

be top

MAGAZINE OF THE FRIEDHELM LOH GROUP



SOFTWARE FOR THE ENERGY TRANSITION

Transformer substations and the digital transformation – how software is creating transparency and speeding things up.

TRUE EFFICIENCY DRIVERS

40 percent

The potential cost savings when plant engineers use the efficient software solutions from Eplan and Rittal for design work, enclosure configuration and the creation of schematics.

30 percent

The reduction in reject rates that automotive companies achieve by using AI to monitor and optimise their production operations – a direct economic gain.



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

DEAR READERS,

Let's not beat about the bush – industry is under more pressure than ever before. Incoming orders are nosediving in a number of key sectors. High energy prices are another challenge and a heavy burden for companies. Value creation and competitiveness are on an increasingly steep downward trajectory. There are no short-term solutions in sight. When it comes to converting energy systems and developing renewable energies as a solution to the high energy prices, progress is slow – too slow.

If the share of renewables in the energy mix is to be doubled in Germany by 2030, the speed of expansion needs to be tripled. For the energy transition to succeed, we need to be much faster in converting existing energy systems and building new ones. Thinking about changes is not enough – we need to implement them, too. To manage these radical changes, we need help. **We need innovations and efficiency drivers!**

Standardisation in engineering is one of the most effective levers for increasing efficiency when converting energy systems. This significantly increases the pace of planning processes and work steps for developing systems, networks and transformer substations.

In our be top cover story, we explain how this works, based on the example of our customer natureenergie netze. Eplan software solutions are giving this energy provider concrete support for digitalising transformer substations and laying the foundations for a

much faster conversion and expansion of its energy infrastructure.

Big efficiency gains thanks to standardisation – this works at system level, too. Rittal RiLineX, the new power system platform, is now really speeding up power distribution technology for plant engineers.

Solutions from Rittal Automation Systems – from enclosure and busbar machining through to efficient wiring – are also bringing more speed to plant engineering. We show you just how high these efficiency gains are in practice, based on the examples of S+S Industries in the USA and Hargassner in Austria.

You may also be surprised to learn how the Friedhelm Loh Group is spurring on the development of the latest technologies such as AI – thanks to an impressive megawatt cooling solution – and driving forward sustainability concepts in relation to steel and plastic.

Enjoy reading!
Prof. Friedhelm Loh



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In the midst of the transition: Simon Rümmele from natureenergie netze, which is working on digitalising transformer substations in collaboration with partners entegra and Eplan.

COVER STORY: HOW TRANSFORMER SUBSTATIONS ARE BEING MADE FIT FOR THE FUTURE

The energy sector is under a lot of pressure. The share of renewables in the energy mix is to be increased substantially – and this means laying a lot of groundwork. For example, transformer substations need to be modernised. A pilot project in southern Germany is showing how this can be done quickly and efficiently in the future. In collaboration with natureenergie netze GmbH, software suppliers Eplan and entegra are creating the very first digital twin for a transformer substation. This is a challenging and highly complex digitalisation project that is contributing to the fit-for-the-future development of the grid.



Dr Carola Hilbrand
Director Corporate
and Brand Commu-
nications 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!

Write to us at:
betop@friedhelm-loh-group.com

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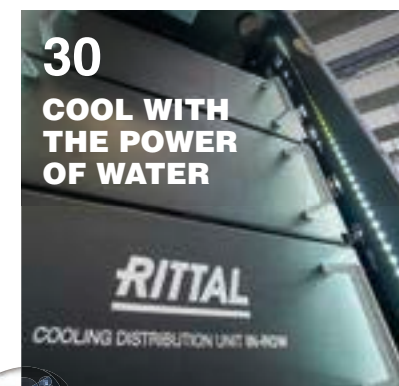
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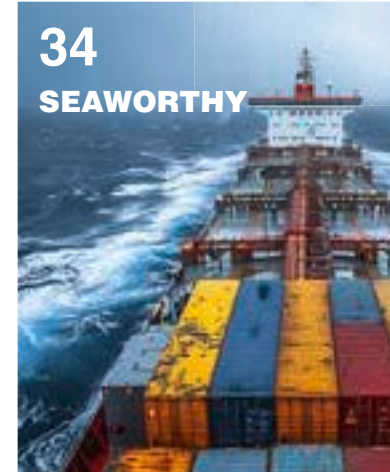
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Nationales Automuseum: 85.000 visitors from all over the world.



+ Check out the digital version of be top:

<https://betop.friedhelm-loh-group.com>

NEWS

COMPANIES

With its 12 plants and more than 95 subsidiaries, the **Friedhelm Loh Group** is a global success story. With more than 12,000 employees, the FLG companies work with their customers to shape the future together. You can read our latest news here.



Prof. Niko Mohr has been the third member of the Executive Board of the Friedhelm Loh Group and CEO of Rittal International and Rittal Software Systems since 1 November.

Management team expanded

Friedhelm Loh Group appoints a new member of the Board

The Friedhelm Loh Group is realigning its group of companies for the future – and, with this in mind, the global player is expanding its Board. Prof. Niko Mohr is joining owner and CEO Prof. Friedhelm Loh and CFO Ralph Lindackers on the Board. With effect from 1 November 2024, he has also taken on the role of CEO of Rittal International and Rittal Software Systems.

FLG is expanding its Board in response to rapid market changes and the growing demand for industrial solutions that integrate software and hardware and come from a single supplier. These are

solutions that the Group companies, including Rittal and Eplan, supply worldwide.

Prof. Niko Mohr is joining the Friedhelm Loh Group from top management consultancy McKinsey & Company. As a strategy consultant, he has more than 25 years of experience in implementing complex strategy, transformation and digitalisation projects at top management level in a range of industries. Most recently, he was Senior Expert Partner at McKinsey and part of the leadership team at McKinsey Digital.

False claims prohibited

True facts instead of fake news

In September 2023, the “Business Insider” portal owned by publisher Axel Springer spread allegations that Rittal was breaching the sanctions imposed against Russia by the EU. These allegations were also published in the online edition of the daily newspaper “Die Welt” and in the local press. Since Rittal has at no point violated applicable sanctions law – either before or after the start of Russia’s invasion of Ukraine – the company initiated legal proceedings against the publisher at Hamburg District Court. The outcome was that the publisher was prohibited by law from making the false claims – 31 in all – because according to the court, the publisher had failed to provide any reliable evidence to back up its sweeping statements. Following a thorough legal review, this dispute has now been resolved. The publisher has accepted the judgement and has not appealed.

Strategic agreement

Rittal supports AI initiative

In Dubai, Rittal has signed a memorandum of understanding with the UAE’s Artificial Intelligence, Digital Economy and Remote Work Applications Office. The aim of this collaboration is to strengthen various AI initiatives and the development of data centres in the UAE. Rittal FZE has committed to providing support for technological advances through innovations in AI, particularly programming for robotics and Industry 4.0 applications, as well as for green technologies.

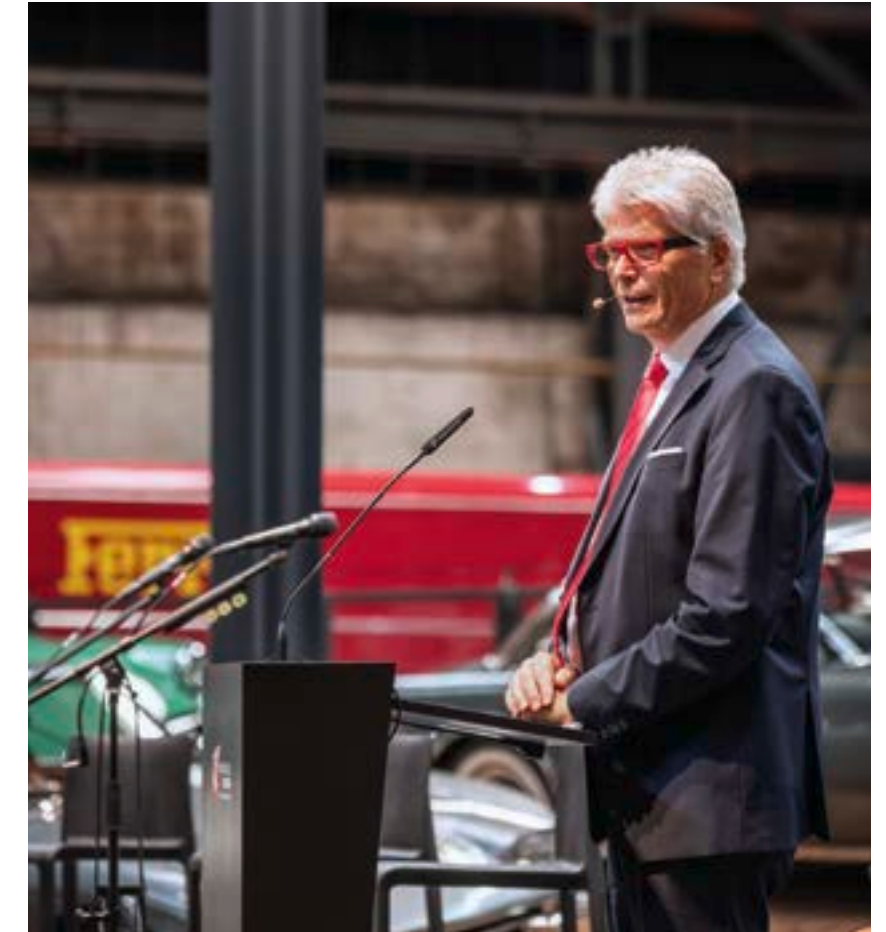
Eplan

40 years of Eplan!

It was a truly groundbreaking achievement when this electrical engineering software was launched in 1984. Called Eplan – which also became the name of the company a short time later – this software revolutionised the work of draughtsmen. Paper and ink were replaced by a PC. Nowadays, it’s impossible to imagine electrical engineering without Eplan. This market leader is revolutionising planning processes for design engineers in various industries, with the digital twin, cloud-based services and ever increasing digital continuity. This was celebrated on 26 June with an anniversary event held at the Nationales Automuseum – The Loh Collection.

GOOD INTERACTION OF HARDWARE AND SOFTWARE

Some 200 people attended the event, and Prof. Friedhelm Loh praised the company for its bold approach of always carving out its own path. “With this 40th anniversary, we are celebrating a major corporate success story. Today, Eplan software is the cross-industry software standard. With our Group’s combined expertise in both software and hardware, we create unique added value on the market,” he said. As a member of the Group, Eplan specialises in solutions for panel building and switchgear manufacturing as one of its key focus areas. The



“Today, Eplan software is the cross-industry software standard,” said Prof. Friedhelm Loh in his speech to the 200 or so guests at the event.



Some 200 people were invited to the anniversary event at the Nationales Automuseum – The Loh Collection in Dietzhölztal-Ewersbach.

Electric P8, Pro Panel, Smart Mounting and Smart Wiring tools were all developed specifically for this industry.

FOCUS ON THE CUSTOMER

“From the outset, we have been driven by our passion for innovation and people. Inventing new things, making solutions better and being one step ahead have

always been part of the Eplan DNA, and these same qualities are the recipe for future success,” explained Sebastian Seitz, CEO of Eplan. “Our development engineers work in close collaboration with their Rittal colleagues in a total of six teams. This generates software that makes life much easier for people working in this sector,” Seitz emphasised.

Rittal in Asia

Mega investment in China

In China, the focus is on modernising industry. **Rittal**, with its mega investment in its **Shanghai** site, is well out in front. The company is **expanding its production facilities** and launching the high-tech production of the **VX25 bayable enclosure system** – the biggest international investment ever made by Rittal.

In just one year, a lot has happened at Rittal China. The expansion of the production facility at the Rittal plant in Shanghai was completed in a mere 354 days, and the new VX25 production line was put into operation, too. Just like the entire portfolio, the bayable enclosure system can now be delivered within 48 hours.

Boosting customers' competitiveness and responding to their needs – this is the primary aim of the biggest international investment ever made by Rittal. The existing 24,000 square metres of factory and logistics space has been expanded by adding a further 10,000 square metres of new production space, spread over

two floors. This represents a real milestone. "This is a massive investment in the future – and it sends out a clear signal about customer proximity and our confidence and trust in the Chinese market," commented Michael Galler, Managing Director of Rittal China and COO of Rittal Asia, during the opening ceremony at the Shanghai plant in early August. The ceremony was attended by representatives of the Rittal management and politicians, as well as by the Chinese staff, who number over 600. "The rapid completion of the new Rittal China factory in under 12 months is an impressive achievement," Asch said.

