.

PROTECTION AGAINST TAMPERING THROUGHOUT THE SUPPLY CHAIN

Stahlo showcased one possible solution to this "problem of trust" at Euroblech 2022. The example application called "SteelGate" illustrates how carbon tracking can be implemented digitally, transparently and, above all, reliably – throughout the entire steel supply chain. This solution makes use of blockchain technology.

The basic idea is simple. A specific data set is assigned to each steel product. Information about the respective emissions generated is added at each stage of production and passed on along with the product. This provides users at the end of the



The Stahlo steel classification label rates products based on the emissions generated, which makes it easy for customers to compare them.

product's carbon footprint and pass on this information securely in their supply chains. "It's a big shake-up for supply chains, because the market for fossil-free steel is still in its infancy. Reliable information is vital to the smooth operation of this new steel ecosystem," emphasises Oliver Sonst, Managing Director of Stahlo.

An increasing amount is now known about the various ways of creating carbon profiles for steel products – based on the different manufacturing routes, for instance. Stahlo is one of the first companies to compile this knowledge in a dedicated database and make it available to customers in the form of a classification label. As the market for green

At its sites, Stahlo manufactures slitted coils, cut-to-size and standard sheets, blanks and contoured blanks in all standard surface finishes and grades, including high-strength and ultra-high-strength products.

"Reliable information is vital to the smooth operation of the new steel ecosystem."

Oliver Sonst
Managing Director of Stahlo

The idea behind carbon tracking: A specific data set is assigned to each steel product. Information about the respective emissions generated is added at each stage of production and passed on along with the product.

supply chain with full details regarding the product carbon footprint of the exact steel they have ordered. Although chains of information are nothing out of the ordinary these days, they have mostly been in analogue format to date. Moreover, the production and quality data does not include details of the emissions generated, and the information is also susceptible to possible tampering.

TRULY GREEN STEEL

Blockchain technology is a promising potential solution when it comes to building trust in the steel supply chain. It uses highly secure cryptographic processes to protect the chains of information against unauthorised access and tampering. Due to the cryptographic linking, any change made to a particular entity's data set without permission – reducing the emissions generated to date, for example – would automatically be registered by all the other distributed data sets.

The cryptotechnology being used isn't the vital factor, though. "It's not the data technology that is decisive, but rather transparency and trust in the supply chain to have reliable information about specific green steel products," explains Sonst. "Being an independent steel service centre puts us in an ideal position to satisfy this need for reliable information," he emphasises.

With SteelGate, Stahlo is demonstrating how all data entered is traceable, all the way back to its original source. The name of the author, the details of the data and the time it was entered are always transparent. As a result, green steel can be identified as truly green – i.e. from fossil-free production – throughout all processing steps. ■

What is a blockchain?

The basic idea behind a blockchain is simple. Essentially, it consists of interlinked data sets. Take the following example: The information about steel products that a steel manufacturer gives its customer could be saved in a blockchain data set and included in the scope of supply. The buyer would then add details about its own machining processes to the data set, and pass this on to its own customers. Nothing out of the ordinary there.

The special feature of a blockchain – and indeed any technology of this kind – is the highly secure linking of the data blocks thanks to cryptographic processes that make subsequent changes to the data impossible. Station B can't modify the data from Station A by deleting it altogether or removing/adding content. As a result, Station C can be sure the information chain is correct.

Furthermore, in contrast to conventional data management, the data is stored on a decentralised basis. There are no centralised entities. The data sets take the form of parallel, permanently linked copies held by all members of a network such as a supply chain. If one entity adds new information to a data set, all the other data sets of all other entities involved change accordingly. The key feature of this application is its security, which forms the technological basis for trust. Bypassing the cryptographic linking of the data blocks or modifying them without this being noticed is regarded as being all but impossible.

In demand

“CUSTOMERS ARE HUNGRY FOR INFORMATION!”

The emerging **market for fossil-free steel** means a big supply chain shake-up. We ask **Oliver Sonst, Managing Director of Stahlo,** about the resulting **challenges** for the steel market and its customers.

01 Mr. Sonst, green steel is definitely on the way, but what does that actually mean for the market – your customers, for example?
As far as the material itself is concerned, nothing! In terms of technology, there is no difference between green steel grades and conventional steel. There is no need for companies processing fossil-free steel to modify their production processes or invest in new equipment. Steel processors do, however, face a different challenge – can they be sure the green steel they purchase really is from fossil-free production? Proof of a green footprint will be vital in supply chains in the future, whether to comply with potential regulations or when communicating with customers, for whom the use of green steel is becoming increasingly important.

02 The first real volumes of fossil-free steel are set to be available from around 2025. When will this issue be relevant for your customers in practice?
It already is! Our customers have been contacting us for some time now, hungry for information about green steel. They are asking what “green” really means for steel products as such, what emissions are actually involved, and whether there are differences between various products and manufacturers. This tells us that there is great uncertainty in the market regarding the workflows and processes involved in producing fossil-free steel. I am therefore convinced that a new, dedicated ecosystem will be created for these steels. Being an independent steel service centre puts us in an excellent position to provide impetus for a neutral information network of this kind.

03 Stahlo showcased a blockchain application for carbon tracking at Euroblech. Won’t converting the entire steel supply chain to technology of this kind be a huge undertaking?
Not at all! A blockchain application requires neither big investments nor a large-scale conversion of existing processes. Essentially, it’s simply a case of passing on a blockchain data set. A specific data set is assigned to each steel product, and information about the respective emissions generated is added at each stage of production. Standard IT technology can be used to manage blockchain data sets. Quality and production data is already being passed on. In most cases, however, this is on an analogue basis and susceptible to potential tampering.

04 You support the creation of an ecosystem for steel. Why is that?
Databases are a possible alternative, but the idea of an ecosystem is very appealing. The data then belongs to a community – the members of the network – which prevents it from being used unilaterally. A community is likely to be more trusted than the database of a closed group, for example, so this could be a key factor in the willingness to pay extra for green products. That would be very important for the necessary investments. ■

Oliver Sonst
Managing Director of Stahlo

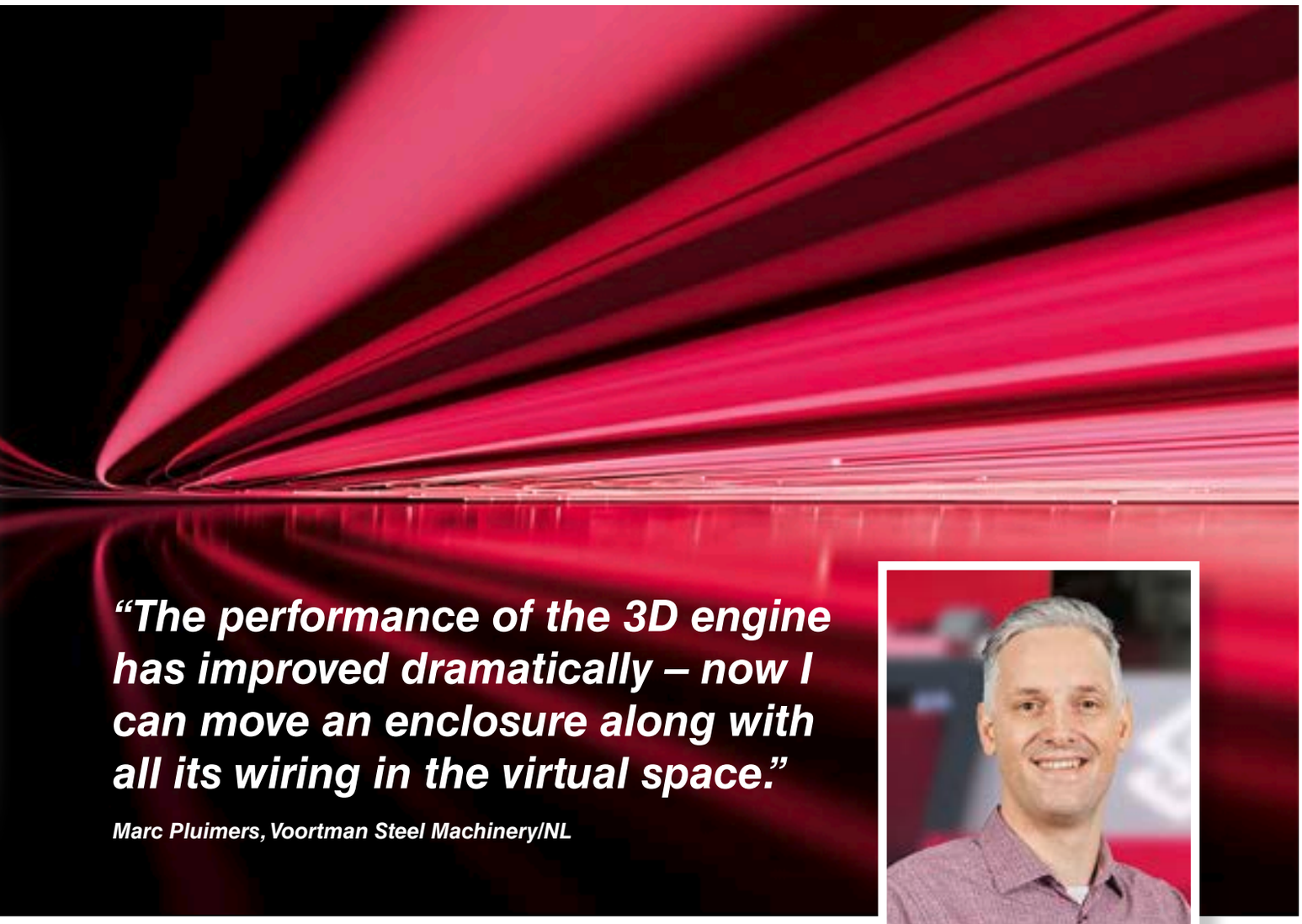
The new Eplan Platform 2023

More room for manoeuvre

Frustrated! That's how mechanical and plant engineers often report feeling when supply chain issues, missing parts and staffing bottlenecks interfere with their time-to-market. If everything could run smoothly right from the planning stage for a machine/plant, that would make a big difference. The new **Eplan Platform 2023** is now ramping up the pace in engineering, boosting opportunities for collaboration and thus freeing up time to deal with any problems that may arise further down the line.

Text: Birgit Hagelschuer

It's 8 a.m. on Monday. The week has just begun, but there's already one thing all mechanical and plant engineers know only too well: They have to work fast – to finish that project planning, to wire that enclosure, to deliver that machine. It might be a cliché, but it's still true for engineering – time is money. Thomas Weichsel, Vice President Software Portfolio at Eplan, sums it all up: "In Engineering – particularly during the current supply bottlenecks – you need to start the planning process as early as possible and drive it forward fast. That gives businesses the best chance of compensating for supply chain problems, or at least mitigating them. If you monitor your time-to-market early on and make your engineering highly automated, you can 'buy' yourself some room for manoeuvre in engineering so you can take action if components end up being unavailable in production."



"The performance of the 3D engine has improved dramatically – now I can move an enclosure along with all its wiring in the virtual space."

Marc Pluimers, Voortman Steel Machinery/NL

COMPLEX DATA MODELS

However, engineering is not just being shaped by high levels of automation – the digital twin is also sweeping through panel building and switchgear, bringing with it greater complexity and higher demands on 3D enclosure models. As many parts as possible need to be sensibly planned to fit a tight space and have to be depicted in detail. Another trend is that panel and switchgear parts are being described in ever greater detail by manufacturers. The level of detail for components is growing continuously and the 3D models of enclosures and switchgear are becoming increasingly complex as a result. This means the volume of data or information that needs to managed is also rising. 3D models of extensive bays usually require a great deal of patience.