FOR MORE SUCCESSFUL CUSTOMERS

As Ingolf Bauer, Business Unit Industry Project Leader at Rittal, explains, this investment is also an investment in the partnership with Chinese customers. "With the VX25, we want to help our customers enjoy even greater success on their respective markets," he says. The enclosure system helps plant engineers boost efficiency and productivity right along the value chain – from electrical engineering and plant engineering all the way through to operation. Thanks to software from Eplan and the VX25 system technology, processes can be made more than 60 percent faster. "We're

going to be working in close collaboration with Eplan to support our customers throughout the value chain," Bauer explains.

FOR FUTURE GROWTH

As Michael Galler, points out, this mega project is also extremely important for the operations of Rittal China. "We have no doubt whatsoever that launching the VX25 and expanding our production capacity will boost our efficiency and competitiveness continuously. What's more, this will help us meet customer needs more effectively and create an even more solid basis for future growth," he says.

POLITICAL MOMENTUM

Zhao Hongwei, Deputy Chair of the Shanghai Songjiang District Committee of the Chinese People's Political Consultative Conference, also offered his congratulations at the opening ceremony. "I am delighted to be part of this ceremony. The governments of the Songjiang district and the town of Xinqiao have left no stone unturned in their efforts to boost digitalisation and intelligent manufacturing. They have deepened reforms and increased openness to create a broader development platform and a better market environment for Rittal and other foreign companies," he said.



The expansion of the production plant in Shanghai was completed within a year – the biggest international investment ever made by Rittal.



"This is a massive investment in the future – and it sends out a clear signal about customer proximity and our confidence and trust in the Chinese market."

MICHAEL GALLER,
MANAGING DIRECTOR OF
RITTAL CHINA AND COO OF
RITTAL ASIA



The employees of Rittal Germany and Rittal China are celebrating the official opening of the new production area together with guests from the worlds of politics and business.



Fast, reliable and efficient: New production lines installed over 10,000 square metres and two floors will continuously boost competitiveness in China.



Data Centre Team Excellence Award 2024

Award for Lefdal Mine Datacenter

At the Data Cloud Conference in Cannes, Rittal was presented with the Data Centre Team Excellence Award 2024 in recognition of the Rittal team's achievements at the Lefdal Mine Datacenter (LMD) in Norway. These achievements include consultancy work and the team's holistic approach involving the RiMatrix containerised platform and a fjord water cooling solution, covering all the pillars of the data centre infrastructure – modularity, standardisation and scalability.

Readers' poll award: "products of the year 2024"

Double IT victory for Rittal

In the "products of the year" readers' poll run by "connect professional", Rittal took top spots in two categories. The magazine's readers voted Rittal into first place in the "data centre infrastructure" category and second place in the "data centre management solutions" category.



Green steel provider

Stahlo and Hyundai Steel

At a special meeting in Seoul, Jungho Lee, VP of the Global Automotive Steel Sales Group of Hyundai Steel Company, and Oliver Sonst, CEO of Stahlo, signed a co-operation agreement on carbon-optimised flat steel products. Hyundai Steel – a specialist in high-strength and ultra-high-strength grades – can play an important role, especially in relation to carbon-optimised steels. Hyundai has been pursuing both a blast furnace approach and a scrap-based electric steel approach for many years now. It is the perfect partner for Stahlo, which is on its way to becoming one of Europe's leading green steel providers, supplying the automotive industry and manufacturing sectors with national and international carbon-optimised flat steel products, especially in the key market of Germany.



Rittal around the world

Five new Rittal Application Centers opened

The idea behind Rittal Application Centers (RACs) – namely the chance to experience greater efficiency and productivity in value creation processes – is attracting a great deal of interest from panel building and switchgear manufacturing customers all over the world. This is why more and more Rittal subsidiaries worldwide are opening this type of training centre – with five being opened this year alone.

Neuenhof, Switzerland

The doors to the eighth Rittal Application Center were officially opened in March 2024. Besides members of the press, 55 customers from 29 companies were present. Following an introduction by Managing Directors Stefan Güntner and Manfred Sac, experts from Rittal and Eplan gave a presentation on the value chain and took visitors on a guided tour of the new premises to demonstrate how productivity in plant engineering can be increased.

Stryków, Poland

In April, shortly before Hannover Messe, the RAC for Poland was showcased by Managing Directors Piotr Gorniak and Artur Marcinkowski. Local RAC Manager Krzysztof Nadolczak and Bartosz Bucki from Eplan gave a guided tour of the new facility, which includes a machine zone equipped with Perforex MT and BC centres. Highlights in the workshop section include Secarex, CW 120M, Wire Station, an engineering workstation and other exhibits.

Hellaby, UK

The tenth RAC, located near Sheffield, kicked off with a VIP event to give selected customers a first impression of the centre. Following the welcome by Shane Hope, Managing Director of Rittal UK, a particular highlight was the guest presentation by the GAMBICA Trade Association. In this presentation, there was particular emphasis on the importance of



Image above: Guided tour of the new RAC in Sweden.

Image on left: Opening ceremony for the new Rittal Application Center in Neuenhof, Switzerland.

digitalisation and automation and their relevance to enclosure assembly.

Ångelholm, Sweden

The first Rittal subsidiary was founded in the far north more than 50 years ago – and, in August 2024, an RAC was opened there, too. Fredrik Wählstrand, Managing Director of Rittal in Scandinavia, opened the RAC that will give new and existing customers the chance to get hands-on experience of innovations in engineering and enclosure assembly, the digital twin and other solutions.

Odawara, Japan

In the south of the metropolitan region of Tokyo, the subsidiary in Japan has also had its own Rittal Application Center since September 2024. Markus Asch, CEO of Rittal International and Rittal Software Systems, was present at the opening. He was obviously delighted by the high level of customer interest and congratulated the local team on their successful implementation of Rittal topics for this important market.

Pilot project: naturenergie netze

DIGITAL REVOLUTION IN TRANSFORMER SUBSTATIONS

The energy sector is under a lot of pressure. German distribution grid operators need to get their infrastructure ready for the energy transition – and fast. By 2030, some 80 percent of electricity is to be generated from renewable sources. A pilot project at **naturenergie netze GmbH** is demonstrating how transformer substations can be modernised more quickly. In collaboration with software suppliers **Eplan and entegra**, this southern German distribution grid operator is now working for the first time on a digital twin that will greatly speed up the planning and further development of transformer substations.

TEXT: GERALD SCHEFFELS AND HANS ROBERT KOCH

CONTINUE READING ►

In the past, there was distribution. For decades, energy was simply distributed in one direction – from continuously operating coal and nuclear power stations to transformer substations, and from there (once the voltage had been stepped down several times) to end consumers. To use a road traffic analogy, this quiet “one-way street” has now become a busy city-centre road network. Nowadays, the energy mix changes hourly with the wind and weather, so there essentially isn’t a reliable base load any more. In addition, wind farm and solar system operators feed in energy decentrally at medium- and low-voltage levels, so power grids now work in two directions. Heat pumps and electric vehicle charging stations mean higher consumption, while the long-familiar load profiles that peak in the early evening are now a thing of the past. However, both the quality of the supply and the 50 Hz frequency must be guaranteed at all times.

Grid operators are facing a mammoth task – they need to make their grids fit for these complex requirements. For natureenergie netze, this involves new construction work as well as modernising a number of existing transformer substations. The plants need to be adapted to suit the increasing demand for electricity, but that isn’t the only challenge. A bigger challenge is that they need to be adapted to cope with a much higher level of flexibility in terms of energy sources and flows and the precise control of electricity.

A DIGITAL TWIN

natureenergie netze (see text box) was quick to address these challenges and is currently working on a pilot project as it modernises one of its systems. The grid operator is using a digital concept to plan and configure its conversion of the Rheinfeldern transformer substation. The new approach applies even to the preliminary work. Rainer Beck, a grid development coordinator, explains: “Before we start planning, we create a digital twin of the transformer substation, i.e. a virtual representation with all the data for both the live components (the primary technology) and the control level (the secondary technology) and, of course, for the buildings and all the peripherals. We then plan the conversion on the basis of this digital twin.”

Another reason why this is a challenging task is that the primary and secondary technology are planned using different CAD software tools. In this pilot project, this issue was resolved by a very special collaboration. As members of the VDE ETG “Digital twins for electrical energy systems” task force, two leading suppliers – entegra with its primtech software solution for the primary technology and Eplan for the secondary technology – had prepared for precisely what natureenergie netze needed for the first (preliminary) planning stage, namely combining primary and secondary technology in a single model.

MAJOR EFFICIENCY GAINS

For this unique project, entegra and Eplan were looking for an innovative distribution grid operator with a suitable pilot project to get involved as the third party in this collaboration. Contact with natureenergie netze came at exactly the right time – especially since the project in question was a complex one. As Rainer Beck explains: “The aim of the project is to renew all the secondary technology in an existing, highly complex transformer substation – and during ongoing operations.” It’s easy to understand why involvement in this project was appealing. “It would normally take two to three years to plan and implement the modernisation, but the new planning methodology will really speed things up.” Everybody involved in the project agrees. Matthias Schuy, Business Development Manager at entegra, explains: “What we’re doing here – integrating a transformer substation’s primary and secondary technology into one digital twin – has never been done before, but promises major benefits.” We asked him if he could give us a bit more detail. Rainer Beck: “Of course. Ultimately, we need to prove that the one-off investment will pay off quickly. After the first project phase – the preliminary planning – we see considerable time savings during the actual conversion of the transformer substations. What’s more, that applies to every project.”



“After the preliminary planning stage, we see considerable time savings during the actual conversion of the transformer substations. What’s more, that applies to every project.”

RAINER BECK, NATUREENERGIE NETZE



“With Eplan, we can drive forward the standardisation and more efficient engineering of the secondary technology.”

SIMON RÜMMELE, NATUREENERGIE NETZE



“Digitally combining primary and secondary technology is unique – and it promises major benefits.”

MATTHIAS SCHUY, ENTEGRA

CONTINUE READING ▶



NATUREENERGIE NETZE

natureenergie netze GmbH is the grid operator for South Baden. The company makes electricity grids and communal energy infrastructure fit for the future and ensures a reliable power supply. It is driving forward the energy transition by modernising and developing the relevant infrastructure. Its grid area covers the region south of Freiburg to the High Rhine in the west and extends from Lake Constance to north of Villingen-Schwenningen in the east. natureenergie netze GmbH is part of the German/Swiss company natureenergie holding AG. www.natureenergie-netze.de



New start at the transformer substation: “The digital twin forms the basis for our planning,” says Rainer Beck from natureenergie netze.

ONE MODEL FOR ALL USERS

During the first stage of the project, the transformer substation was scanned, photos were taken of the rating plates, and the primary technology data generated was compared with the data from the asset management system. The result was a valid, functional primtech 3D model of the transformer substation. During a fully automated process, the datasets created in primtech were then exported to Eplan via an interface and used as the basis for planning the secondary technology in Eplan. Finally, the data from the secondary technology was integrated into the digital twin. This work is almost complete. By documenting the scenario as it currently stands, the basis has been provided for replacing the transformer substation's secondary technology efficiently. "This is a really important step. All the data is verified. We basically follow the 'single source of truth' principle. The data in the original systems is left untouched and linked to the digital twin. This prevents redundancies that could prove problematic in the future," explains Jan Oliver Kammesheidt, Global Vertical Market Manager Energy at Eplan.

In terms of the architecture of the combined data model, the parties involved – very much in keeping with the twin approach – have created a special infrastructure. "There's no leading system – instead,

there are merely different perspectives of one and the same model. The digital twin opens a window to the systems – for example, from primtech to Eplan or SAP. The digital twin therefore fulfils one of its main functions – namely offering centralised access to all relevant information for the transformer substation," Schuy explains.

STANDARDISING SECONDARY TECHNOLOGY

This collaboration by the three parties – entegra, Eplan and the distribution grid operator – was made possible, or at least made easier, by a decision taken two years ago. That was when naturenergie netze started using the Eplan Electric P8 and Eplan Pro Panel software solutions to plan its secondary technology, i.e. its control technology. Simon Rümmele, who is a grid development project leader, was responsible for this and is still in charge today. "With Eplan, we can drive forward the standardisation and more efficient engineering of the secondary technology – as well as end-to-end planning that we can also use during the operation phase for preventive maintenance and overhauls," he says.

LESSONS FROM MECHANICAL ENGINEERING

The project is demonstrating that users in the electricity industry are benefiting from experience and solutions from mechanical engineering. In that

sector – one in which Eplan has been active for decades – standardisation and "industrialisation" of panel building and switchgear manufacturing equipment is firmly established. As regards this step for transformer substations, there's still a lot of catching up to do – but it has to happen. "Up until now, transformer substations have been planned on a case-by-case basis and built as one-offs. However, this makes it very difficult to judge the need for modernisation and new-builds that is arising as a result of the energy transition. The sector needs to standardise much more than it has in the past. We are providing support and are delighted to have found an innovative partner in naturenergie netze. With the joint digital twin for primary and secondary technology, we are speeding up the process considerably and making it more reliable, too," Kammesheidt explains.

STRONG PARTNERS FOR THE CONVERSION

As Rümmele explains, this is precisely what naturenergie netze is setting out to achieve. "We want and need to digitalise more, because we believe this will open up opportunities and make things easier in the future. That's why we're trying out the latest technologies and planning further pilot projects at our transformer substation in Rheinfelden. What's more, with Rittal, the sister company of Eplan, we also have a

strong partner on board for converting the 'hardware', in other words, all the enclosure technology," he says.

naturenergie netze has also been planning standardisation for some time now – and the joint digital twin created by entegra and Eplan will provide the basis for this, too. Rainer Beck: "We can envisage using two standard concepts and buildings in the 110 kV range and creating variants on the basis of these. We're also working on this with the main primary suppliers. This will also cut down the amount of time and planning required. And this is vital, because we're going to be forced to adapt the majority of our transformer substations to comply with the new requirements. The digital twin and the preliminary work being carried out by entegra and Eplan will help us with this. Through partnership and collaboration, we are coming up with a genuine innovation that will help us develop our grids and make them fit for the future efficiently."

However, it is not only naturenergie netze who will benefit from the project. Kammesheidt: "In contrast to the mechanical engineering sector, grid operators openly share information, because they're not competing with each other. There's already a lot of interest. I'm convinced that many grid operators will be able to take what we're doing here and in the VDE task force and use it to plan and implement their own conversion and new-build projects faster." □



"The industry needs to standardise. We are delighted to have found an innovative partner in naturenergie netze."

JAN OLIVER KAMMESHEIDT,
EPLAN



Engineering with Eplan When it comes to modernising secondary technology – panel building and switchgear manufacturing equipment – naturenergie netze opts for 3D planning software from Eplan.



Stepping into the future as partners Working in close collaboration, naturenergie netze, entegra and Eplan are creating a project blueprint. This highly efficient approach will help develop grids that are fit for the future.

Scan here to go to the video:



CONTINUE READING ►

WHAT EXACTLY IS PRIMARY TECHNOLOGY?

Primary technology covers all the equipment that is needed to distribute and transport electrical energy – switchgear, busbars, disconnectors, transformers and cables.

The “**primtech 3D by entegra**” software offers an efficient way of planning and designing outdoor switchgear for transformer substations. Fully functional 3D models serve as the basis for the digital twin for seamless integration into state-of-the-art planning and operating concepts.

Find out more:
www.primtech.com

OUR EXPERTISE: READY FOR IEC 61850!

Modernising transformer substations principally involves the secondary technology, i.e. panel building and switchgear manufacturing equipment. To create smart grids, the remote control and protection technology therefore needs to be thoroughly modernised, complete with a switch from copper to fibre-optic technology.

IEC 61850 with Eplan

Not only does the software expert offer configuration tools for the engineering of protective devices, it also works on transferring data to various software tools and control technology systems.

Automation with Eplan and Rittal

The link and digital continuity between Eplan tools and Rittal automation solutions also provide a boost for downstream plant engineering.

Technical know-how

TRANSFORMER SUBSTATIONS: GOOD TO KNOW

Transformer substations have a key role to play in the energy transition. To be fit for the future, they need to keep pace with the latest technological developments, be planned efficiently and be equipped with state-of-the-art control technology. The foundations for rapid development are **standardisation and end-to-end digitalisation** – two key elements that are already well established in industry. **Eplan, Rittal** and **entegra** are supplying the appropriate tools and modules for converting **primary and secondary technology** quickly.

WHAT EXACTLY IS SECONDARY TECHNOLOGY?

Secondary technology covers all the equipment and systems that are not used directly for transporting or transforming electrical energy, but instead for controlling and monitoring the primary technology.

Eplan, with its **Eplan Data Portal** and **Eplan Platform**, offers suitable device data and software tools for efficient electrical engineering – from preliminary planning to engineering with the automated creation of schematics. **Rittal VX enclosure system technology** and design-tested **VX25 Ri4Power switchgear and power distribution systems** ensure reliable operation.

Scan here to go to the video:



CONTINUE READING ►

Interview

THE BOOSTER: INDUSTRIAL KNOW-HOW

The first transformer substations have been planned and built, and the digital twins reflect the current operating state. Grid operators have started using the Eplan Platform. **Haluk Menderes, Managing Director of Eplan**, outlines the prospects in this challenging area – and looks ahead to 2030.



“We are contributing our experience in standardisation, the digital twin and use of cloud platforms, in the interests of the all-electric society.”

HALUK MENDERES,
MANAGING DIRECTOR OF EPLAN

Mr. Menderes, the energy transition is posing big challenges for the sector – and for grid operators in particular. Many transformer stations and substations need to be expanded or built from scratch. What role can Eplan play here?

With the Eplan Platform, we can speed up and simplify the planning of equipment throughout the energy system – from generation to consumption. This also applies in particular to the building and operation of transformer substations. We are therefore transferring our decades of experience in industrial automation to the energy technology sector.

You already have a well-established market position in industry – i.e. in mechanical engineering – but would it be fair to say that the energy sector is a relatively new market for Eplan?

Actually, this market isn't that new to us. For many years now, we've had a whole host of customers who work in the energy technology sector. For example, nine of the ten biggest global manufacturers of wind turbines use Eplan for their development work. Moreover, one of the global market leaders in energy storage systems has around 400 active Eplan licences. When it comes to grid operators, though, you're right – we're not as well known or established in that field. However, this situation is now changing, and we're already implementing some challenging projects.

So can your solutions be transferred from industrial automation to grid system planning with ease?

They certainly can. The existing Eplan Platform for electrical engineering and fluid engineering is already ideally suited to grid operators – for everything from preliminary planning to engineering complete with automated creation of schematics. We provide support throughout a system's life cycle – and this is clearly shown in practice. Of course, there are always adaptations to be made – to comply with the new IEC 61850 standard at the moment, for example – but we're also developing new solutions specifically for the energy technology sector. What's more, we're expanding our teams all over the world to include experts in this field.

When showcasing their solutions to a grid operator, what benefits can these experts highlight?

Well, in addition to the functions and end-to-end nature of our platform, we have more than 600 engineers working on the development and advanced development of our solutions at Eplan. That's more than all our main competitors have in total. We're also quite upfront about the fact that we focus on energy technology as a target market alongside industrial automation. We do that in conjunction with Rittal and in collaboration with partners, as our project with entegra and naturenergie netze shows, for

example. This is a clear management commitment that we actively put into practice. We have around 70,000 industry customers who will benefit from this, too. I very rarely have a conversation with a customer that doesn't include the topic of energy and the future of energy supplies. We want to play our part in helping ensure a reliable power supply in the all-electric society, too, by contributing our experience in standardisation, the digital twin and the use of cloud platforms, for example. This offers major benefits for users – and it's also an exciting area with a lot of growth potential for us.

We'd like to finish by asking you to look into the future – in 2030, where will Eplan be on the energy industry market?

By 2030, Eplan will be more or less just as well established as a planning tool there as it is in industry. Grid operators will create a digital twin for every new-build and conversion project – with Eplan for the secondary technology and with a similarly highly performing system for the primary technology. Both systems will interact and users will utilise this data throughout the entire life cycle of the infrastructure component in question. This will save them time and money. What's more, just like their suppliers and service partners, they'll be working on the basis of data that is shared, consistent and always up to date. □

**ECONOMY
AND ECOLOGY***How can politics
and business set
the right course?***One question:**

THE EFFICIENCY REVOLUTION – HOW WILL IT WORK, DR GUNTHER KEGEL?

A GUEST ARTICLE BY DR GUNTHER KEGEL, PRESIDENT
OF THE GERMAN ELECTRO AND DIGITAL INDUSTRY
ASSOCIATION (ZVEI)

It's hardly surprising if people currently have a rather bleak picture of the future. The geopolitical situation has deteriorated over recent years, while the European elections have strengthened parties on the fringes of politics. In terms of being a business location, competition with other economic areas worldwide is fiercer than ever before, while the economic development of Europe and Germany is much weaker than it could or should be.

These are very worrying developments, especially since there is no imminent solution to any of these challenges. The same is true when it comes to climate change – one of the most pressing issues of our times. This long-term threat calls for continuing major investment by both the state and the private sector – something that is not currently easy to achieve, given the weak economy and Germany's strained federal budget. This strengthens the perception that the economy and ecology are at odds with one another. Nothing could be further from the truth, however – in fact, a much stronger joint approach needs to be taken to climate protection and the economy. The means for achieving this are provided by the market economy and companies that are keen to leverage market opportunities with a view to decarbonising our industrial society. For example, a survey of ZVEI member companies reveals that 90 percent of them are already investing in measures to boost energy efficiency. However, this survey also shows that companies feel their initiatives are increasingly being thwarted by red tape.

The time is therefore ripe for a major change – towards greater efficiency of business, politics and society, and with a view to our available resources. The good and practical thing about this is that we already have highly effective levers for this "efficiency revolution". What we need to do now is use them – and that means the most extensive possible electrification, digitalisation and automation of all sectors. This must be combined with smart use of energy, especially when it comes to generating, distributing and storing it. The fact is, electricity from renewable sources is the raw material of both the energy revolution and the efficiency revolution. The annual electricity requirement is set to more than double from its current figure of 550 TWh to up to 1,200 TWh in 2045. At the same time, we can reduce our primary energy requirement by more than 50 percent by using electricity, and save a further 30 percent by consistently pursuing digitalisation and pressing ahead with sector coupling. Both the ZVEI and I personally are therefore convinced that the future is electric. This is not ideological – it is simply the most efficient, most sensible way.

The electrical and digital industry is therefore a strong partner with the necessary know-how. It has already developed many essential technologies and has the innovative strength needed to tackle major challenges. However, fundamental changes call for two key things – a strong will to make change hap-



Dr Gunther Kegel, CEO of Pepperl + Fuchs SE and, since 2020, President of the German Electro and Digital Industry Association (ZVEI).

pen and the right framework conditions. This is why the political sector, too, must prescribe an efficiency revolution. The entire regulatory framework must be made more consistent – nationally and at EU level. The ZVEI expects the new EU Commission to focus on and implement a competitive framework. Regulations must be streamlined, checked for coherence and consistently reduced. It is absurd that the very people who are forging ahead and investing have so many obstacles put in their way. This must stop, because it curbs entrepreneurial spirit and the will to make change happen – permanently. The stated target of reducing reporting requirements by 25 percent can be used as a guideline here. Ultimately, this will leave companies more room for innovation and progress and for securing prosperity.

Populist debates don't get us anywhere. Instead, we need to play the technological and administrative efficiency card. Politics, industry and society need to come together and engage in factual, democratic and pluralist discourse. Let's look forward with optimism – and launch the efficiency revolution now. □

NEWS

INNOVATIONS

Hardware and software: Only intelligently combining these two worlds gives industrial and IT companies a real edge. In this section, you can find out more about **the latest product developments** from **Rittal, Eplan and Cideon**.



Blue e+ units

First DNV-tested cooling units

For the first time, the Rittal product portfolio now includes successfully DNV-tested cooling units for the shipping industry – the Blue e+ dynamic range. Rittal has further developed its cooling units for dynamic loads on the high seas. Besides the EMC compatibility test that is customary for ships, tests were also specifically conducted to check vibration resistance and the reliable functioning of the units when they are tilted. Testing to standard DNV CG 0339 (Class A) ensures that the energy-efficient units cool safely and reliably, even under high dynamic loads. More on this starting on page 34.

Update for VX and AX

New base/plinth systems

Enclosure assembly needs to be quick and straightforward. Every minute counts – even when installing the base/plinth. The same is true when it comes to cable entry – almost everything has to be done in the shortest time possible. Rittal has come up with a solution – its new base/plinth system for the VX large enclosure in stainless steel and the AX compact enclosure. Panel building and switchgear manufacturers benefit from a versatile modular system for fast, customised fit-out options.

New CX console system and CX one-piece console

Flexible fit-out

With the new CX console system and CX one-piece console, there are many options. Do you want the pedestal alone? Or would you prefer a two-piece or three-piece assembly with a desk unit or console? Or perhaps you'd like the CX one-piece console? It all depends on your application. The console system and one-piece console are both compatible with the Rittal AX/VX system platform for compact and large enclosures.