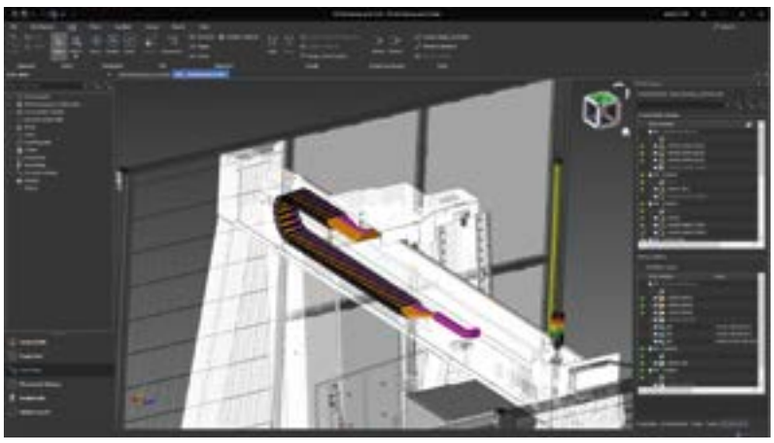
3D ENGINE BOOSTS PERFORMANCE

Eplan has come up with a clear solution to these challenges – the Eplan Platform 2023. Although it clearly can't fix resource shortages, it can simplify and speed up the engineering process and, in an ideal scenario, thereby create that all-important room for manoeuvre. It has a practical tool for this purpose – a new 3D graphics engine that offers considerably better performance for 3D enclosure models. "Creating virtual prototypes in 3D is an important part of the process in enclosure and switchgear production," explains Weichsel. In fact, the requirements for 3D enclosure models that will serve as a basis for digitising downstream processes are becoming ever more complex. "To meet these requirements, we have optimised the performance of our 3D graphics. Our users thus benefit from faster speeds and added convenience when building enclosures. It is not just the 3D rendering that is faster – users can also zoom and pan much more easily. As a result, we're offering our customers the kind of 3D performance that they need for efficient engineering." Company-specific standards, regional directives, national standards such as NFPA and IEC, and of course the variation in measurement units on the global market – all these factors require an ever-growing variety of device variants on the wiring plan. Previously, it has only been possible to allocate one macro to each article. However, the new article management system of the Eplan Platform 2023 now allows users to allocate up to 20 different wiring plan macros to each article and ▸

A new 3D graphics engine ensures users can also zoom and pan faster and more easily.

The new cable editor lays the groundwork for virtual machine cabling, ensuring the lengths of the cables can be easily determined in Eplan Harness proD.

link them to the corresponding standards and directives. The benefit for users is that once the relevant standard has been selected for a specific device, the software automatically allocates the relevant macro to that device. This makes it easier to manage articles, provides a better overview of the project and cuts down on administrative outlay. Component manufacturers who provide article data for the Eplan Data Portal in the data standard also benefit. For example, a drive can now be saved and updated in the Eplan Data Portal as a data set that incorporates different wiring plan macros. This drastically cuts manufacturers' outlay on providing and updating data.

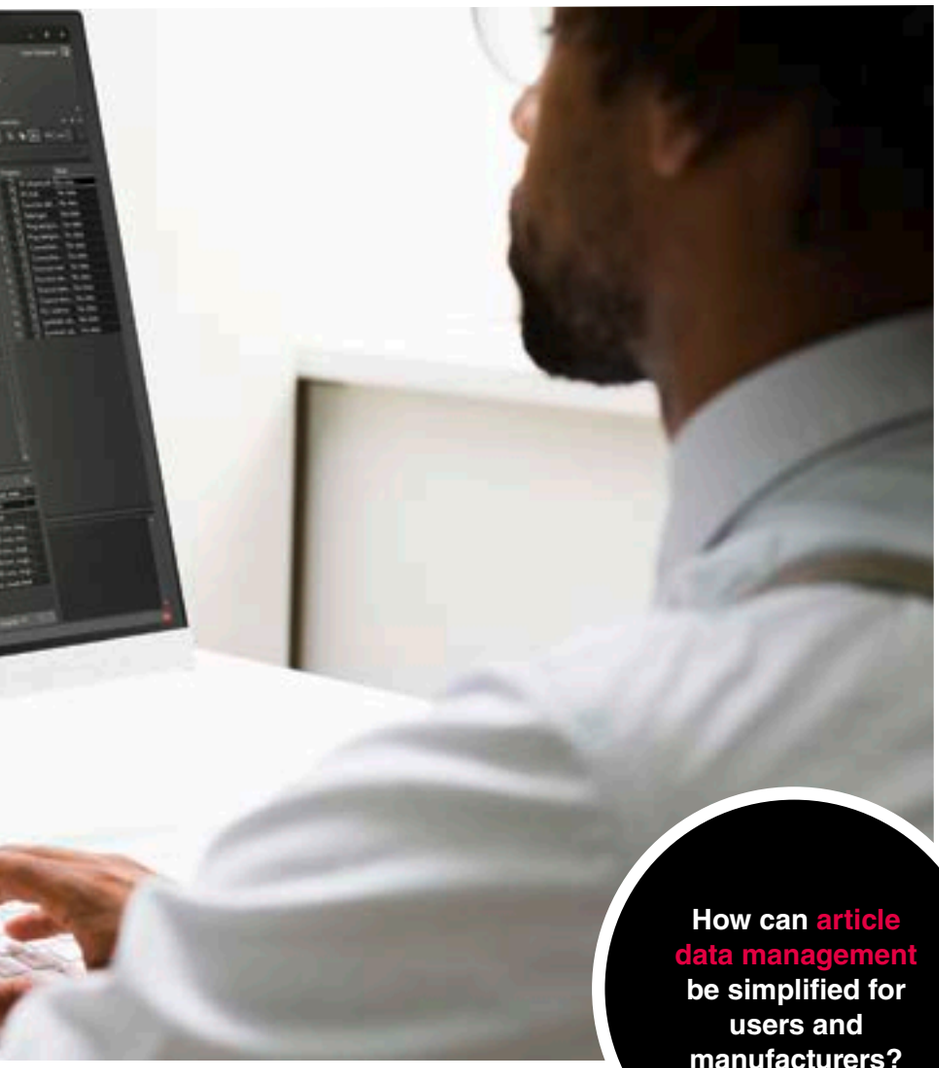


WIRING MACHINES VIRTUALLY

The Eplan Platform 2023 also simplifies the field cabling of enclosures that are spread across a plant in a decentralised arrangement. For instance, the new cable editor makes it easier to manage and visualise a cable on the Eplan Platform, regardless of the number of wires. Article and type numbers, source and destination, and shielding and connection are all depicted clearly in a single dialogue. The new cable editor thus lays the groundwork for virtual machine cabling, ensuring the lengths of the cables can be easily determined in Eplan Harness proD. The end result is that all cable information can be seen at a glance – from source to destination. Moreover, Eplan eStock, the new cloud-based article management system for the Eplan Platform 2023, provides a means to maintain article data centrally, in the Eplan cloud.

COLLABORATION IN THE CLOUD

This simplifies collaboration, speeds up coordination processes and reduces breaks in continuity. Project



How can article data management be simplified for users and manufacturers?

"Thanks to the new 3D graphics engine, our users benefit from faster speeds and more convenience for 3D enclosure models. In addition, the new multi-standard support helps Eplan Platform 2023 users avoid the previously laborious task of managing article data – particularly for international projects."

Thomas Weichsel
Vice President Software Portfolio at Eplan

teams can access article data on Eplan eStock from anywhere by simply (and securely) logging into the Eplan cloud, whether they're in their home office, at a business premises somewhere or sharing data with business partners. Autewe GmbH in Überlingen has already put eStock through its paces as a beta tester. Markus Beirer, Head of Electrical Engineering, describes how things used to work: "Before, our staff working from home used local copies of article databases because accessing the central article database through a VPN was too slow. The articles they had saved locally were not regularly updated to match the databases on our server." In the future, all staff will be working with the same database, thanks to Eplan eStock. "We expect to see an improvement in productivity because we won't have to create article data over and over again any more. It will be much easier to work as a team, too," points out Beirer.

CENTRAL ARTICLE MANAGEMENT = CONSISTENT DATA

Data sovereignty is always retained by the company or user and that company or user determines the quality of the data and access to it. Standards can be easily implemented across the board by issuing rights. Companies benefit from centralised access to the cloud in a number of ways. They can make better use of their personnel resources because they no longer have to spend valuable time building up and maintaining their own IT infrastructure. This also delivers cost savings, since bespoke solutions based on SQL servers or a virtual desktop infrastructure are complex. The quality of projects also reflects the fact that data is more consistent and of a better quality because it is not being entered several times over. What's more, everything is in line with the necessary standards. ■

FIND OUT MORE

www.eplan-software.com

NEWS

AROUND THE WORLD

What do beer drinkers in the USA, train passengers in Poland and owners of South Korean cars have in common? They are all benefiting from products, solutions and services provided by **Eplan** and **Rittal** that meet the needs of global customers in a whole range of sectors in terms of time, cost and energy-efficiency.

USA

CHEERS – KEEPING THE BEER FLOWING

Deutsche Beverage, which is headquartered in Charlotte, North Carolina, is a manufacturer and supplier of custom brewery equipment. To help it meet its customer's needs faster and take the strain off its own storage capacities, the US plant engineering firm uses standard enclosures from Rittal in both stainless steel and NEMA designs. Another plus point is that the enclosures can be modified to suit customer requirements, which lowers production times and labour costs. Technical support from Rittal also helps Deutsche Beverage work faster and more efficiently right from the quotation stage, thanks to the provision of CAD drawings, special orders and enclosure modifications.

POLAND

TRAINING TRAIN DRIVERS WITH RITTAL

Before train drivers get behind the controls for the first time, they are trained in simulators. Rittal is now helping Polish rail company UTK to deliver top-class training by ensuring the IT that runs the simulation software is safely housed in a security room. The room, which prevents unauthorised access and protects against physical damage, contains six Rittal racks with LCP CW, a CMC III monitoring system and power distribution units. Two external chillers ensure the cold water supply for the LCPs. An uninterruptible power supply (UPS) and an early fire detection and extinguisher system make sure the system runs safely and without disruption. Rittal has been able to produce corresponding certificates for the solution.

SINGAPORE

DOING OUR BIT – A SMARTER WAY TO MAKE ELECTRIC CARS

From 2023, there are to be 30,000 electric cars rolling off production lines every year at Hyundai's car factory near Singapore – with a bit of help from artificial intelligence and the Internet of Things. Solutions from Eplan and Rittal are doing their bit, too, by helping to standardise engineering processes and plant technology and make it transparent. Seven Eplan P8 licenses are being used to ensure all information is available at all times, from planning through to running panel and switchgear systems. Some 280 TS 8-series large enclosures and 45 Blue e+ cooling units from Rittal are also being used on the assembly line.

280 **TS 8-series large enclosures and 45 Blue e+ cooling units from Rittal are being used in Hyundai's smart car factory.**

AUSTRALIA

FIT FOR THE HEAT DOWN UNDER

Extreme conditions demand special solutions. For example, the sensitive control electronics used in the oil and gas fields of Australia need to be safely protected from the heat in special enclosures. Rittal has worked with BRS Electrical to develop one of these solutions for Santos, Australia's largest oil and gas company. Modified TS 8 bayed enclosures have been fitted with sun shields, roof-mounted fans and heat exchangers in order to protect electronic control units for starting motors (MCC) and their remote terminal units (RTUs) from heat stress.

INDIA

KEEP YOUR COOL – CAR PRODUCTION IS RUNNING

Production downtime caused by overheating power electronics is not an option for any car manfacturer. India-based Maruti Suzuki is no exception. After the local Rittal Service team had aready maintained 600 cooling units on one site, Rittal India also took care of maintenance and servicing for a total of 4,500 cooling units at another site. This is helping the car manufacturer boost the availability of its production systems, even at high temperatures. The gradual replacement of older models with efficient Blue e+ cooling units is also being planned.