An extensive range of accessories offers a whole host of options for interior fit-out. For example, custom options are available for the base configuration and cable entry.

Eplan eBuild 2025

Creating wiring schematics in the cloud

Thanks to the new version of Eplan eBuild, users can now create wiring schematics in the cloud directly from their Internet browser. This means they are available, early on and at the touch of a button, for the quotation and preplanning phase. Users can see the configuration and generation process at all times, thanks to the optimised user interface that includes a navigation bar with plenty of functions, for example. New, context-sensitive inline app assistance technology helps users find what they need



faster. The new help function, which is now directly embedded inline in eBuild, makes the system even easier to use.

In Project Builder – part of Eplan eBuild – the relevant macro libraries can be selected and then configured or gen-

erated. The new navigator makes the selection process easier. The system ensures digital continuity from product structuring through to project implementation by ensuring compliance with technical standards.



Cideon & SAP

New PDI interfaces

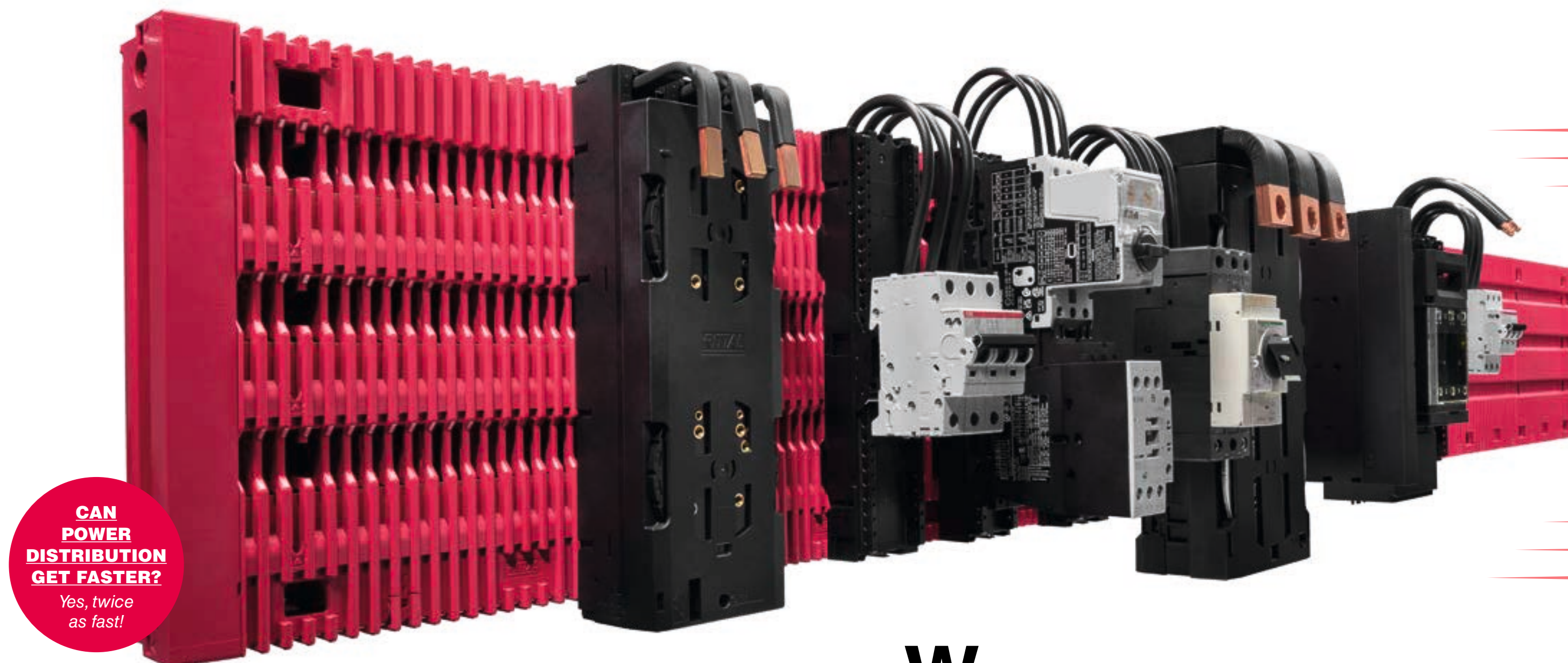
SAP is making increasing use of the cloud. Up until now, product lifecycle management via the SAP Engineering Control Center (ECTR) was mapped in the private cloud. Now, there is also product data integration (PDI) for SAP PLM (BTP) for the public cloud, and companies can use this to link their engineering data to SAP. PLM System Integration (PLMSI) for Autodesk Vault is also new. Cideon provides support in the form of consultancy and implementation of the correct integration. This all results in consistent data without redundancies or manual reworking.

Power distribution

New Ri4Power combination section

Rittal Austria is launching the new Ri4Power combination section – a newly developed power distribution and switchgear system. This space-saving, tested system meets the requirements for power grid expansion. The combination section is based on the VX25 Ri4Power switchgear and power distribution system and has a 4 x 50 x 10 mm main busbar. The bar spacing is 185 mm. The special feature of the application is that it combines an air circuit-breaker with several NH slimline fuse-switch disconnectors in one enclosure. The necessary tests to ÖVE-IEC-61439 Part 1 and Part 2 were carried out successfully at an independent AIT (Austrian Institute of Technology) test laboratory.





**CAN
POWER
DISTRIBUTION
GET FASTER?**
*Yes, twice
as fast!*

The new RiLineX power platform

MORE POWER WITH A PLATFORM

Time and cost pressures are rising and there's a skills shortage – the panel building and switchgear manufacturing sector continues to be under a lot of pressure. What's needed are ways to speed things up in plant engineering – when it comes to power distribution technology, for instance. There's now a solution – **RiLineX, a new, open platform system** for even more efficient planning and faster installation of **60 mm busbar systems**. This boosts efficiency by up to 50 percent.

TEXT: DR JÖRG LANTZSCH AND HANS ROBERT KOCH

With the new RiLineX power distribution platform from Rittal, complex design planning, the loss of space when components are installed and the cutting to size of protective covers are now all a thing of the past. What makes this so innovative? Up until now, installing power distribution technology in enclosures has been a very time-consuming process. Planning and installation are often complex tasks for plant engineering companies – and in many cases, there's a shortage of workers with the relevant skills. Even the 60 mm busbar technology, which has been established since the early 2000s, does not meet every practical need. Although this technology has become established, especially in Europe, thanks to its many advantages over 1:1 cabling in the enclosure, there is evidently a clear need for further development – in terms of the dimensioning of busbars, for example.

PREVIOUSLY – LOSING TIME AND SPACE

Up until now, it has been necessary to install the flat copper bars, which are arranged 60 millimetres apart, by using appropriate supports mounted with the project-specific spacing as stipulated by the necessary short circuit resistance. However, this means that components can't be installed at these

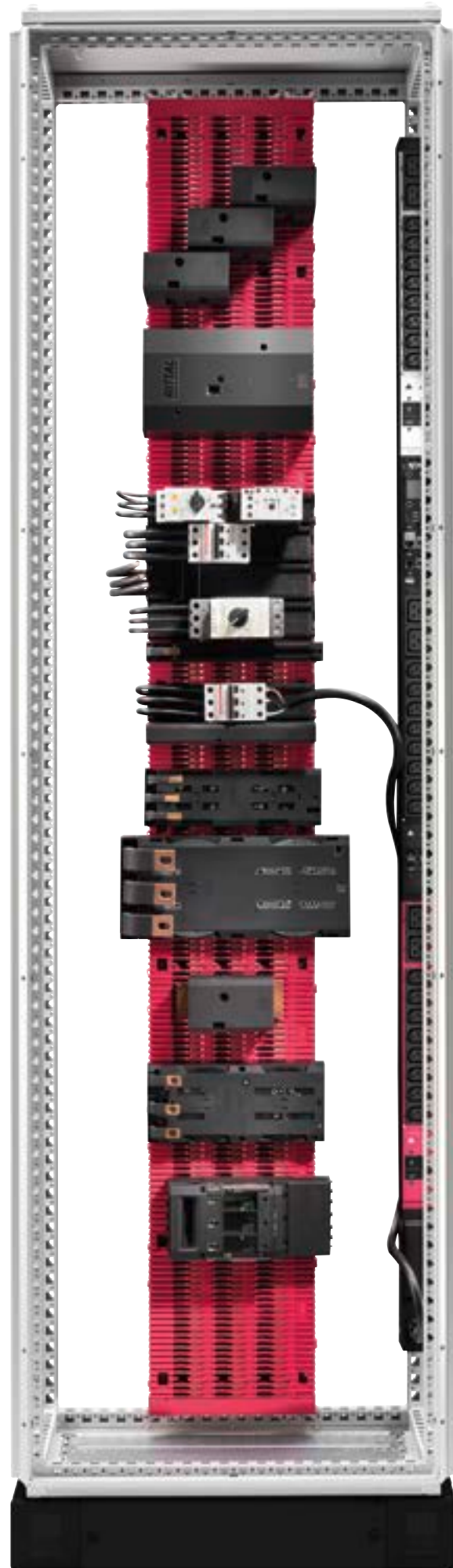
specific points. This loss of space must be taken into account right from the planning stage. Moreover, exposed contacts pose a risk. To protect people and technology, time needs to be spent cutting plastic covers to size prior to commissioning. This results in scrap and plastic waste. On average, cutting the contact hazard protection covers to size produces 1.9 kilograms of plastic waste per system.

NOW – EASIER AND SAFER

The new RiLineX power distribution platform from Rittal speeds up the planning and installation process significantly. With this new busbar system, the copper bars are built into the board directly, without any special supports, so components can be planned or mounted anywhere on them. The complex cutting process is no longer necessary, either. In this system, the cover remains over the bars from the outset, providing protection against accidental contact.

The contact hazard protection is certified to protection category IP2XB, which means penetration by a solid foreign object with a diameter of 12 millimetres or more is prevented. The contact hazard protection at the front can also be upgraded to protection category IP 3X. In that configuration, ▶

Vertical or horizontal? Either is possible: Not only can the RiLineX board be fitted horizontally across bayed enclosures, it can also be mounted vertically, such as for IT applications.



Rittal is protecting the system against penetration by a solid foreign object with a diameter as small as 2.5 millimetres. In either case, there is no possibility of finger contact. The design means that Rittal can pretest the entire system for short circuit resistance up to 52.5 kA, so planners and users alike can rely on a completely safe solution. RiLineX is suitable for applications up to 1000 V AC and up to ± 1500 V DC.

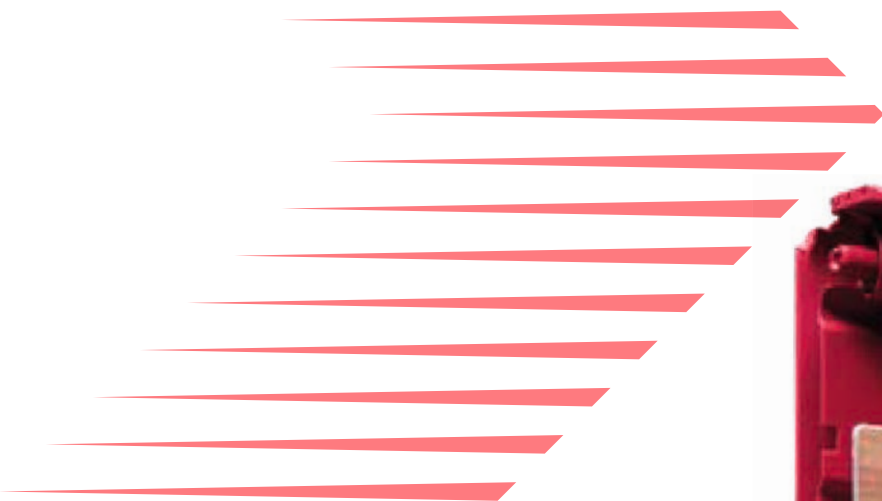
30 TO 50 PERCENT FASTER

The solution significantly reduces the amount of work involved in everything from planning and assembly to maintenance. What's more, it makes plant engineering much more efficient. The result is savings of up to 30 percent in engineering and up to as much as 50 percent in assembly. An innovative click system for boards and components ensures simple installation. This means that project-specific modular solutions can be implemented with ease. Thanks to this modularity, the boards are also maintenance-friendly.

Depending on the customer application, Rittal offers two different approaches for greater flexibility of use. In one of these options, the RiLineX platform is available as a complete board – which can be installed in next to no time – for Rittal AX compact and VX25 bayable enclosures up to 1,200 mm. It can also be supplied already installed in the enclosure. The board is therefore ideal for standard applications when the requirements are known in advance. This reduces costs for users and gives them a clearer overview. What's more, they can install the system without needing any special prior knowledge.

MORE FLEXIBLE THAN EVER

Alternatively, the open modular system version offers complete configuration freedom for customised system design up to 2.4 metres or even more – with additional flexibility through baying connections. Users simply need to know the length of the mounting plate and can then flexibly combine modules in 200 mm increments. What's more, the drilling pattern is identical on every standard mounting plate from Rittal. It's then simply a case of cutting standard busbars to size for the system. The copper bars are then fixed securely in the board so that the short circuit resistance is ensured at all times. This version



Since, with RiLineX, the copper bars are installed directly in the board, without special busbar supports, components can be planned or mounted anywhere on them. The contact hazard protection is certified to protection category IP2XB.

is also available as a kit without bars. For international applications, eliminating the need to ship heavy metal from one continent to another offers both cost and environmental benefits. With RiLineX, the boards can simply be used on site with cost-effective standard bars made from copper or aluminium in various cross-sections. Baying across several enclosures, even retrospectively, is easy. With the new RiPower configurator, Rittal provides support during the planning phase.

A FOUR-POLE SOLUTION FOR THE FUTURE

With RiLineX, Rittal is taking power distribution in enclosures into the future. Initially, the system will be available as a three-pole solution for currents up to 800 A. In the future, end-to-end four-pole systems will also be available. Moreover, the platform is suitable for use in direct current applications, which play an important role in relation to efficient industrial applications and renewable energies in particular. By the time of Hannover Messe 2025, all relevant connection adapters, fuses, disconnectors, etc. will be available for the system. □



“The RiLineX platform is simpler, safer and more efficient than conventional busbar systems.”

RAPHAEL GÖRNER, EXECUTIVE VICE PRESIDENT BU ENERGY & POWER SOLUTIONS AT RITTAL

With RiLineX, Rittal is supplying a contact-hazard-protected power distribution system that is also suitable for high currents. Who benefits from this?

Anybody who needs a fast, reliable solution will benefit from RiLineX. This means everybody from conventional panel building and switchgear manufacturers through to the energy storage industry, installers of photovoltaic systems and the IT sector.

What are the particular strengths of RiLineX?

With RiLineX, Rittal is offering a lot of flexibility. Designed as either a complete board or a modular system, the power distribution can be set up quickly and flexibly to suit the customer's needs. Thanks to its design, RiLineX is already pretested for short circuit resistance up to 52.5 kA. Offering time savings of 30 percent in engineering and 50 percent in assembly, RiLineX is simpler, safer and more efficient than conventional busbar systems.

What role do sustainability and partners play?

With RiLineX, we are significantly reducing the use of plastic. Due to the open modular system, there's also no longer any need to ship copper around the world, with all that entails. And last but not least, thanks to its suitability for direct current and digital integration, RiLineX enables the fast installation of smart infrastructure for the “all-electric society”. Even before the sales launch, we have set up a platform ecosystem with technology partners. Device and component manufacturers will receive the necessary interface data licence-free, so they can develop their own products. □

Rittal IT cooling

COOL WITH THE POWER OF WATER

As a result of AI and high-performance computing, the **performance density in data centres** is reaching a level that poses a challenge for the entire infrastructure. There is a solution, however – direct liquid cooling. In consultation with hyperscalers and server OEMs, **Rittal** has developed a compact, modular **Coolant Distribution Unit** that delivers over **1 MW of cooling output**, thus paving the way for future AI applications.

TEXT: STEFFEN MALTZAN

At just 30 kW, things start to get difficult! That's the point at which air cooling reaches its limits and can no longer remove enough heat from a server rack. AI applications will soon need more than 150 kW of cooling output per rack, though, so what's the solution?

Rittal has addressed this issue by developing its Coolant Distribution Unit (CDU) in a compact rack format. Using water, this CDU delivers more than 1 MW of cooling output for single-phase direct liquid cooling of server racks. "One of our priorities was to factor in handling during operations from the outset. As far as possible, it is important that the usual processes can be used to service the system, despite the new technology," says Michael Nicolai, Head of Rittal IT Sales in Germany. How does this work? With modularisation and the Open Rack V3 – the development of which Rittal drove forward in the Open Compute Project

(OCP). Power is supplied via the rack's standardised DC busbar. Based on this model, the server is also linked up to the central water circuit via connections in the rack. The CDU's functional units, such as the controller unit and several coolant conveying units (CCUs), are completely modular. The benefit for servicing is that the slide-in equipment can be pulled out like servers, including while operational, i.e. in a "hot swap".

GETTING STARTED OR SWITCHING OVER FASTER

In addition to the liquid-to-liquid version, Rittal is also planning liquid-to-air versions that do not need a water connection in the facility. "The liquid-to-liquid solution proved a real draw at trade fairs. As drivers of technology, hyperscalers in particular will use these kinds of installations in high numbers. However, we want to carry out extensive testing first," ▶



"Hyperscalers in particular will use these kinds of installations."

MICHAEL NICOLAI,
RITTAL IT SALES BU

says Nicolai. There are still many more questions to answer. What are the key things to consider in terms of the pipework for the building's primary circuit? What changes result from the high performance density of the power distribution? How does DLC impact service during operations and ultimately the entire data centre? We draw on our experience in these areas, too – and we also know suitable suppliers," he continues.

POOLING EXPERTISE

Although the approaches taken by international hyperscalers will set the standards in the industry in the medium term, the agile colocation sector can't wait that long. "Most colocators have a strong customer focus and want to offer their cus-

tomers good conditions for AI and HPC as fast as possible now," Nicolai explains. This is where liquid-to-air versions come in – solutions that cool the processors with water, but dissipate the heat into the air via the back door or side coolers. They don't offer the cooling output or efficiency of liquid-to-liquid solutions, but they can be put into service faster in data centres that don't have a water connection. With these versions, colocators can carry out their own tests with less effort and lower levels of investment, or create individual "HPC islands" in air-cooled data centres for their customers.

"These versions therefore play a leverage function – they introduce direct liquid cooling to the data centres as an enabling technology for AI," Nicolai explains. "Suppliers like Rittal and planners, project developers and users now need to pool all their know-how fast in order to apply best practices and simplify the radical changes that are affecting the entire system in data centres. With this in mind, we are working in close collaboration with major data centre developers and will shortly be installing a set-up for trials under real conditions on behalf of a physical science research institute." □



Compact and modular: Innovative solutions from Rittal for liquid cooling in data centres

INTERVIEW

NOW, IT'S NOT SO MUCH A QUESTION OF "IF" AS OF "HOW"

As **Chief Technology Officer** on the management board of Rittal International, **Philipp Guth** is focusing intently on the necessity for **liquid cooling in data centres** – and on the associated technological challenges.



system designs – but this technology still has disadvantages and needs further development with regard to the substances in which the entire installation is immersed. Our current focus is therefore on DLC with water. The technology can be retrofitted and is closer to the technology that users are accustomed to.

Liquid cooling is often still thought of as unusual, expensive and potentially dangerous. How can these misgivings be addressed?

These basic misgivings have quickly given way to an understanding that it's quite simply a necessity. Now, in discussions with planners and customers, it's not so much a question of "if" as "how". And that doesn't just apply to the actual cooling solution, for which no single design has become established as the standard. This is where most questions arise, and very specific answers are often needed. For example, how does the high performance density affect the power distribution technology? Or how does the pipework in the building need to be designed? When answering these questions, we draw on our many years of experience of data centres as complete systems. We also understand the relevant facility trades, for example, and can arrange these where necessary to provide our customers and partners with the best possible support. □

"Misgivings about liquid cooling for data centres have quickly given way to an understanding that it's quite simply a necessity."

PHILIPP GUTH,
CTO OF RITTAL

Mr. Guth, why are more and more data centres turning to liquid cooling?

More high-performance AI applications are leading to ever greater performance density in data centres. From 30 kW per rack, air cooling reaches its limits – but we're already discussing rack performance levels in excess of 150 kW with our customers. Nvidia GPUs are one example. While air cooling was still predominantly used for the last generation of Nvidia chips, use of liquid cooling is set to increase massively with the Blackwell generation.

In terms of liquid cooling for data centres, what options are available?

Currently, the main alternatives are direct liquid cooling (DLC) of the processors – the type of solution Rittal is offering with its new CDU – and immersion cooling. For DLC, a

water/polyglycol mix that has already proved successful in industry and the automotive engineering sector is generally used. This mix flows from the distribution unit into the rack and through the heat sinks directly onto the components that generate heat. From there, it carries the heat to the heat exchanger, where it is dissipated. Immersion cooling allows for simpler

**COOLING
UNITS
ON SHIPS?**

We show how they're being made seaworthy.

Cooling units for maritime applications

SEAWORTHY



Test engineer Oleg Gudi from Phoenix Testlab makes meticulous adjustments to the test set-up.

When seas are rough, ship passengers often become ill – but the onboard technology suffers, too. Wave motion and, above all, vibrations from the ship's engine cause serious problems for systems and components – they quite literally fall apart. That's why Rittal has further developed its **Blue e+ range of cooling units** for maritime applications and made them seaworthy. The units were thoroughly **tested at Phoenix Testlab GmbH** and **according to DNV**. This also makes them an attractive option for dynamic applications on dry land.

TEXT: MARTIN WITZSCH AND HANS ROBERT KOCH

A mere glimpse into the engine room shows that space on a ship is at a premium and there is very little room for technology. Even so, technology still needs to be installed there. Sometimes that means retrofitting equipment, such as scrubbers – the exhaust gas cleaning systems that stricter environmental legislation now calls for. Once installed, the equipment has a lot to contend with – vibrations from the diesel engine, rocking due to the swell of the sea, heat and damp conditions all put a huge amount of stress on the electronics. These issues also affect the cooling units for enclosure climate control, as Ralf Schneider, Head of Solution Sales



CERTIFICATION

DNV certification guarantees the reliability of components and systems with regard to hazards at sea and is a credential in the marine and offshore sector.

Cooling at Rittal, explains. "Vibrations cause cooling compressors and other heavy components installed in cooling units to start vibrating violently, too – and, before long, coolant lines are torn out and mountings are destroyed," he says. The reason for this is that cooling units are normally developed for static applications rather than dynamic ones. "Compressors installed in a conventional configuration with vibration damping so they don't disrupt sensitive equipment such as the spindles of machine tools in industrial operations can have the opposite effect at sea. They can really 'shake things up' and cause a whole load of other problems," Schneider explains. ▶



“We have further developed our cooling units for dynamic applications, and have had them tested and certified, too.”

RALF SCHNEIDER, HEAD OF SOLUTION SALES COOLING AT RITTAL



Vibration test: The units are attached to a vibrating plate. The tests are conducted on various axes to simulate impacts from different directions.



Put through its paces: Vibrations that are produced on a ship by the diesel engine are recreated under laboratory conditions, and their impact on the cooling units is measured.

>6.2
THE SEASONAL ENERGY EFFICIENCY RATIO (SEER) OF THE BLUE E+ DYNAMIC COOLING UNITS

AN ENERGY-SAVING SOLUTION FOR THE HIGH SEAS

The cooling units boast excellent energy efficiency, with a seasonal energy efficiency ratio (SEER) of over 6.2. They will soon be available in two enclosure sizes and four output classes – 1.0, 1.6, 2.0 and 2.6 kW. Having been further developed for maritime use, these units will be launched as the “Blue e+ dynamic” range. As the “dynamic” part of the name suggests, they are also suitable for other applications involving dynamic loads, such as crane systems and conveyor belts.

CERTIFICATION – FAR FROM TRIVIAL

To offer cooling solutions to the growth market of ship outfitting, too, Rittal decided to further develop its Blue e+ range of cooling units for dynamic applications and have them tested and certified for maritime use. Schneider describes the process involved. “We’d already had shipping approval for our AX and VX25 enclosures and the Ri4Power power distribution system for some years, but we didn’t have it for our cooling units. However, one of our customers wanted to have their complete systems certified, including our cooling units,” he explains.

Making cooling units seaworthy and getting the associated certification is anything but trivial. There are a number of large classification societies – and ship-owners and outfitters have different preferences, depending on the sector involved. Moreover, each supplier has developed different certificates, depending on whether a piece of equipment is to be used on the bridge, in the engine room or on deck. Rittal opted for certification to DNV, a leading classification society for the maritime industry. DNV certificates are widespread in commercial shipping and recognised globally in critical sectors such as oil and gas. The

certificate covers tests involving vibrations, climatic fluctuations, and inclination. It also includes EMC (electromagnetic compatibility) emissions testing – both the radiation of emissions and immunity to them.