Rittal cooling units

COOL
WHEN THE HEAT IS ON

Soltau is something of a hotspot. When the ovens at **Harry-Brot** reach over 200 degrees Celsius, the bread rolls and loaves aren't alone in feeling the heat. The company's staff and equipment also work up a sweat. Despite a room air temperature of 45 degrees, everything needs to run like clockwork – excellent test conditions for the new **Blue e+ cooling units from Rittal.**

Text: Dr. Jörg Lantzsch

A wonderful aroma of bread fills the air. Every day, the ovens at Harry-Brot in Soltau turn out products including some 180,000 sandwich loaves. Freshly baked, they make their way through the production section and are then packaged and loaded into lorries to embark on their journey to supermarkets across Germany. The country's biggest manufacturer of bakery products is a household name, with a range that includes everything from brown and wholemeal bread to sliced loaves for making toast and sandwiches.

To ensure everything goes like clockwork, systems need to be in continuous operation. It hasn't always been that way, however. Heat-related breakdowns used to be a regular occurrence at the plant. These were mainly caused by the failure of control technology installed in enclosures, and the consequences were huge. "When our systems go down, it also brings our lorries to a standstill, and we are unable to deliver our bread. That's a big problem, because our customers expect to find fresh bread on the supermarket shelves every day," explains Björn von Frieling, the site's Workshop Manager.

Even though temperatures outside the enclosure can often reach 45 degrees, temperatures inside are much, much higher. They have been measured at between 60 and 70 degrees in the past – hardly the ideal conditions for sensitive electronics, especially when installed in relatively small compact enclosures. Rather than climate control units, Harry-Brot had simply been using fan-and-filter units for these enclosures.

Do you have cooling problems in production, and are you looking for other ways of cutting energy consumption?

“Our systems are reliable, and we have roughly halved our energy consumption.”

Björn von Frieling, Workshop Manager at Harry-Brot in Soltau

The reason for this was simple. “Cutting-edge, energy-efficient Blue e+ cooling units from Rittal were previously only available with high cooling outputs of at least 1.6 kW – definitely too high for our purposes,” explains von Frieling. He was therefore delighted when Rittal launched the new Blue e+ S-units with lower cooling outputs. “These are ideal for the levels of heat generated by our application. In consultation with the Rittal sales team, we agreed on a trial here at the plant to put the units through their paces in our operation,” he says.

SURPRISING TEST RESULT

Besides ensuring high system availability, Harry-Brot also considers reducing the company’s carbon footprint to be a top priority and therefore prefers to invest in energy-efficient technologies. Accordingly, it used the trial to compare a new energy-efficient Blue e+ S cooling unit with a Blue e unit that had also previously been available with a lower cooling output. For both units (500 W), the energy consumption was measured continuously during the trial.

Image above:
Every day, the ovens at Harry-Brot in Soltau turn out products including some 180,000 sandwich loaves – a real climate control challenge for equipment and systems.

Top-left image: Bread dough moving along a conveyor belt. If systems go down, this also brings the lorries to a standstill, and no bread can be delivered.

Top-centre image: Rising summer temperatures have made the role of cooling units even more important.

Top-right image: The trial produced a surprising result. The new Blue e+ S cooling units consume 60 per cent less energy.

The result for the first five months surprised von Frieling. “I wouldn’t have expected a result like that,” he reveals. The Blue e+ unit consumed just 248 kWh of electrical energy, compared with 626 kWh for the Blue e unit. This corresponds to savings of 60 per cent over the entire test period and 884 kWh for the year as a whole. Based on an average industrial electricity price of around 26 cents per kilowatt-hour, Harry-Brot can thus achieve an annual saving of around 230 euros per cooling unit. What’s more, Blue e+ units come with integrated condensate evaporation. Excluding the proportion of energy consumption accounted for by this function, the saving is over 260 euros per cooling unit.

BREAKDOWNS SOON A THING OF THE PAST

Even more important for von Frieling, though, is the higher availability that can be achieved with enclosure climate control. Effective climate control in enclosures means production systems break down less often. “That will make it easier for us to guarantee the delivery of fresh bread,” he insists. Production stoppages due to excessive enclosure temperatures are also bad for sustainability. Components need to be replaced or repaired, which requires manpower and materials. The new enclosure climate control system will ultimately mean these resources are not called upon. Dozens of enclosures at Harry-Brot are therefore set to be equipped with Blue e+ S cooling units in the near future.

New technologies for greater sustainability

Harry-Brot was established in 1688 as a small artisan bakery in the Altona district of Hamburg. In the 334 years that followed, it has gone on to become one of Germany’s biggest market players – thanks to a corporate philosophy that focuses on the systematic use of new technologies and on sustainable business practices. “Efficiency is the name of the game at Harry-Brot. New technologies such as Rittal Blue e+ S cooling units help ensure continuous improvement in terms of the quantities we produce and our green credentials,” says Norbert Lötz, Managing Director for Production and Technology.

FURTHER REDUCTION IN ENERGY CONSUMPTION

The high energy efficiency of enclosure climate control is contributing to a long-term corporate strategy that has already been initiated for the entire production operation. Between 1999 and 2018, the energy consumption per metric ton of flour fell from around 1200 kWh to just over 800 kWh. The Blue e+ S units are helping reduce this figure further. As a result, von Frieling can imagine the system also being used at other company sites in the future. ■

FIND OUT

VIDEO-INTERVIEW

with Björn von Frieling

Teamwork: Workshop Manager Björn von Frieling from Harry-Brot in Soltau (front) and Rittal Product Manager Stefan Eibach are delighted about their shared success.

Heat pipe and inverter control is key

Users of Blue e+ units can cut their energy consumption by an average of up to 75 per cent. This is made possible by the innovative technology installed in the units, which combines a heat pipe with a separate inverter-controlled compressor. The heat pipe itself works without its own compressor, an expansion valve or other regulating elements, so it uses no power. In situations involving limited amounts of heat or a regular ambient temperature, this means the heat pipe can take care of cooling in a very energy-efficient way. Additional compressor cooling support is only necessary if the amount of heat to be dissipated or the ambient temperature is very high. The compressor's inverter-controlled drive means the speed can be tailored to requirements. This results in lower cooling hysteresis, better energy efficiency and a reduced carbon footprint for the company.

Charging station for Cologne public transport authority

FULL IN SIXTY MINUTES

What "core competencies" do enclosures need to offer when it comes to expanding charging infrastructure?

Charging infrastructure is one of the major stumbling blocks as we **switch to electric mobility.** That doesn't just apply to Teslas, Renault Zoes, VW ID.3s and others like them. If city buses are to be switched to **e-mobility,** they need powerful charging stations, too. At its northern depot, Cologne Public Transport Authority (Kölner Verkehrs-Betriebe/KVB) is showing just what these charging stations could look like. The **Rittal VX25 enclosure system** is there, too.

Text: Dr Jörg Lantzsch

Heavyweights:
With the components inside each charging point weighing in excess of 400 kg, the stability of the VX25 enclosure is a crucial factor.

Public transport involving the use of buses is an ideal way of pushing forward the energy revolution in the transport sector. Cologne Public Transport Authority, for example, is turning to electric buses – and aims to have a fleet of over a hundred by the end of 2022. However, operating a fleet of this size calls for powerful charging infrastructure. You only need to look at the battery capacity to realise that charging e-buses is no trivial matter – these batteries are around ten times bigger than the equivalent battery for a car.

The system, with its 53 charging points, charges buses with DC voltage, delivering maximum power of 150 kW.

UP TO 53 BUSES CHARGED OVERNIGHT

Having planned, built and launched the charging system for Cologne Public Transport Authority's northern depot, the plant engineers of SBRS have demonstrated how efficient charging infrastructure of this kind can be realised. The fleet of buses is charged overnight, using only green electricity. The vehicles are not connected to the charging station via a plug – instead, the connection is made via pantographs fitted to the roofs of the buses. The system, comprising 53 charging points, charges buses with DC voltage, delivering maximum power of 150 kW. At its heart is the highly efficient SBRS intelligent load and charging management system. "In principle, it's possible to fully charge the buses within 60 minutes," says Markus Heine, Project Leader at SBRS. "However, in normal operations, they're charged over a period of three hours or so to achieve maximum efficiency." The electrical engineering technology is installed inside enclosures in a separate building. Thanks to the high degree of efficiency and therefore low levels of loss, no active cooling is needed for the enclosures. There is one VX25 enclosure for each of the 53 charging points, and the power electronics, contactors and automation technology for the charging management are all installed inside these enclosures. The power semiconductors for the DC charging technology are modular in design. This means it's easy to scale the charging capacity up or down in line with requirements. The enclosures have perforated doors on both the front and the back – and the only type of cooling that takes place is passive. The only fans fitted are for the power semiconductors.

STABILITY IS KEY

With the components inside each charging point weighing over 400 kg, the stability of the enclosures used is crucial. "We never had any doubts about the quality of the new VX25 in this regard, as we'd had good experiences with the previous model," Heine explains. The flexibility offered by the system in terms of expansion is another plus point of the VX25. "What we get is a one-stop solution that includes everything from the enclosure and its installation components to the base and accessories such as a door switch," emphasises Heine. Two other particular advantages that helped win over SBRS were the very quick availability of the enclosures and the modular system of the VX25, which means that fewer different components are needed. The Project Leader firmly believes that fast delivery is extremely important, especially during the system implementation phase. After all, projects often have short timelines to begin with and delays in actually getting started on them are all too common. ■

"We've been really impressed by the quality, stability and flexibility of the VX25 enclosure."

Markus Heine
Project Leader at SBRS GmbH

FIND OUT MORE

www.sbrs.com

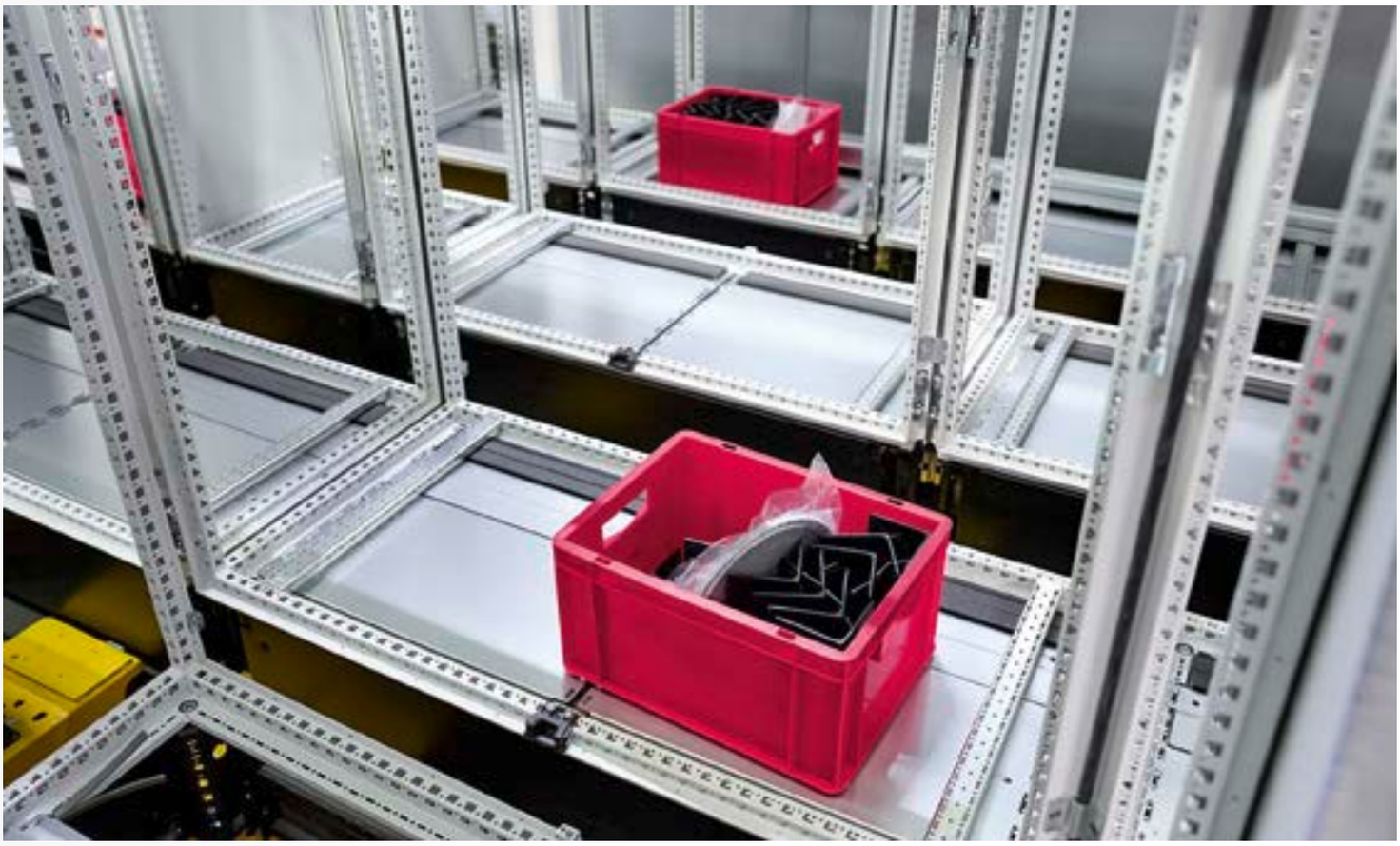
www.schaltbau-refurbishment.de/produkte/uebersicht/e-mobility