NUMEROUS DNV TESTS

To make the cooling units seaworthy, the Rittal developers started by strengthening the mountings for the components – e.g. the compressor – and the connections for the pipework, and they also changed the layout of the pipework in the unit. To ensure that the design changes would comply with requirements, Rittal initially tested the units in its QA lab. This is where pre-compliance tests reflecting the technical requirements for certification are carried out for specific cases such as shipping classification. Rittal then commissioned the independent Phoenix Testlab in Blomberg to carry out the final DNV tests. Lars Diedrichs and his team are responsible for environmental testing at Phoenix Testlab. “To test vibration resistance, we first conducted a sine sweep test through a defined range of frequencies. This enabled us to see whether resonances occur. Next, we carried out a broadband random vibration



“The cooling units from Rittal passed all the DNV tests with flying colours, so they’re completely seaworthy!”

LARS DIEDRICHS, PHOENIX TESTLAB GMBH

test across the entire frequency range. The test piece was vibrated for 2.5 hours in each spatial axis, i.e. for 7.5 hours in total,” he explains. After the vibration test, the test pieces were put in the climate chamber and subjected to a number of temperature cycles, sometimes with high air humidity, too.

FOR “DYNAMIC” APPLICATIONS

Next, the inclination, i.e. the ship’s movement, was simulated at another test station. The final stage of testing was EMC measurements, including both EMC emissions and EMC immunity. It initially came as a surprise to discover that EMC requirements in shipping are significantly stricter than in industry. The reason for this is that radio communications on ships are a top priority. As Diedrichs explains: “A ship is a self-contained system. There’s not much room on the cable trays and you don’t get the same clean electrical isolation as you do in an industrial system, so the requirements are much stricter.” Units in the 1.0, 1.6, 2.0 and 2.6 kW output classes were tested. Volume production of these DNV-tested units – the Blue e+ dynamic range – will start in early 2025.

“Besides the enhanced reliability, cooling units offer a big cost benefit, too.

Although the units cost more than the standard versions, they’re much cheaper than alternatives such as air/water heat exchangers. These alternatives would require pipework retrofitting, with all the outlay that entails,” Schneider explains. There are other possible applications, too. “Dynamic loads don’t just occur on ships. I’m thinking of crane systems, where an enclosure also travels on the crane trolley. We’ve also already received requests for an airport baggage handling system. Although a normal cooling unit can generally withstand these conditions, there’s still a chance it might not. But a unit that has coped with the tough DNV tests won’t have any problems in that kind of environment.” □

Scan here to go to the video:



Wiring in enclosures

READY FOR ROBOTS

THE FUTURE OF WIRING
What will a robot need in the future?

At Hannover Messe, the **wiring robot from Rittal** proved a real showstopper. While fully automatic wiring in enclosures is still a long way off, this robot shows the way things are moving, with more and more automation being called for in enclosure assembly, too. With its **concept machine**, Rittal is working on the next development step and sharing its insights with customers – e.g. in relation to data requirements.

TEXT: RALF STECK AND HANS ROBERT KOCH

A whole host of megatrends are currently turbocharging automation. On the one hand, the digital transformation is creating the necessary technical and digital foundations, while on the other, demographic developments and the resulting skills shortage are forcing companies to make the best possible use of their existing staff, based on each employee's particular skill set. Increasingly, automation solutions are being used to perform simpler, repetitive tasks, while skilled staff carry out test and development work.

NOTHING WORKS WITHOUT DATA

In panel building and switchgear manufacturing, too, some processes are already automated or supported digitally – for example, the machining of mounting plates or cable processing on the basis of digital data from Eplan. In other areas, work on integrating digital support into manual work processes is only just starting. One example is the Eplan Smart Wiring solution, which guides workers step-by-step through the manual wiring of enclosures. Moreover, the Rittal Wire Handling System (WHS) “shoots” wires that have been assembled on demand by the Rittal Wire Terminal directly to the workstations, by means of air pressure and a pipework system. Even staff who don't have the relevant specialist skills can therefore wire an enclosure efficiently and without errors. ▶



With Wire Terminal WT C from Rittal, wire processing is up to ten times faster.

NOW WE'RE REALLY WIRED! FROM WIRE PROCESSING TO WIRING

Depending on the variant, the compact, fully automated Wire Terminal WT C wire processing machine can produce up to 36 different wires in cross sections ranging from 0.5 mm² to 6 mm² fully automatically, with no manual intervention. These wires can be sent to the relevant workstations by means of air pressure and a pipework system – and in the future, it will also be possible to send them directly to a wiring robot.



“There is still a lot to be done before the robot is ready to go into production. We are in close contact with customers and component manufacturers and incorporate our findings into our developments.”

JOCHEN TRAUTMANN,
MANAGING DIRECTOR OF RITTAL
AUTOMATION SYSTEMS

Without the relevant digital data, it would be virtually impossible to use all these support solutions efficiently. Only when a wire's colour, cross section, ends, length and routing are defined in the enclosure's digital twin can automated wire processing be used effectively.

WIRES WITH A “LIFE OF THEIR OWN”

The wiring robot goes one step further. It wires terminal strips and components on mounting rails automatically, with one-sided or two-sided wiring, and complete with a wire pull-off test. As Jochen Trautmann, Managing Director of Rittal Automation Systems, explains: “As I see it, there's simply no alternative to automation in panel building! Control system requirements are growing constantly, and yet it's getting harder and harder to find skilled staff. Many companies are finding it impossible to recruit even semi-skilled staff.”

Trautmann outlines the technical challenges associated with developing a robot of this kind. “First of all, it's really difficult to position a wire precisely with a robot gripper. Wires are flexible, so the stripped end is never straight out in front. What's more, when the part of the wire behind the gripper moves, the position of the tip of the wire changes, too. Last

but not least, when the first end of the wire has been positioned, the process of taking hold of the other end and twisting the tip is a mechanically challenging one.”

WIRE PULL-OFF TEST INCLUDED

Once you get to grips with the fact that the wire seems to have a life of its own, there are major benefits to a robot system of this kind. The robot carries out a wire pull-off test immediately after every contact – in other words, it pulls on the newly inserted wire with a defined force and measures the resistance. If the wire yields or slips out the terminal – or if it wasn't inserted into the contact in the first place – this is detected and can be rectified. There is therefore no doubt that every wire is in the right place and has the right contact, so there's no need for follow-up checks during the testing phase.

CORRECT DATA IS THE KEY

Data quality is even more challenging. It is not only the position of every contact point in three dimensions that needs to be communicated to the robot, but also the orientation and depth of the contact terminal into which the wire is to be inserted and the position of the labelling panel. Even though many manufacturers supply 3D models of their components,

“We need very precise data for every terminal. 3D models of components are currently not detailed enough for robot applications.”

JOCHEN TRAUTMANN

these are not detailed enough for the robot application.

“We need very precise data for every terminal,” explains Trautmann. “We can use a camera to determine the position of the component on the top hat rail and then adjust the contact point coordinates accordingly. However, the geometry and coordinates of the contact points must be included in the models supplied by the component manufacturer,” he continues. The aim is to generate the robots' path control programs automatically and directly from the 3D plan from Eplan.

SHARING INSIGHTS WITH CUSTOMERS

Trautmann explains the current state of development: “There's still quite a lot to do before the robot will be ready to go into production. We need to continue sharing our insights with our customers, learn more about wire handling, keep on optimising the system and work on data quality in collaboration with the component manufacturers. Our main aim is to increase process reliability to the point where hardly any errors occur.” □



Eplan Smart Wiring: This software is a virtual assistant for manual wiring in enclosure assembly. From the connection point through to the exact routing, the software provides all the wiring information you need – in digital form and also in 3D, if required.

Panel building and switchgear manufacturing

START-UP HELP FOR AUTOMATION

No two panel building and switchgear manufacturing companies are the same, but they all have one thing in common – a huge and ever increasing need for automation. But how do you get started? What's the first step? Which solution should you use first?

We asked **Jochen Trautmann, Managing Director of Rittal Automation Systems**, what the individual steps might be.

INTERVIEW: SABINE SPINNARKE



“It’s worth automating wiring processes first. The potential savings are huge – and not just for the industry giants.”

JOCHEN TRAUTMANN,
MANAGING DIRECTOR OF RITTAL
AUTOMATION SYSTEMS

How much sense does it make to automate individual process steps?

Semi-automatic solutions such as the Secarex cutting centre are a great way for smaller companies to get started, for example. What’s more, every cutting, crimping and sheath-stripping machine has open interfaces and can be integrated into an end-to-end automation line at some point in the future – so even a small investment can represent a step towards end-to-end automation.

How do you support customers who are thinking about an investment?

We offer ROI calculations that help them with their decision by showing them the point at which their investment in a milling centre or a fully automated wire processing machine will pay off. A Perforex Milling Terminal pays off from just 100 enclosures per year and a fully automated wire processing machine from 300 enclosures. In terms of value creation, wiring accounts for almost 50 percent of the workload, so it’s worth automating this first. The potential savings are huge – and not just for the industry giants.

There’s always a business risk, though, isn’t there?

Not necessarily. In Belgium, for instance, Rittal has started offering use of fully automated wire processing machines as a service for customers who are keen to avoid any risk. What’s more, specific projects can be tested and validated on our machines in the Rittal Application Center (RAC). That breaks down the psychological barrier to bigger investments. We support our customers from the start-up phase through to complete in-house production with the machine. □

People often say they can’t afford automation. What’s your response to that?

As I see it, the question isn’t whether you can afford it, but rather whether you can afford not to automate. Only with the help of end-to-end automation can I cut down the amount of time spent on machining in panel building and switchgear manufacturing by up to 85 percent while simultaneously improving quality.

But SMEs are daunted by the outlay involved...

You don’t need to embark on full automation straight away. It’s easier to start with the software. That always pays off. For instance, you can use tools such as Pro Panel from our sister company Eplan to plan the manufacture of your switchgear cleanly and conveniently, based on a digital twin.

What other ways can companies get started?

Digital assistance systems such as Eplan Smart Wiring and Smart Mounting can speed up wiring and installation processes – and make them safer, too. The switchgear manufacturer gets step-by-step instructions on their tablet, for instance, so they can see in 3D where and how wiring paths, rails, cable ducts and components need to be placed. This is really helpful, especially given the current skills shortage, since even unskilled staff can get started with ease.

Panel building and switchgear manufacturing

SPEEDING UP THE PROCESS

Stand-alone product solutions are not enough. In panel building and switchgear manufacturing, big improvements in efficiency can only be achieved by taking account of the **entire value creation process** – from planning and plant engineering all the way through to operation. Only when data, software and hardware are combined intelligently can their full potential be realised, giving rise to that all-important **MORE**. **Eplan and Rittal** provide support by offering solutions from a single source – at every phase and throughout the entire process.

MORE DATA QUALITY
The Eplan Data Portal gives planners fast online access to high-quality data from well-known component manufacturers. This data can be transferred easily, so project planning work is reduced. There is also the option of using preconfigured solutions – our Industry Standard Projects – to speed things up even more.