Challenge for mechanical and plant engineering companies

CAUTION – SUPPLY BOTTLENECK!

The **Beumer Group** and **Blumenbecker** are actually doing very well. The order books of these two businesses in the German town of Beckum are full. If only it weren't for the **supply bottlenecks!** Suppliers are currently under renewed scrutiny as a result. What are the criteria for good partnerships, though? The example of **Rittal and Eplan** shows it's about more than the ability to meet supply commitments.

Text: Annedore Bose-Munde



Empty enclosures are not uncommon, and that includes panel building and switchgear applications. Blumenbecker, too, sometimes has a long wait for built-in components such as control technology.

The Beumer Group is one of the big international players when it comes to intralogistics and material handling systems. Mark Antonius Behler takes a certain degree of pride in setting out its wide-ranging portfolio, although producing that portfolio requires well-functioning relationships with suppliers – relationships that are currently being compromised by supply bottlenecks. “The biggest challenge for Beumer at present is reacting to volatile supply chains and finding alternatives,” says Behler, Director Engineering & Project Management Product Business at the Beumer Group. “In difficult situations, having the flexibility to switch suppliers is important,” he adds.

Blumenbecker, one of Beumer’s top control system suppliers, is also having to contend with supply problems. “The worst thing is when we have deadlines to meet but it’s impossible because our suppliers fail to meet their deadlines. That messes up our entire production schedule,” says Reinhard Agnesens, Key Account Manager at Blumenbecker Automatisierungstechnik. “In one specific instance, for example, we had to install empty en- ▸

“We see solid partnerships as the number one stabilising factor for our supply chain.”

Mark Antonius Behler
Director Engineering & Project Management Product Business at the Beumer Group

“It’s vital to expand partnerships with suppliers who can overcome even difficult situations.”

Reinhard H. Agnesens
Key Account Manager at Blumenbecker Automatisierungstechnik

Packaging machinery such as the unit shown here is manufactured by the Beumer Group for its logistics customers.

closures on an interim basis and deliver the necessary components to go inside later on. This challenging situation cost us a lot of time because of the extra communication and processing work, and the need to delay the order," reveals Markus Tigges, who is responsible for all Blumenbecker engineering projects.

ACTIVE PARTNERS CALLED FOR

So, what exactly is the approach adopted by these two businesses when demand is high but supply lines often collapse somewhere or other? "When things got tough, there were definitely suppliers who confirmed orders and also their ability to deliver, but then nothing happened. Others at least phoned to tell us they were unable to meet the delivery deadline," says Behler, describing the situation.

There are, he says, all sorts of suppliers out there. "We now distinguish between active and passive partners. In the case of an active partnership, we expect realistic suggestions to solve any problems that arise," Behler continues. When it comes to passive partners, Beumer now has at least one alternative supplier and has also increased its stocks. "We are essentially happy to rely on our partners and, as I see it, a good partnership includes two-way dialogue. We know exactly where we are with Rittal in this regard," underlines the project manager. Tigges agrees with him. "Thanks to on-time deliveries, our collaboration with Rittal has worked very well, even during difficult periods," he says. Binding promises regarding delivery deadlines are also very important to Blumenbecker. "We therefore initiate the order process very early on, simply because that makes it easier for suppliers to respond," explains Tigges. "It's vital to expand partnerships with suppliers who, financially speaking, can overcome even difficult situations," adds Agnesens.

When manufacturing its mechanical and plant engineering equipment, the Beumer Group depends on well-functioning relationships with suppliers, as Mark Antonius Behler is fully aware.

IT'S ALL ABOUT BEING ABLE TO DELIVER

Besides the quality of the products supplied, the issue of actually being able to deliver has become decisive for both the Beumer Group and Blumenbecker. The priority is treating both customers and suppliers as partners. "We are in very close contact with our customers, and that especially includes communicating the delivery times of various suppliers. We may switch suppliers if the components are equivalent in technical terms and switching will lead to shorter delivery times," explains Agnesens. The supply situation has triggered a global rethink at many companies. For example, a large number of processes have come under renewed scrutiny, including aspects such as innovation, digitalization and sustainability.

The latest automation technology: Blumenbecker sees Rittal as a development partner for optimising the value chain.

Full order books: Blumenbecker offers solutions and services for process automation, control technology and industrial maintenance/ requirements.

FOCUS ON DIGITALIZATION

Innovations at the Beumer Group used to mainly be geared towards optimising the performance and quality of equipment. That is now changing. "We have, without doubt, also reached physical limits that mean optimisations no longer make sense. The focus of innovation is now increasingly on digitalization. Customers expect us to leverage the possibilities it offers," says Behler. If a system were to go down, for example, no-one would now want to wait three days for a service engineer. Faster interventions in the case of system faults, reduced downtimes and less travel all also contribute to sustainability. As regards Beumer's products, energy-efficient implementation is a further focal point.

Blumenbecker, too, leverages digitalization in its panel building and switchgear value chain. Having made a start on this some time ago and already developed solutions in-house, it has now switched to Eplan engineering solutions. The issue of interfaces is key when it comes to mapping reliable processes. "Data interfaces and innovations on machinery are important to us, as is dialogue with Rittal and Eplan," emphasises Tigges.

DEVELOPMENT PARTNERS FOR THE FUTURE

Both businesses need to reposition themselves to meet all these challenges in the future, which means also focusing on collaboration in the area of digitalization. Blumenbecker regards Rittal and Eplan as development partners for optimising the value chain, and many projects are handled with a coordinated approach. Besides various Eplan engineering solutions such as Eplan Electric P8 and Eplan Pro Panel, for example, Blumenbecker also uses the latest automation solutions for machining enclosures and components, including milling, drilling, laser machining and cutting centres from Rittal.

The Beumer Group, too, is taking a close look at processes and optimising them, always with an eye on well-organised data management and precisely defined interfaces. "We see Rittal as a pioneer – both for products and in terms of approaches to digitalization. We are happy to adopt the same approach as part of our development partnerships," says Behler. Beumer paid Rittal a visit to explore the possibilities of the Eplan Smart Wiring software tool – a virtual assistant for manual wiring in panel building – and has already received some suggestions for engineering cable harnesses. It was also interested in Eplan Fluid, an engineering tool for project planning in the areas of hydraulics, pneumatics, cooling and lubrication. To further optimise its own digitalization processes, the Beumer Group is planning to work with Eplan and Rittal as digitalization partners for mechanical and plant engineering. ■

VIDEO INTERVIEW

with Mark Antonius Behler from BEUMER

BEUMERGROUP

VIDEO INTERVIEW

with Reinhard H. Agnesens from Blumenbecker

Eplan speeds up planning, operation and maintenance

TIME FOR A MAKEOVER?

How do you significantly boost output in outdated production facilities?

The building sector is booming, and one of the many beneficiaries is the **long-established company Sto**. The high demand for the paints, varnishes, and coating and heat insulation systems manufactured in the small town of Stühlingen meant that production at the company's main site reached its limits. Its biggest production facility needed to be modernised as a matter of urgency. The only question was how. **Sto chose the Eplan platform** for the retrofit – and, as a result, cut the amount of time previously spent on maintenance work and regular process engineering modifications by half.

Text: Marius Schaub

Production 3" is the facility in Stühlingen at the Sto headquarters that is responsible for the biggest proportion of the total output produced by this manufacturer of paints, varnishes, and coating and heat insulation systems. The facility has been operational since 1980, but problems have built up over the years. For example, it has become more difficult to get hold of spare parts for measurement and control technology components. The growing product portfolio also meant the facility was facing more and more challenges. "Whenever a new product was developed and brought to the market, we had to create space in our tank storage facility for new raw materials, increase capacity or lay new pipes," explains Joachim Hauschel, who is in charge of planning and automating systems with Eplan at Sto in Stühlingen. The ever-increasing scale of the process engineering involved meant that process control reached its limits. Ultimately, the result was that there were no longer any free interfaces available, since all of them were already in use.

THE ISSUE OF MEDIA DISCONTINUITY

There was nothing else for it – an expansion was absolutely essential to bring the production capacity and automation up to date. Hauschel and his colleagues in the planning and automation team wanted to solve another problem, too: "We had already used Eplan to digitally configure the system's existing electrical design engineering. However, the entire piping and instrumentation flow chart existed only on paper or in Excel charts – and even that documentation was very sparse, because it was never updated when changes were made." The plant staff always felt the effects of this as soon as maintenance work or process modifications were called for – in many cases, staff had to trace the relevant pipes by physically walking through the plant. It was laborious work. "There were some pipelines I followed five times on foot – getting a different result each time. After all, it's really easy to miss a branching off," Hauschel explains.

To create a totally reliable database, make work easier for his own staff and provide the control system engineer carrying out the retrofit with a complete picture of both the target and actual state of production, Hauschel included not only the electrical design engineering in the specifications, but the fully digital piping and instrumentation (P&I) flow chart, too. "To do this, we were looking for a standardised platform that would offer us everything from a single source," Hauschel explains. The search produced exactly what they were looking for – the Eplan platform. This was the ideal solution, as it offered a state-of-the-art technical basis for cutting-edge engineering that would make it possible to digitalize all areas of the industry. Eplan Electric P8, which is used to create circuit plans and wiring schematics, also automatically generates detailed evaluations as an integral ▸

The Preplanning experts: (from left to right) Joachim Hauschel (Sto), Klaus Lechtenbörger (Eplan) and Ronny Kaltschmid (Kaltschmid Industrial Engineering)

The men of action from KRIKO Engineering GmbH: (from left to right) Bernd Jenne and Oliver Andris in the Sto plant

component of the project documentation. Meanwhile, Eplan Preplanning means that engineering data can be collected digitally across all planning phases – from electrical engineering, fluid technology and P&I through to electrical measurement and control technology – and prepared in such a way that it can also be used for operation and maintenance.

"Although we'd heard of Eplan Preplanning, we weren't familiar with the functions and features the system offers," Hauschel recalls. The Sto managers inspected a reference system to get better acquainted with the tool, but it was a service provider that Hauschel knew from earlier projects that tipped the scale – Kaltschmid Industrial Engineering. This electrical engineering company uses Eplan for all its engineering processes. The company's Managing Director, Ronny Kaltschmid, explains why: "Preplanning lets you record engineering data early in the preplanning process – and this proved ideal for the Sto project."

INTERCONNECTED AT LAST

The integrated functionality helped keep the project on its tight schedule. "We needed to complete the instrumentation flow chart in just three months, so that our automation specialist, KRIKO Engineering in Merzhausen, could then get started on its work," says Hauschel. Even so, Kaltschmid recommended including fluid technology as a third discipline, since all shut-off valves in the Sto production facility are controlled by pneumatic actuators. "Electrical planning that also incorporates fluid planning in the documentation hugely simplifies the processes in both engineering and everyday production," Kaltschmid explains. Hauschel shares this view.

Following an analysis of various suppliers, the job of planning and implementing the entire retrofit was awarded to KRIKO Engineering GmbH, an automation and drive specialist with extensive expertise in Eplan, control technology, process control and IT. Thanks to the development of efficient macros and the integrated functionality of Eplan with Preplanning and Fluid, the upgraded system was able to start regular operation just nine months later, in January 2020. "Even during the planning phase, we carried out renovations with KRIKO to ensure a quick switch-over to the new production control system, because we knew we only had two weeks available for the switch," comments Hauschel.

Due to just-in-time production, the system engineering team needs to be able to guarantee system availability of 98.5 per cent at all times. This availability is ensured by means of a 24/7 on-call service. If there is a problem in part of the system, a member of the team needs to be on site within 30 minutes to get production going again as quickly as possible. "That's why we need to have documentation that is up to date at all times," emphasises Hauschel. In extreme circumstances, this means that, even at 3 a.m., the plan needs to show very clearly where each component is installed and how they are all connected. "Eplan meets this requirement perfectly," Hauschel reports. The tools help visualise projects and make them easier to understand. "For us, one of the biggest advantages of this trio – Eplan Preplanning, Electric P8 and Fluid – is that we can now undertake all plans and modifications ourselves," Hauschel sums up after the retrofit.

FIND OUT MORE

User report available to download:

TWICE AS FAST

For the planning and automation managers at Sto, a really important criterion is that staff need to be able to work independently during everyday operations. This criterion also applies in relation to the Rittal enclosures that are standard components at Sto. "When it comes to these components, which are so crucial, our philosophy is that every apprentice must have

Electrical control of the valves: Sto engineers can undertake all plans and changes themselves.

built an enclosure themselves, at least once. This is the only way they'll gain an understanding of what it means to saw, drill, cut a thread and do the wiring." Hauschel has consistently applied this principle not only in respect of the hardware, but the software, too. Each and every member of staff should be aware of the importance of reliable, centrally stored data.

The Eplan tools have been used for maintaining data right from the very start of the project. "Eplan exports all the data – wherever it is processed and whether it is in the form of text, equipment identifiers or other information – to other systems so that everything is synchronous at all times," says Hauschel as he explains the procedure. Since changes are made to the process technology or production control on an everyday basis, he works with the tools daily: "Outlook, Teams, Eplan – the first thing I do when I sit down at my desk in the morning is to start up these programs, because I need them throughout my working day."

So, was the decision to use Preplanning, Electric P8 and Fluid as a bundle the right one? Planning and automation expert Hauschel gives a factual answer: "We're now making a time saving of at least 50 per cent. In the past, we often had to walk through the entire plant when problems arose. Now, we use the flow chart as our guide and this gives us a complete overview straight away." The fact that pneumatic plans are an integral part of the full schematics also makes everyday work easier. "The function for switching between the different disciplines is just great," says Hauschel. "A basis for communication has also been created with the system," adds Kaltschmid, pointing to the advantages that extend beyond production and the Sto staff, and explaining that suppliers, maintenance engineers and other service providers are now all benefiting from the central, integrated data storage system. Hauschel is quick to agree: "The reliable database has improved our efficiency both inwards and outwards. For example, if a service provider needs to perform maintenance work on part of the system, a PDF that has been produced in Eplan is sent to them in advance. This gives them a much more comprehensive picture than just a list of the installed components."

There are more than 500 wiring schematics for the Sto systems in Eplan Electric P8. For three of the production systems in Stühlingen, the P&I diagrams have already been mapped out in Eplan Preplanning, while 50 up-to-date pneumatic diagrams have been documented with Eplan Fluid. "The system is growing all the time," Hauschel says. He should know – he deals with changes and extensions on a daily basis. "It's now impossible to imagine our everyday business without Eplan." ■

The retrofit at Sto:

The solutions with Eplan

- More than 4,000 pages of wiring schematics in **Eplan Electric P8**
- The P&I for the production system is mapped out in **Eplan Preplanning**
- The fluid plans were stored in the electrical design – with **Eplan Fluid**

The result

- **Time saving of more than 50 per cent** for planning and automation
- Reliable database for production modifications and maintenance work
- System availability of 98.5 per cent

KRIKO Engineering in Merzhausen was responsible for successfully implementing the measures.

Photovoltaic installation on the roof at Spedition Lutter

How can shipping companies become almost entirely energy self-sufficient? Photovoltaic installations with energy storage systems are one possible solution.

TESVOLT battery storage systems

NOT TIED TO THE **POWER GRID**

A growing number of **shipping companies** are becoming independent from the power grid, and with good reason – electricity prices are continuing to rise, while power cuts are very costly. Besides being a logical and climate-friendly solution, generating and storing their own power is also a cost-effective option. In terms of technical requirements, however, this calls for high-performance **battery storage systems** such as the ones offered by **TESVOLT** using **Rittal** enclosure technology.

Text: Vera Neuhäuser

The TESVOLT battery storage system stores solar power and provides backup power.

"Rittal adapted the enclosure perfectly to our needs and has been supplying us with very high-quality, robust storage system enclosures for many years."

Simon Schandert
Co-founder and CTO of TESVOLT

Thanks to solar panels and an energy storage system, Spedition Lutter in Bönen is almost entirely energy self-sufficient. Together, a photovoltaic installation on the roof with a peak output of 80 kilowatts and a battery storage system with a capacity of 50 kilowatt-hours cover practically all the energy requirements of this company, which has 52 employees and transports goods throughout Germany. The entire installation, including the battery storage system, will have paid for itself in just eight years.

ELECTRIC VEHICLES WITH CLEAN POWER

"As a shipping company, we inevitably emit a certain amount of CO_2 into the air. We wanted to change that, and we're now gradually switching to electric vehicles," explains Martin Gerold, who runs Spedition Lutter along with Thomas Gerold. The company currently has twelve electric fork-lift trucks and four electric cranes. Charging them from the public power grid would be expensive, as it would result in peak current loads during the charging process. Energy suppliers would have to be prepared for these and would apply correspondingly high charges.

Martin Gerold also has green plans for the future. As soon as battery technology reliably provides appropriate ranges, he intends to start replacing vehicles from his fleet of 26 diesel lorries with electric models. An on-site solar-powered recharging station will also be built at that point.

BATTERY STORAGE FOR INDEPENDENCE

The solar installation on the company building has an east-west alignment. The aim is to keep the amount of solar power generated as uniform as possible throughout the day rather than having a high yield around noon, as is the case with south-facing installations. The battery, which is installed in a VX25 enclosure system from Rittal, stores surplus solar energy from the roof. This is used to supply the site's servers, IT systems, lorry workshop and lorry wash facility with clean power, overnight and early in the morning. If the company fed this surplus solar power into the grid, it would currently be paid just 6 cents per kilowatt-hour. Without the storage system and the solar installation, on the other hand, each kilowatt-hour would cost the company 30 cents, and this figure continues to rise.

Optimising self-consumption

Peak shaving

Backup power

The next step will be to make the necessary additions for the storage system to also serve as a backup power supply solution. "We had a power cut just recently. That, too, costs an industrial company a great deal of money," says Martin Gerold. In the future, the storage system will supply power when the public grid is down.

The lithium battery was supplied by TESVOLT, which is headquartered in the German town of Wittenberg and specialises in battery storage systems for commercial and industrial companies. TESVOLT has become a global technology leader and has already won a number of awards. Sophisticated technology makes its batteries particularly durable and cost-effective.

The energy storage system specialist considers safety to be extremely important, so it uses industry-tested VX25 enclosure technology from Rittal.

"Energy storage systems for commercial and industrial use need to meet high requirements. We therefore use only industry-proven components," says TESVOLT's co-founder and CTO, Simon Schandert. "Rittal adapted the enclosure perfectly to our needs and has been supplying us with very high-quality, robust storage system enclosures for many years," he adds. ■

Interview with Jannik Kunzel from TESVOLT

THE ENCLOSURE FORMS PART OF OUR **SAFETY CONCEPT**

When solar and wind power is unavailable, energy storage systems ensure a stable power supply. The associated enclosure technology needs to match the stability and reliability of these systems – and also meet many more requirements. We ask **Jannik Kunzel, Product Manager at TESVOLT**, why **TESVOLT AG** has been thinking outside the box and developing joint solutions with **Rittal** for some years now.

Interview: Annedore Bose-Munde

Mr. Kunzel, why are energy storage systems growing in popularity to such an extent right now?
Essentially, energy storage systems support efficient energy management. This means self-consumption can be optimised, for example by storing power generated by photovoltaic installations during the day and then using this at night or when it's overcast. Peak shaving is a further typical application. Storage systems can step in and shave load peaks at the precise point in time when cooling systems are starting up or a large number of vehicles are being charged simultaneously. Certain countries also use time-dependent electricity tariffs, and we have introduced a time-of-use function for this scenario. The storage system charges up at times when power is inexpensive, and this power is then used during expensive periods. Storage systems make it possible to achieve zero feed-in at the grid connection point, which might avoid an expensive expansion of the grid connection.

Energy storage systems are technically challenging. What role does the enclosure play?
An important one, is the short answer. One of the first steps for us is to find an enclosure that is suitable for the battery technology. The enclosure system also needs to meet basic contact hazard protection requirements. An appropriate IP protection category is important, as is the earthing concept, of course. The enclosure system also forms part of the TESVOLT safety concept. Our systems are always certified by the TÜV inspection agency – and that includes the enclosure. Battery modules are heavy, so the enclosure also needs to be very robust.

What loads must an enclosure actually be able to withstand?
The largest system we currently use consists of 12 battery modules – each weighing 56 kilograms – and the necessary peripherals. All that adds up to around 600 to 700 kilograms. There's also the enclosure itself, which weighs about 150 kilograms. The enclosure system must have a sufficiently stable design to prevent any deformation. Given that our solutions are scalable, it must also be possible to extend the enclosures by baying them, for instance. Another important factor is ensuring straightforward handing – our modules must be easy to install.

At what stage of the development process does the enclosure enter the equation?
When we are preparing a new product concept, we consider the enclosure very early on. A specification that defines all the requirements is then drawn up. This forms the basis for the joint development and engineering process for the appropriate enclosure system. Following a number of iteration loops based on CAD data, an initial prototype is produced. The subsequent test installation of the modules and components indicates any final adjustments that may be required. The second prototype that follows this process is then normally the series prototype.

What do development partnerships mean to TESVOLT?
It's vital to tackle the joint design engineering tasks together as early on as possible. All changes made later on can become expensive. We very much appreciate it when – as with Rittal – our development partners are proactive, coming up with suggestions and ideas. We were also happy to draw on the complementary skills of Rittal, such as its thermal expertise. The TS 8 systems were the first joint project with Rittal. That was in 2016, not long after our company was founded in 2014. We regard Rittal as both a development partner and a supplier. We value its delivery reliability and also the quality Rittal ensures with its robust and durable products.