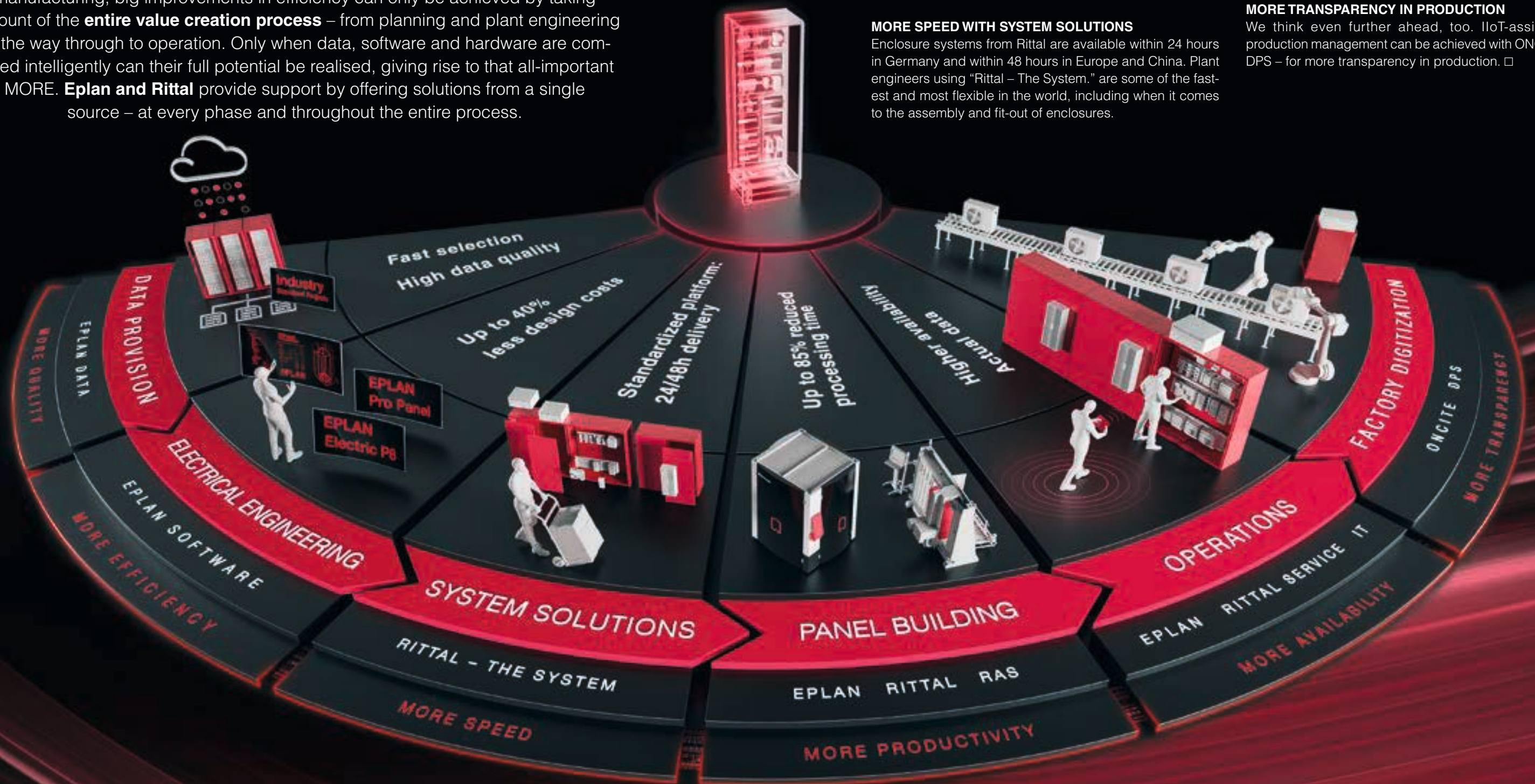
MORE EFFICIENCY IN ENGINEERING
Thanks to Eplan Electric P8 for preparing circuit diagrams, Eplan Pro Panel for 3D-assisted design and Rittal RiPanel for configuring enclosures, plant engineers are ideally equipped for the future – and planning costs are reduced by up to 40 percent, too.

MORE SPEED WITH SYSTEM SOLUTIONS
Enclosure systems from Rittal are available within 24 hours in Germany and within 48 hours in Europe and China. Plant engineers using “Rittal – The System.” are some of the fastest and most flexible in the world, including when it comes to the assembly and fit-out of enclosures.

MORE PRODUCTIVITY IN PLANT ENGINEERING
Automation solutions from Rittal speed up the machining and fitting out of enclosures, as well as wire processing, by up to 85 percent, while software-based assistance systems from Eplan make assembly and wiring easier still.

MORE AVAILABILITY IN OPERATION
Thanks to 150 service centres and more than 1,000 service experts worldwide, the Rittal service team responds quickly to provide support. With the Rittal ePOCKET digital wiring plan pocket, your equipment and system documentation is always up-to-date.

MORE TRANSPARENCY IN PRODUCTION
We think even further ahead, too. IIoT-assisted production management can be achieved with ONCITE DPS – for more transparency in production. □



Eplan Platform 2025

PACKED WITH FEATURES!

CENTRED ON EFFICIENCY

How can Eplan speed up everything from project planning to production?



+ Find out more

at <https://www.eplan-software.com/solutions/new-generation-of-the-eplan-platform/>

The **new Eplan Platform 2025** is ready! Packed with new features – e.g. an innovative macro preview, a component-specific properties display and an upgraded comment navigator – this latest version of the software brings greater **speed and simplicity to electrical engineering**. Here’s an overview.

TEXT: DANIEL GIEBEL



“The new Eplan Platform 2025 offers users lots of additional benefits, such as optimised, simplified data management – for quick results.”

DESIREE FUHS, BUSINESS OWNER
FUNCTIONAL DESIGN AT EPLAN

With this new version, Eplan is focusing on even easier and more efficient use of the software. This is made possible by various factors, including faster data availability and greater data depth in the process for creating schematics. This benefits design engineers, as well as professionals working in enclosure assembly, production and service.

NEW MACRO PREVIEW

This feature makes article management much simpler. In addition to the images already provided in the current version, article information such as the 2D model, the digital twin based on the 3D enclosure layout, and a schematics macro are available. Design engineers can see at a glance which data and macros are defined for a motor, for example, without having to go through the properties menu.

COMPONENT DETAILS AT A CLICK

Cables, wires and terminals have different properties, such as bending radius, cross section and number of pins. In the Eplan 2025 version, these specific properties are available immediately when you click on the component – and not just in the overview, but in article management and the insert centre, too. The information displayed is fully configurable and can be individually defined.

MORE COLLABORATION

In the new software, the comment navigator is available directly in the ribbon bar to make it easier for design engineers to work together and add comments and corrections to the schematic. Users of this collaboration element also benefit from further enhancements to the comment navigator, such as options to add and manage their own comments in the Eplan Platform, view the history and update the status. With the Eplan eView add-on, even cloud-based collaboration with redlining and greenlining functionality is possible.

TAKING MACHINE CABLING A STEP FURTHER

Pre-assembled cables can now be defined in Eplan Electric P8 and cabled virtually with the new Eplan

Cable proD that will be available in parallel with the Eplan Platform 2025. Eplan Cable proD serves as the interface between the 3D models from MCAD systems and the correct cabling information from Electric P8. It enables users to precisely define and route cables and order them in the correct lengths.

QR CODES LINKED TO SYMBOLS

The Eplan Platform 2025 simplifies the creation of schematics thanks to context-related images and QR codes that can be linked to symbols. This also offers greater data depth. By simply scanning the codes, users can access installation instructions and servicing information directly. This makes schematics easier to understand and helps production, commissioning and service staff carry out their tasks more rapidly.

MECHANICAL FEED-THROUGH OF CABLES

Dependencies between cables and components are displayed automatically by Eplan Electric P8 and transferred to connection or cabling lists. This means that correction loops due to missing cables can be avoided. Mechanical feed-through of cables is available for enclosure assembly in Eplan Pro Panel. The software recognises the dependencies and routes the cable precisely – without any manual intervention. □



Eplan Cable proD

PERFECTION IN MACHINE CABLING

Instead of working on the basis of whether something “looks right” and using complex prototypes, users of the **new Eplan Cable proD software** benefit from entirely **virtual cable planning**. As a result, the cabling of new machines works straight away, saving design engineers both time and money. **Lukas Menzel**, who is responsible for rapid design at Eplan, explains the many advantages.

TEXT: BIRGIT HAGELSCHUER



“With the new software, we are plugging a gap in the machine design engineering process.”

LUKAS MENZEL, BUSINESS OWNER RAPID DESIGN, EPLAN

Mr. Menzel, can you start by explaining in your own words what exactly Eplan Cable proD is?

The name Cable proD refers to a 3D software solution that Eplan has designed specifically for machine cabling. This plugs a significant gap. You see, just as machines can already be planned perfectly using their digital twin, this software now finally also makes digital cable planning possible.

What are the drawbacks of manual cable planning, then?

Often susceptible to errors, planning cables “by hand” is also almost always both time-consuming and costly. The cables can be too short, too long or – worse still – located incorrectly, and dealing with this can involve a great deal of outlay. Resulting interfering signals can cause malfunctions that are difficult to pinpoint and therefore ultimately delay the commissioning of important new machines.

What are the advantages of digital planning?

Our customers utilise the 3D software to create a digital twin just for the machine cabling. Their design engineers use this to plan the appropriate cable routes that they would otherwise need to define on the physical prototype. The information provided by the digital twin about the necessary cable length is available much sooner than in the case of tradi-

tional manual cable planning and, most importantly of all, it is accurate. That makes the planning work far more efficient. The interfaces to all standard mechanical CAD tools are another big advantage, enabling data to be input in its original format and output in the universal data format.

How exactly is the susceptibility to errors reduced?

One key example of the added value of our digital solution is that design engineers can complete their cable planning much sooner and can spend the extra time sourcing pre-assembled cables. These can then be installed using the plug & play principle, which rules out incorrectly connected wires, eliminates any current leakage and avoids time-consuming reworking in production. Being able to share the digital cable planning details with the mechanical team means cables fit into the machines and installation spaces with one hundred percent reliability. What’s more, the integrated HTML viewer helps ensure cables from series machines always follow the same route through the machine, with the result that the planned lengths are right and there are no nasty surprises during servicing.

How flexible is the software in everyday use?

If a machine has to be rearranged or con-

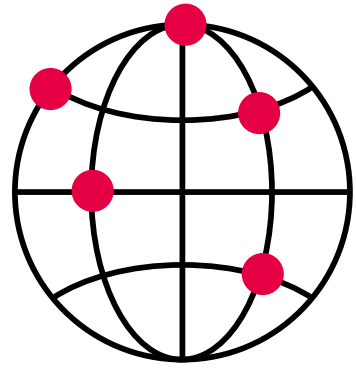
verted – or is made two metres longer, for example – it’s quick and easy for design engineers to replan using the digital twin. This takes a matter of minutes. Fully planned modules of completed orders can also be reused and combined in any way you want.

Do you need much experience to use Eplan Cable proD?

Not at all. Given that, generally speaking, planning a machine’s cable routes isn’t a daily task for users, we have made sure that even customers who only use the software occasionally can quickly achieve the results they are looking for. Our pilot customers have confirmed that it is very intuitive.

What about digital continuity and sharing data?

The data from wiring schematics and the 3D enclosure layout can be taken over directly and simply positioned on the 3D mechanical model, for instance. Users can also avoid the need to export data by taking over assemblies from traditional mechanical CAD systems in their native format. This speeds up the project and prevents data discontinuity. The HTML viewer enables users to share the 3D cabling information very flexibly, whether within their team or with customers. As a result, everyone involved gets a proper overview at an early stage in the planning process. □



WORLDWIDE

On high mountaintops, in the supermarket or in railway tunnels – Solutions from the **Friedhelm Loh Group** are used wherever weather-resistant enclosures, a reliable IT infrastructure and energy supply are needed.



GERMANY

The CS Toptec enclosure from Rittal creates "cosy" conditions for sensitive measuring technology, even in mountainous regions.

TOPTEC CLIMBS GERMANY'S HIGHEST POINT

To make more accurate and faster predictions about where allergens are moving, the company Helmut Hund GmbH developed an automatic pollen monitoring system. Such a system has recently been put into operation on Germany's highest mountain – the Zugspitze. However, the outdoor area of the Schneefernhaus research station has to face the strong winds and low temperatures. This means an enclosure is needed for the sensitive technology, so that an optimal working environment can be ensured at all times. It not only needed to

have the most important outdoor approvals against external influences, it also had to ensure the correct climate inside the enclosure. Hund opted for Rittal's CS Toptec outdoor enclosure. The double-walled construction reduces the penetrating heat, even when the sun is shining hard. The double-walled enclosure design also stops condensation forming. An overhanging rain canopy keeps water away from the enclosure seals. Thanks to its IP55 protection category, the CS Toptec offers a high level of protection against dust and water jets.

IT STARS IN THE SUPERMARKET



SPAIN

Spanish supermarket chain Condis relies on a direct database connection so that it can have up-to-the-minute prices from local fruit and vegetable suppliers at hand all the time to sell lettuce and other vegetables in its stores. These and other applications demand a fail-safe IT infrastructure. Besides the main data centre, the company relies on a Rittal Micro Data Center to handle every backup function.

The Micro Data Center offers a high degree of protection against physical threats like water, fire or unauthorised access. Rittal Liquid Cooling Units ensure the climate in the racks is controlled in an energy-efficient way. The data centre also features a UPS, a fire alarm and extinguishing system, as well as a monitoring system to keep an eye on the IT processes.

THE DATA CENTRE TAKES A BREAK WHEN IT GETS HOT

MBO Services GmbH from Austria specialises in concept development, planning and designing, programming, and as the execution and commissioning of cleanroom concepts. MBO has not only installed a new cleanroom but also an edge data centre for its client IMS Nanofabrication. The server infrastructure was housed in a tool cluster in the grey room surrounding the clean room. This consists of Rittal VX IT racks with a special height of 52 U. Another challenge was to design efficient climate control systems for the high-performance computers. To do this, six Liquid Cooling Packages, each with an output 53 kW were integrated into both enclosure suites. And aisle containment ensures a high cooling efficiency.