Can you give another example of a joint project?
One new development at TESVOLT is our E-Series with enclosure technology and a ventilation concept from Rittal. The new model has a higher energy density and, accordingly, a higher thermal load – all part of the challenge when designing the

"With the new TESVOLT E-Series, greater attention has been paid to climate control, so we can ensure the battery is at the ideal temperature."

Jannik Kunzel
Product Manager at TESVOLT

enclosure. Rittal carried out simulations in advance that focused on the enclosure's temperature behaviour. The air inflow and outflow were investigated, and minimum spacing was defined to ensure external air for cooling can be drawn in. With the new E-Series, the enclosure design is now much more open. Greater attention has been paid to climate control, so we can ensure the battery is at the ideal temperature. ■

Thank you very much for talking to us.

High performance in a compact space

TESVOLT E-Series battery storage systems (on the right in the picture) feature a particularly high energy density. They are equipped with the latest generation of Samsung lithium-ion batteries. In conjunction with the Dynamix Battery Optimizer (DBO), this ensures high performance with minimal space requirements. The modules are installed in the Rittal VX25 enclosure system. A newly developed ventilation concept has also been incorporated.

Even products that have been in the range for years can be optimised. It's good when suppliers proactively suggest improvements.

Viessmann cleaning spatula: Nothing very spectacular, but with years of proven service and used by almost every maintenance engineer.

Even the latest heating technology occasionally needs to be serviced by qualified professionals to ensure permanently high levels of efficiency. And to work efficiently, these specialists require the best possible tools. Viessmann supplies these, too. One example is its cleaning spatula. Although nothing very spectacular, it has years of proven service and is used by almost every maintenance engineer to clean away deposits on heat exchangers in gas boilers, something it does quickly and thoroughly yet gently. "We regularly take another look at products, even ones that have been in the range for years, to identify improvements that will optimise costs and quality," explains Anton Ewitsch, Global Lead Buyer Polymers at Viessmann. "Several teams operate a kind of CIP – a continuous improvement process – in the various product groups," he adds.

Viessmann does not use injection moulding in its manufacturing operations, so external expertise is required for such products. It first collaborated with LKH in the summer of 2021. "And we were highly impressed. LKH didn't just answer our questions about optimising the handle. It proactively suggested a whole host of improvements throughout the entire value chain and backed these up with figures. An added bonus was that it also submitted the lowest quote," reveals Ewitsch.

Viessmann and LKH

A HANDLE ON HEATING MAINTENANCE

Viessmann, a heating and climate control specialist headquartered in northern Germany, regularly and systematically combs through its product portfolio – always on the lookout for more cost-effective, ergonomic and sustainable solutions. How, though, can you find genuine room for improvement in the case of **plastic products** that have been in the range for years? The company's answer is to call on the special expertise of **LKH** throughout the entire value chain.

Text: Meinolf Droege

"We were highly impressed – LKH proactively suggested a whole host of improvements throughout the entire value chain."

Anton Ewitsch
Global Lead Buyer Polymers at Viessmann

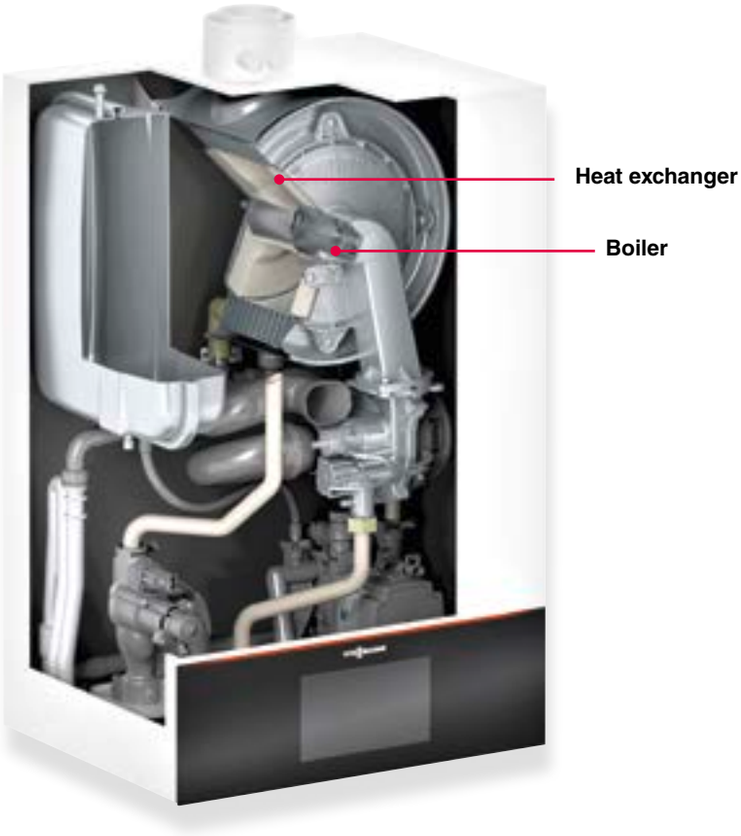
SUSTAINABILITY IS ABOUT MORE THAN JUST THE MATERIAL

The initial focus was on the plastic component, the handle. The design was revised to make it lighter and more ergonomic. The virgin polyamide previously used for the handle, which had a 15 per cent glass fibre content, has now been replaced by a recycled polyamide with 30 per cent glass fibres. The lower weight also cuts costs and the carbon footprint, and both are reduced further still by the switch to 100 per-cent recycled materials. In a second stage, LKH offered improvements to additional process steps, from LKH buying in the metal part itself through to production, packaging and delivery to Viessmann on pallets. "LKH has also revamped the packaging. Being smaller means it uses less material and more packs fit on each pallet, which also makes logistics more cost-effective and sustainable," adds Tahir Butt, Value & Cost Engineer Strategic Procurement at Viessmann.

CONTROL OVER PROCESSES

Given that LKH has now taken over the entire process chain, it is also responsible for quality. Viessmann was fine with that, because LKH always ensured extremely transparent project management, including clear communication and workflows. It reliably met all deadlines and simply got on with delivering the product. The fact that LKH has extensive experience of producing hybrid components for Rittal and other customers also played a role.

The first successful project provided ideas for further potential optimisations, including for more complex Viessmann products. Especially given the difficult situation at present, it was important to move beyond the respective confines of component design, injection moulding technology and material selection, and to identify and combine potential throughout the entire value chain. "Let me put it this way, we need partners who think along the same lines as us and take us forwards," sums up Ewitsch. ■



The cleaning spatula is suitable for Viessmann Vitodens gas boiler systems, for example. It is used to remove encrustations and other impurities from the combustion chamber.

Sustainable climate control solutions

Founded in 1917 as a heating manufacturer, the family company Viessmann is now a world-leading provider of sustainable climate control (heating, cooling and water/air quality) and renewable energy solutions. The integrated solution portfolio seamlessly combines products and systems across digital platforms and services, thereby creating the ideal customised climate. All activities are based on the company's mission statement – "We create living spaces for generations to come". The 13,000-strong Viessmann family and its (trade) partners aim to live up to this responsibility every day.

www.viessmann.co.uk

Instead of virgin polyamide with a 15 per cent glass fibre content, the handle is now made from a recycled polyamide with 30 per cent glass fibres.

Robots in enclosures? BFSA has invented an unusual way to use enclosures in the mechanical engineering sector.

Enclosures are versatile. They can even get robots ready to roll. Time to think outside the box!

A mobile box: The castors on the enclosures ensure the cells can be used at various different machines. The system can gradually grow.

Mechanical engineering reinvented

When inside the box is outside the box

Automation is becoming increasingly important in manufacturing – particularly for smaller businesses. However, there are certain obstacles to overcome. A robot typically needs a lot of space, is complicated to operate and requires extensive safety fixtures and fittings. **Black Forest Smart Automation (BFSA)**, which is based in Löffingen, Germany, is showing that there is another way. Several patents are impressive proof that this young company really can think outside the box. One of its ingenious ideas is to house robots in **enclosures from Rittal.**

Text: Ralf Steck

Georg Willmann is a model entrepreneur – energetic, grounded and passionate about innovation. In the space of just 25 years, he has harnessed these traits to build up what is now one of Germany's 20 biggest turning shops in Löffingen, in the south of the Black Forest region. WST Präzisionstechnik GmbH currently has 650 employees who work on 250 turning, milling and grinding machines to manufacture precision parts for the automotive industry and other sectors. WST also has a second plant in Hüfingen and a site in the USA.

Around seven years ago, WST decided it needed to automate some of its handling processes. A number of processes were identified as activities that should be carried out by robots, such as removing machined parts as well as other downstream steps such as cleaning, deburring, laser engraving and measuring. That would mean automated turning machines the company already had could then be left to run without supervision. Willmann appointed design engineers and other staff to develop and build the bespoke solutions, and this team has since become a subsidiary in its own right – Black Forest Smart Automation. The first staff members included Waldemar Klan, team leader in engineering, and Martin Rudolf, head of engineering, who started with factory equipment engineering and laid the foundations for the automation technology. All in all, there are 22 experts at BFSA covering all areas from sales and production to assembly and services.

GAINING EXTRA PRODUCTION TIME

"When using our systems, machines can be left running unsupervised, for example overnight or at the weekend," says Christopher Mayer, head of sales. Combining the systems with a bar loader, for instance, frees up extra production time without having to deploy additional staff. "As a result, our systems often pay for themselves in six months to a year. There are currently 65 of our systems in use at our parent company WST alone – you could say it is our main showroom. At the same time, we can also prove the reliability of our systems there," explains the manager. The ingenious details that BFSA incorporates into its solutions are particularly striking. For example, on one particular Haas machining centre, the robot has to reach very deep inside the machine com- ▸

partment to remove the finished part. Instead of using a bigger robotic arm, which would have generated bigger inertial forces, the arm was mounted on a linear axis so it can travel along this axis and into the machine compartment to remove parts. A turning device has also been attached at the front of the linear axis that opens and closes the machine vice in the machining centre to allow the removal and insertion of parts. A patent has already been awarded for this "intelligent" vice.

In other solutions, the values from component measurement, which is carried out in the BFSA cell, are used to amend machine parameters. This means that a tolerance of 15 micrometres can be reliably maintained in turning operations, even when the machine heats up and cools down. As a result, an entire machining step in a grinding machine can be omitted, which not only saves a lot of time, but also cuts down on additional handling and costs.

ALWAYS THE PERFECT FIT – COMPACT AND MOBILE

Sabine Machlitt, head of procurement at BFSA, sets out additional features that make the systems really stand out: "Firstly, they are compact, with most systems having a footprint no larger than a Euro pallet, which even the tightest production workshops can accommodate. Secondly, they are mobile and can be rolled to one side to make way for work on the machine. And, last but not least, our systems look good because they are integrated into an enclosure and therefore have a very sleek, clean outward appearance."

So what led to this unusual use of enclosures in mechanical engineering applications? "I'd long had the idea of installing robots in enclosures," recalls Markus Pfeifer, inventor and head of programming. "We were able to turn that idea into a reality at BFSA. Instead of using a heavy machine base to carry the robot and enclose it to protect its working area, we use standard enclosures. We chose Rittal as a supplier not just because the company makes the best enclosures, but also because it meets our needs quickly and without any fuss." The advantages don't stop there though: "From the door with its elegant handle to the fixings on the side and rear panels, the build quality of the enclosures is outstanding." The design also features ingenious gusset plates and reinforcements that ensure the enclosures are rigid enough and can withstand the inertial forces generated by a handling robot.

CLEANING IN ENCLOSURES

The Rittal VX25 standard bayed enclosures used at BFSA can be combined as part of a modular concept. For instance, there is a cleaning station made up of three enclosures that are bayed in a U shape. Finished parts are taken out of the turning machine, cleaned to remove all particles larger than 300 micrometres and then finally placed into trays. Once full, the trays are packaged while still in the enclosure, before there's any chance of the parts picking up any dirt or particles again. This is where BFSA is making the most of the IP 55 protection category that the enclosures come with as standard to ensure they are air-tight and dust-tight.

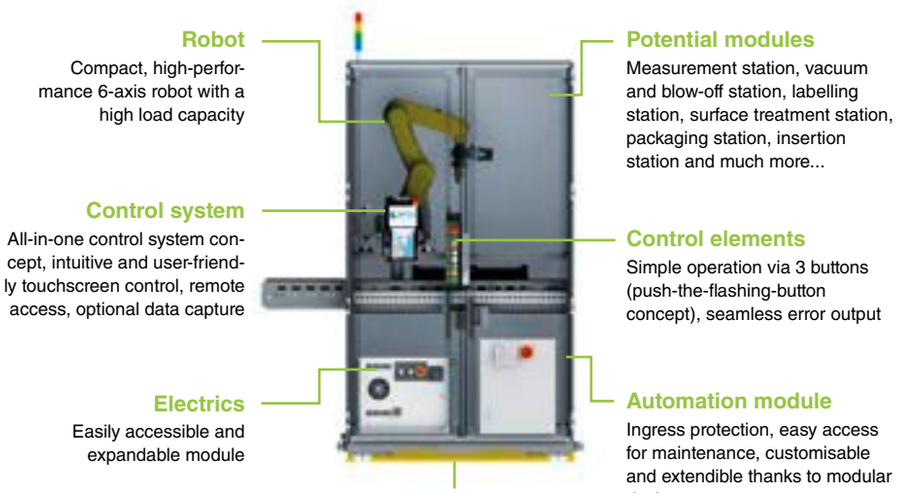
Other solutions incorporate a laser station, where parts are labelled with a data matrix code (DMC) once they have been measured. In this application, it is crucial to ensure the laser beam is contained within the station at all times. Rittal enclosures can do just that, too, and have the relevant certifications to prove it.

"One major advantage of the enclosures is the comprehensive certifications they come with, which we can use for our own CE declarations of conformity," explains Pfeifer. "These cover everything from lightproof qualities and air-tight seals to the mechanical strength of the side

panels and doors, which makes it easier for us to present evidence relating to the mechanical protection of the robot's working area." In the lower section of the main enclosures, BFSA fits another, smaller AX-type enclosure from Rittal, where the station's entire control system is installed. The door on the large enclosure has a cut-out section so operators can access the op-

"With Rittal, I buy exactly one enclosure and that's it – job done. That easily provides a time saving of 20 per cent and more."

Markus Pfeifer
Inventor and head of programming at BFSA



erating elements of this control system without having to open the door. BFSA supplies Rittal with the relevant STEP files for making additional cut-outs in doors and side panels, which is done by laser cutting before the enclosures are then painted black. Pfeifer is also impressed by the accessibility of the enclosure: "You only need to remove six screws to take the rear panel off and the double swing doors let you open up the whole of the front."

The programmer is very happy with the company's collaboration with Rittal: "Rittal is always able to deliver and we get the modified enclosures within six weeks, painted and complete with the cut-outs we've requested."

Recalling how things used to work, Pfeifer really appreciates the current approach: "At first, we built our solutions in a conventional way, on a welded machine base and with a cover made of profiles, plates and plexiglass. That meant we had to buy in lots of different components for the enclosures from lots of different suppliers, which involved a great deal of procurement, logistics and bookkeeping work. With Rittal, I buy exactly one enclosure and that's it – job done. That easily provides a time saving of 20 per cent and more. The modularity of the solution gives us more freedom during the design process and allows us to create solutions that are more innovative and – thanks to the certifications supplied with the enclosure – are quicker to document, too." In this case, thinking outside the box to put automation solutions inside a box has really paid off, as Machlitt sums up: "Switching to Rittal has not just made the systems look nicer – they're also lighter. The castors on the enclosures mean a cell can be moved from one machine to the other and the system can gradually grow. That is another benefit and a step closer to our goal of being able to offer automation solutions that are suitable for smaller companies, too." ■

H2 Core Systems

HYDROGEN IS GO!

Green hydrogen is set to drive forward the energy revolution. But how can this environmentally friendly energy source best be used in industry? There are various options, one of which comes from **H2 Core Systems**. The company's modular technology solution – which is safely housed in **enclosures from Rittal**, is in global demand.

Text: Daniel Giebel

What kind of systems convert water into green hydrogen, store the gas and make it usable?

Climate change and the energy revolution are two of the biggest issues of our time. They have given rise to a whole host of concepts with confusing names such as "sector coupling" and "power to x" (see box), which makes it all the more refreshing when Uwe Küter describes the hydrogen technology that is so important in this context as "charming". Küter works in Sales & Business Development at H2 Core Systems in Heide, which is about an hour's drive north of Hamburg. This systems integrator specialises in building systems that use electricity from renewable sources to convert water into green hydrogen, then store this for use in a whole range of applications. Depending on their size, the company's modular systems can produce anywhere from one to 450 kilograms of hydrogen a day. Established in 2020 as a spin-off from TC-Hydraulik GmbH, H2 Core Systems currently employs a workforce of over 20, although full order books mean that headcount is on the rise.

EVERYTHING IN ONE ENCLOSURE

Although Küter is clear that every enquiry is different, customers usually fall into one of two categories: "One will have photovoltaic systems, will want to make direct use of their electricity and will be looking for ways to store it. The other will need heat for industrial processes, will have been using natural gas so far and will want to switch to hydrogen." The systems from H2 Core Systems serve both purposes. Housed in 19-inch VX25-series enclosures from Rittal, they combine electrolysis units for producing hydrogen with modules and optional extras such as storage systems, compressors and fuel cells. "The modular baying system from Rittal enables us to combine our electrolysis units and scale them up or down to suit requirements, with anything from one to 40 units in a system. Another key advantage is the excellent stability of the enclosures. After all, a complete electrolysis unit can weigh as much as 500 kilograms." During development stages, H2 Core Systems works closely with Berlin-based Enapter AG, which contributes its all-important AEM Electrolysers:

WHAT WE NEED FOR A GREEN LIFESTYLE

"Enapter builds particularly small modules known as stacks. Besides their size, the other major advantage of these is their level of availability – if one stack in the system fails, the others continue to run. There are no losses and the stacks can be replaced relatively easily," explains Küter.

A TURNKEY SOLUTION THAT IS EASY TO USE

Thanks to the Rittal enclosure system, H2 Core Systems is able to offer its solutions portfolio on an entirely plug-&-play basis. For example, the systems can usually be installed at the customer's premises in a single day, normally by just one member of staff. As Küter points out, the aim is to train customers so they can take care of maintenance work and replace parts largely on their own: "We can control a lot from here, over the Internet. The customers point their smartphone camera at the relevant area and we tell them what to do." It's a solution that works worldwide. Turnkey systems from Heide are in use in the UK, the USA, India and Brazil. Küter is enthusiastic: "Hydrogen has a huge advantage, namely that anyone can use it – any municipality, city or country anywhere in the world. All you need is a little water, wind and sun." ■

"The modular VX25 enclosure system from Rittal enables us to combine our electrolysis units and scale them up or down to suit customer requirements."

Uwe Küter, Sales & Business Development at H2 Core Systems

H_2 and Co.

Hydrogen is produced by electrolysis, which involves using electricity to break down water into oxygen and hydrogen. The gas is a useful energy source, and can be stored, transported and used to generate electricity or heat. The only waste product is water vapour. The umbrella term **power to X** stands for all the ways excess power from renewables can be stored and utilised. These technologies facilitate smart networking between power, heat and mobility, which is known as **sector coupling** and is an important part of the energy revolution.

NEWS

NEWS FROM THE FRIEDHELM LOH GROUP

Dirk Röcher can now carry out more complex assembly work.

RITTAL FOUNDATION DONATES DIGITAL WORK BENCH TO AWO

Championing jobs for people with disabilities

Shaping the digital future is not a job that should be the sole preserve of just a small number of well-trained specialists. Both AWO Siegener Werkstätten and the Rittal Foundation firmly believe that people with physical or psychological disabilities should also be able to participate in all aspects of the digital world, including work. That is why the charitable foundation run by the Friedhelm Loh Group has donated 20,000 euros and enabled the acquisition of a pick-by-light work bench system.

The system guides workshop staff step by step through the production process, giving them more opportunities for work. The digital solution guarantees work is carried out and documented in line with QM requirements, encourages independent working and boosts self-confidence. “The pick-by-light bench ensures workers with disabilities can independently master multi-stage assembly tasks,” explains Jens Hunecke, deputy managing director of AWO. This means the AWO workshop now has a system that gives people with disabilities a better opportunity to access the regular jobs market, where working processes are often digitally monitored. It offers customers and end clients QM-checked certainty and gives employees with psychological or physical disabilities new opportunities to participate in everyday work. Thanks to a personalised log-in process using a smart card, the integrated assistant adapts to the ergonomic needs of each member of staff.

The system has been an instant success. “You can practically see staff pushing their skills beyond their previous limits,” says workshop foreman Axel Wagenknecht.

As he explains, the general financing of workshops for people with disabilities is not geared toward the new requirements brought by digitalization, which makes it difficult to invest in tools for the future, such as the assisted work bench. This is where the Rittal Foundation aims to help. “We want to invest in sustainable participation in working life,” says Rainer Reissner, Managing Director of the Rittal Foundation.

VICTIMS OF THE AHR VALLEY FLOODS

Sport support

Time-out as a source of respite. The highest amount the Friedhelm Loh Group has ever raised – 930,000 euros – is still being allocated. The Rittal Foundation has recently awarded 25,000 euros each to two projects in the Ahr Valley. One is being run by "ahrlotsen e. V.", which aims to roll out its Sportbox project so that flood victims can borrow sports equipment. The second recipient is the "Spenden-Shuttle" association and its "MegAHR" project for young people in Bad Neuenahr-Ahrweiler. "With your support, we're doing something really worthwhile. Every cent is well spent if it helps us bring people together and give them a bit of time-out," explains Guido Henseler from "Spenden-Shuttle", who plans to use the donation to build a basketball court.

"Spenden-Shuttle" is receiving 25,000 euros for its new youth initiative.

A helper prepares a food parcel for displaced people in Sambir, a village in western Ukraine (left). **Maryna, 38, and her daughter Eva, 4,** at a distribution point for humanitarian aid (right).

RITTAL FOUNDATION

Ukraine: Where we are helping

We will help where we can. There was no doubt about that at the Friedhelm Loh Group when the first images of the war in Ukraine emerged. Staff and the owner and CEO Friedhelm Loh donated 600,000 euros in the spring. A total of 38 Ukrainian staff were evacuated to Haiger from the war zone. Now, in autumn 2022, there is still no end in sight for this war. The Friedhelm Loh Group is therefore continuing to pitch in to give Ukrainians a boost and nurture some hope. Even after the major donations distributed in April, the Rittal Foundation has continued to support organisations delivering aid directly to the people of Ukraine. In August, for example, a sum of 50,000 euros was donated to the Hoffnungsträger Foundation in Leonberg, which used the money to organise the evacuation of 169 children from a Ukrainian orphanage to Freiburg. Steps were also taken so that 46 children with disabilities could be taken in by a social care centre in Cluj, Romania.

At the end of September, the Rittal Foundation gave 30,000 euros to human rights organisation International Justice Mission (IJM) Germany, which is providing aid on the ground. The IJM is operating primarily in Romania, where it is looking after refugees and protecting women and children from people traffickers and being forced into the sex trade.

The aid organisation CARE, which has so far reached more than 321,000 people in Ukraine, also received a donation of 20,000 euros from the Rittal Foundation. This money will be used for a variety of purposes, including tackling sexual violence and providing psychosocial care. It will also help refugee children and young people who have come to Germany from Ukraine by providing them with school starter packs.

Lifesavers: A young Dalit girl in front of a water tank – the Debora Foundation aims to help destitute people in India by providing direct, unbureaucratic emergency aid.

On site in person: Rainer Reissner, Managing Director of the Rittal Foundation, visited the camp for landless families located in the outskirts of Bengaluru (also known as Bangalore).

Shelter and refuge: Between around 70 and 80 landless families live in the camp.

Commitment by the Debora Foundation in India

RAYS OF HOPE FOR PEOPLE IN NEED

They are losing their few possessions, the roof over their heads, their jobs and their way of life. In **India**, as in all parts of the world, COVID-19 is pushing people into situations of dire need – especially those who were already living on the edge of society before the pandemic. The **Debora Foundation** is therefore providing rapid emergency aid to landless inhabitants and **people of the lowest caste, the Dalit,** to help them survive the devastating aftermath of COVID-19. We report on an on-site visit.

Text: Sarah Benscheidt

What sort of help is required for people in dire need? Swift, unbureaucratic and practical help.

Absolutely everything is full of the same brown dust. The dust from the loamy soil is smeared over everything – children's bare feet, dogs' fur, water canisters, laundry, cooking pots and the makeshift shelters. The pandemic has led to an unusual camp being set up in the outskirts of Bengaluru, a city with over a million inhabitants. Somewhere between around 70 and 80 families have cobbled the camp together, using whatever they could find amongst rubbish thrown away by city-dwellers. The pandemic has deprived the landless – people in India who previously financed their homeless, casteless, nomadic existence through casual labour – of their way of life.

SOURCES OF INCOME CUT OFF

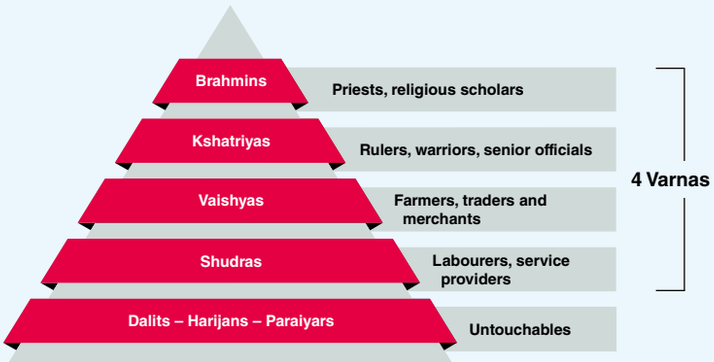
A trick in return for a few rupees. That's how it used to be, back when people paid a few pennies when one of the sacred domestic cows, colourfully decked out, "bowed down" in front of their vehicle. However, since the pandemic, that's all a thing of the past. Although the cow is still a sacred animal in India, this form of showmanship that previously enabled landless people to keep their heads above water is hardly a way to a better life now. This source of income has dried up as a result of the pandemic – and it's going to be hard to tap back into it again. This is driving people like the landless (even further) into poverty, slums and hopelessness. And they're not the only ones. As in all parts of the world, COVID-19 is pushing people into situations of dire need – especially those who were already living on the edge of society before the pandemic. Millions of other people living in poverty in India have lost the jobs they need to survive – especially people from the lowest castes, such as the Dalit.

"What really moves me is the dignity that radiates from the poorest of the poor – and the joy and gratitude in their eyes."

Rainer Reissner
Managing Director of the Rittal Foundation

THE CASTE SYSTEM IN INDIA

Under the Indian caste system, people's place in the social hierarchy is determined from birth.



BREAKING FREE FROM THE VICIOUS CIRCLE

Once people have got caught in the vicious circle of poverty, it's very hard for them to break free from its grip through their own efforts. This is why the Debora Foundation is lending a helping hand, providing rapid, unbureaucratic and sustainable aid. Established in Bengaluru in 2018, the Foundation's primary objective is to set up long-term aid structures by building an education and training centre for Dalit children. However, the serious aftermath of COVID-19 means there still needs to be a continued focus on the emergency aid that was introduced in 2020 in response to the hardship caused or made worse by the pan-

The Debora Foundation provides landless people with heavy-duty tarpaulins.

The tent village in the outskirts of Bengaluru, a city with over a million inhabitants, provides landless people with protection against storms, damp and disease.

JUST UNDER

500

people with no permanent abode, such as the landless, are provided with heavy-duty tarpaulins by the Foundation.

AROUND

5.000

people were provided with food and toiletries, and a sewing school for young girls was also set up.

demic. Together with its partner in India – the International Justice Mission e.V (IJM), an international aid organisation – the Debora Foundation supplied around 5,000 people with food and toiletries at the start of the pandemic and also set up a sewing school for young girls. This provides the basis for a "small return on investment", as Dietmar Roller, development expert and CEO of the IJM put it, explaining the thinking behind the project. So far, 150 particularly needy young women have also been given sewing machines so that women, too, can earn money by making and selling items such as face masks or pieces of clothing.

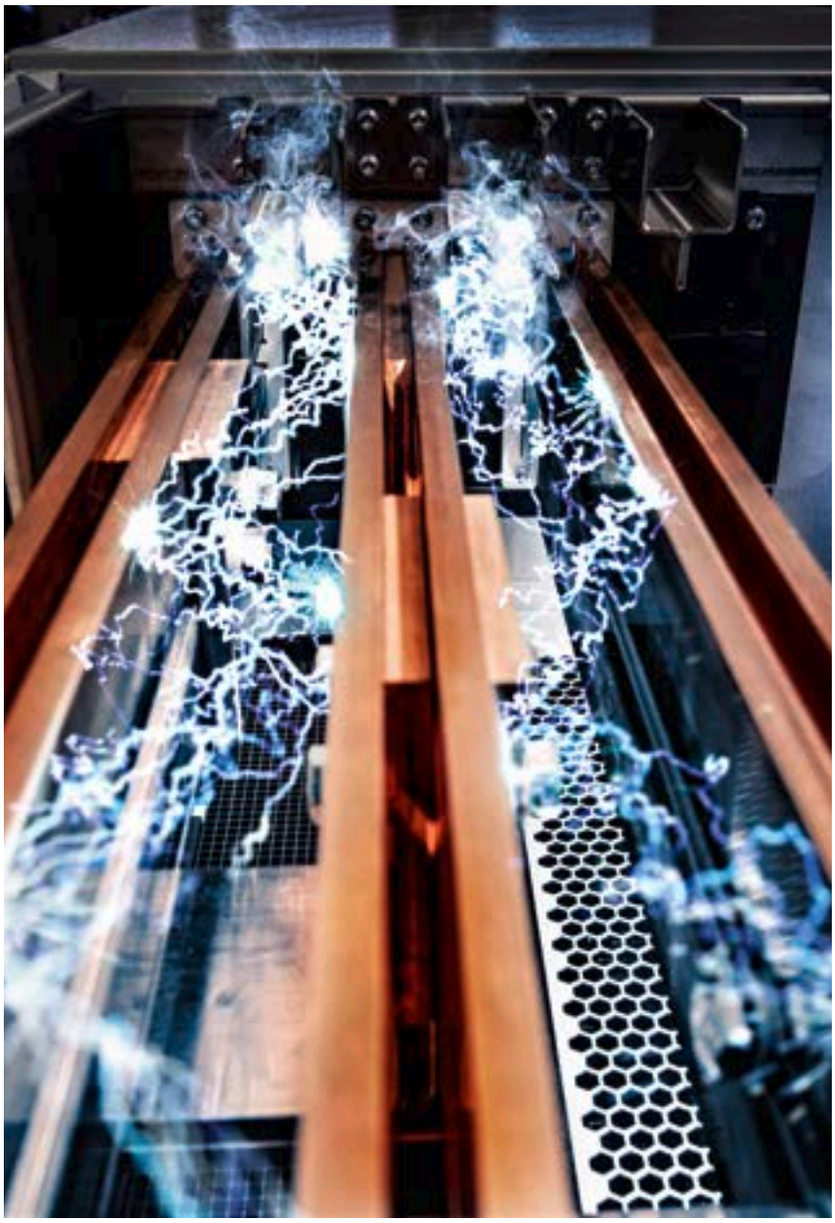
PROTECTION FROM HOMELESSNESS AND FORCES OF NATURE

Now, in 2022, as aftershocks from the pandemic continue to wreck livelihoods and the risk of homelessness is also very much higher due to the monsoon season, the Debora Foundation is expanding its emergency aid programme. The Foundation is providing almost 500 people who have no permanent abode, such as the landless, with heavy-duty tarpaulins. Spread over the shacks and dwellings that the people themselves have made, these provide protection against storms, damp and, therefore, disease. A small tented village has grown out of this. During a visit to this camp, Roller and Rainer Reissner, Managing Director of the Rittal Foundation, were particularly pleased to see that, after two years, the aid provided by the Debora Foundation is visibly bearing fruit. People have a roof over their heads, are living in safety and are being given a livelihood. Best of all, these delicate shoots of hope are rooted in sustainable soil and are slowly beginning to grow unaided.

Charu (not her real name), a 15-year-old girl from the landless community who is benefiting from the access to education opened up by the Debora Foundation in one of the women's self-help groups, passes on her newly acquired knowledge to other children in the camp – all on her own initiative. "This is genuine extra tuition that's going on here," says Roller, who's really impressed by the double-domino effect. He explains that, although elementary education is ostensibly available, children from deprived backgrounds, such as the Dalit caste, often fail to keep up in 'chalk and talk' lessons (the only style of teaching used) "and they therefore also lose the opportunity to access secondary school education and the prospect of a better future". The progress made by Charu demonstrates how people can break free from the vicious circle and just how fruitful and effective the commitment shown by the Debora Foundation can be for each individual. After all, when Charu now teaches the Dalit children under the shelter of the tents, she also symbolises a very special type of interaction – helping people to help themselves, so they can live in freedom and safety. ■

The Debora Foundation

The Debora Foundation is a charity registered in India. It is named after Debora Loh, the wife of Prof. Friedhelm Loh. The Foundation's primary goal is to help children and young people from deprived backgrounds get a high-quality education and promote their overall development.



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Logistics without power cuts

Arc flash protection. Online retailers are under massive pressure. Buyers expect fast, reliable delivery, within 24 hours wherever possible. That's why sellers who operate their own logistics system need everything to run smoothly – which includes preventing power cuts. One of the prerequisites for that is switchgear with arc flash protection. We've taken a look at how it all works in practice at **Elektro Vieweg**, which has implemented just such **switchgear with Ri4Power technology from Rittal** for a major online retailer.

Find out more in the next issue of be top!

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New Eplan Smart Mounting speeds up the installation of components in enclosures. The system shows assembly workers where and how each component needs to be positioned.

NEW EPLAN SOFTWARE FOR ASSEMBLY WORK

Enclosure production is getting even smarter

Eplan Smart Mounting. The time pressures in enclosure production are huge and the shortage of skilled staff is leading to bottlenecks. This is where Eplan Smart Mounting comes in. This new software helps staff to install all components such as top-hat rails, cable ducts, auxiliary switches and time relays in the enclosure or on the mounting plate. Thanks to a user-friendly layout and with the aid of a 3D visualisation, staff can see straight away where each component needs to be positioned. The browser-based application, which uses a central web server, does not need to be installed and can be run on a tablet in a workshop, for example. The digital twin in Eplan Pro Panel supplies the corresponding information from engineering, such as dimensions, positioning details, drilled hole patterns and methods of fastening components in place. That's not the end of it though, as the data from Eplan Pro Panel can also be used for wiring work. When using Eplan Smart Wiring, subsequent wiring work in the enclosure can also be carried out systematically. Another practical benefit is that the smart tools are compatible with standard wire processing machines such as the Wire Terminal WT from Rittal. Digital continuity is what it's all about!

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