ELECTRICAL DESIGN ENGINEERING FOR THE ARCTIC

Steerprop Oy, a manufacturer of ship propulsion systems, uses Eplan for its design engineering work. The company was looking for solutions that would make it easier to manage all the latest information about the design. By opting for the Eplan Platform, Steerprop was able to speed up its flow of data and information. As Esa Peltomaa, Chief De-

sign Engineer at Steerprop Oy, explains, opting for Eplan has brought better scalability to the design process and has delivered other benefits, too. "Every hour invested in the preparation of the design base saves several hours of work at later stages," he says.

Supplying equipment that is suitable for use in cold and icy conditions and

can even withstand the tough conditions of the Arctic Ocean is one of Steerprop's strongest customer segments. Other segments include offshore vessels and passenger and cruise ships. Thanks to high-performance electrical design engineering, the propulsion systems are both reliable and ideally suited to the harsh conditions at sea.



AS QUICK AS A FLASH IN THE RAILWAY TUNNEL

Indian Railways was looking for a power distribution solution in railway tunnels that would meet global standards and meet some very detailed technical specifications – and do all that within just four to six weeks. The railway company approached Rittal India, who developed an ideal power solution for this application. Because Rittal was the first company to do this within the time set, Indian Railways commissioned several more projects.

STORING SOLAR ENERGY INTELLIGENTLY

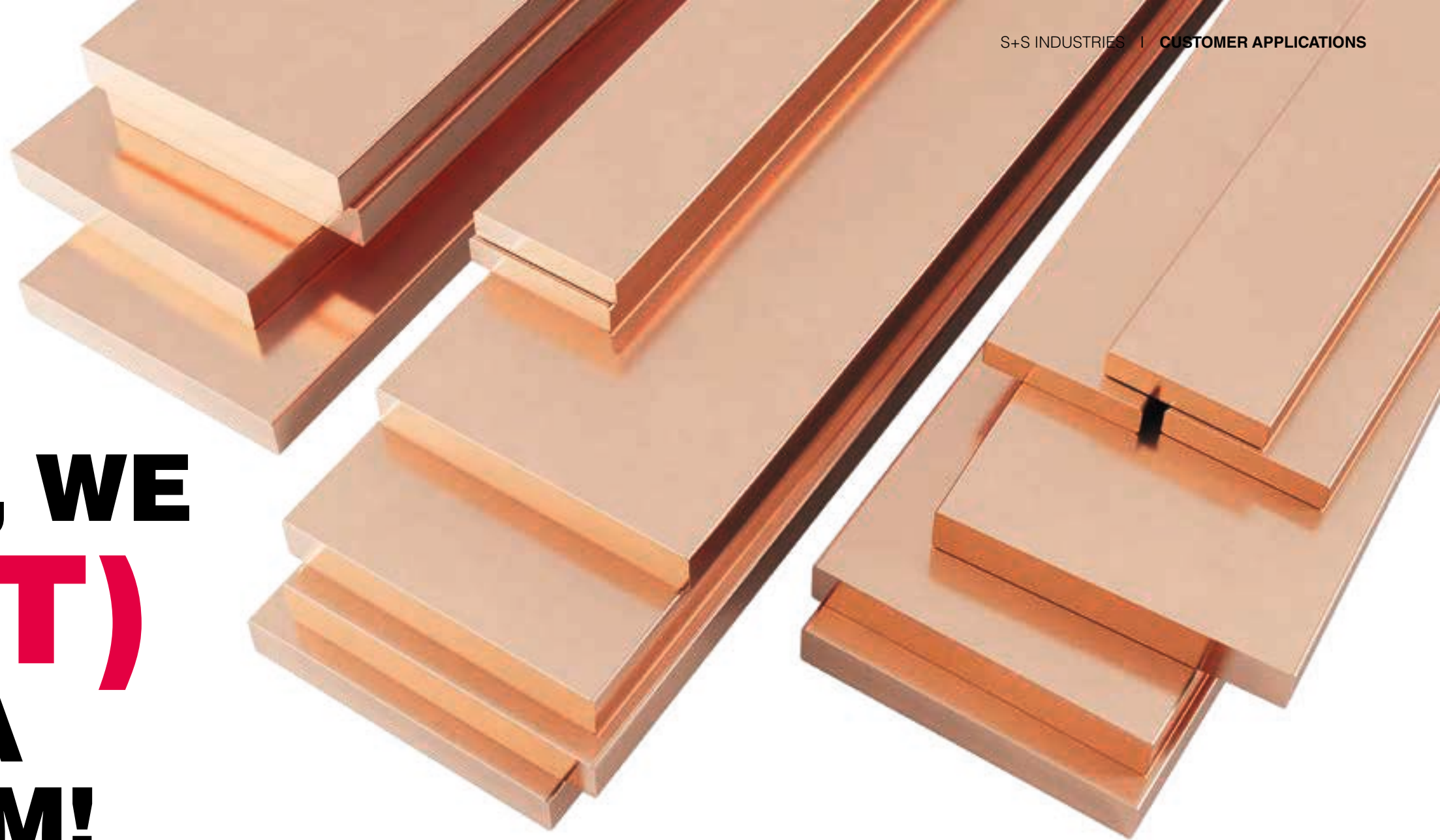
Energy Queensland, an energy supplier from Queensland, Australia, relies on outdoor and compact enclosures from Rittal for its battery storage systems. Together with the distribution companies Energex and Ergon Energy, the company feeds the electricity generated from solar energy into the grid. The surplus energy is temporarily stored in battery storage units and released into the grid as soon as it is needed. The secondary systems and protection and control relays are housed in the Rittal CS TopTec outdoor enclosures that monitors when the electricity is to be fed back into the power grid.



DUST PROTECTION FOR EXPANDED CLAY



The Laterlite Group from the town of Rubiano di Solignano near Parma in Italy is a pioneer in the production of expanded clay in Europe. These small brown spheres are used in flower pots, for example. Production is complex because working with clay creates a dusty environment, deadly for any electrical installation. To protect the sockets in particular from the adverse weather conditions and dust (even outdoors), the Italian company installed compact plastic enclosures from Rittal's AX series. Thanks to the high IP66 protection class of the NEMA 4X enclosures, they protect the electrical components inside even in very harsh environments.



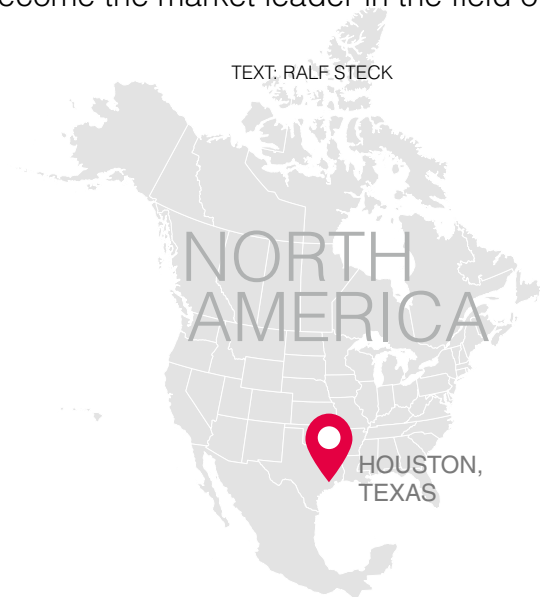
HOW DO YOU MACHINE BUSBARS?
 Using punching and bending machines from Rittal Automation Systems.

Rittal and S+S Industries

HOUSTON, WE (DON'T) HAVE A PROBLEM!

Is the stereotypical image of the dynamic and impulsive US entrepreneur something of a cliché? Actually, no – and Greg Andrews is living proof! That was apparent at the new **Rittal Application Center in Houston**. No sooner had the **Rittal Automation Systems** solutions for machining copper busbars been put into operation there than the Vice President of **S+S Industries** wanted to buy them. Andrews has now placed orders for a total of five machines and is aiming to become the market leader in the field of busbars.

TEXT: RALF STECK



It all started at the opening ceremony of the Rittal Application Center (RAC) in Houston. On a guided tour by Moises Abreu, who is responsible for copper busbar machining solutions at the RAC, Greg Andrews stopped spellbound in front of the punching and bending machines that had just been delivered from Rittal Automation Systems. “They were exactly what I’d been looking for,” recalls Andrews. “I immediately wanted to buy the machines. I knew they would deliver an incredible boost to my business!” he adds. Abreu was initially less enthusiastic, because he knew the machines at the RAC aren’t supposed to be for sale. “We found a solution in the end, though,” he reveals.

CUSTOMERS TEST APPLICATIONS

The RACs are not just showrooms for Rittal enclosures and production equipment. Almost like a training centre, they give customers a chance to work with specialists from Eplan and Rittal to de-

velop, optimise and implement their own application scenarios. The RAC equipment is also used for small and medium-sized series. Ideally, this means customers can develop their processes and have the first parts produced before they purchase a machine (complete with a verified process) and start series production at their own production plant.

A Business Development Manager in the Value Chain Team at Rittal North America LLC since August 2023, Abreu is building up the RAC in Houston. He previously worked in Germany, at Ehrh Maschinenbau in Rheinbreitbach, where the punching and bending machines Andrews was so keen to get his hands on are developed and built. Ehrh has been part of Rittal Automation Systems since 2022. Its punching and bending machines and its material feeding systems can machine busbars for use in enclosure manufacturing that are capable of transferring high currents. ▶



“Demand for busbars will grow further still in the USA in the coming years.”

GREG ANDREWS, VICE PRESIDENT OF S+S INDUSTRIES

The systems in the FlexPunch series are extremely high-performance CNC punching machines.



FlexPunch is a modular punching machine equipped with three CNC-controlled axes, which maximises the precision of production components.



“Enclosures and machines from Rittal are highly sought after in the USA!”

MOISES ABREU,
RITTAL AUTOMATION
SYSTEMS

BUSBARS HIGHLY SOUGHT AFTER

The US busbar market has been growing extremely fast for a number of years. There are two good reasons for this. Firstly, busbars are needed for the power supply of data centres, which are springing up everywhere. Secondly, the US government triggered a modernisation wave in 2021 with its nationwide Infrastructure Investment and Jobs Act, providing 1.2 trillion dollars of funding. This is leading many companies and public institutions to modernise their ageing electrical installations. As in Europe, thick enclosure cables are being replaced by busbar systems to distribute high currents. However, production capacities in the USA have so far been inadequate. According to Andrews, the annual shortfall already amounted to around 2,200 metric tons just for aluminium busbars in 2019.

S+S Industries plates its customers' prefabricated busbars – made of copper, for instance – with zinc. “We realised the production capacities for these busbars were far too low throughout North America,” remembers Andrews. He had al-

ready noticed the sleek, high-quality Rittal enclosures on his customer visits, and when he heard about the new Rittal Application Center in Houston, he attended the opening event.

“When Moises showed me the Rittal Automation Systems solutions, I immediately knew these machines would be perfect for achieving a breakthrough on the North American busbar market,” reveals Andrews. “The systems at the RAC weren't for sale, and it took us a while to win over the company management,” adds Abreu.

ROUND-THE-CLOCK OPERATION

Together with Andrews and company headquarters in Germany, he ultimately found an efficient solution. While waiting for the new machines to arrive from Germany, the RAC in Houston was to process a total of around 30 metric tons of copper for S+S. This period was also used to train S+S's factory managers so they could plan the entire production operation and specify the changes at the RAC that were necessary to complete the order efficiently. Abreu monitored production, staff were



“I immediately knew these machines would be perfect for achieving a breakthrough on the North American busbar market.”

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VICE PRESIDENT OF
S+S INDUSTRIES

The EB40 Professional E comes from the Professional Line of bending machines. The “E” in the name refers to the machine's electric drive, which enables energy savings of up to 70 percent to be achieved.



taken on, and the RAC succeeded in processing all the copper within three weeks. Rittal also helped define an optimum material flow at S+S and prepare for the installation work. The customer ultimately took delivery of a turnkey solution.

Since then, the machines from Rittal Automation Systems have been operating 24/7 for S+S. “We're aiming to process 2,200 metric tons of aluminium and 3,200 metric tons of copper each month,” explains Andrews.

SOFTWARE MAKES ALL THE DIFFERENCE

He is particularly impressed by the machine programming software. “You can obviously buy punching machines in the USA, too, but they don't have the PowerCut software that makes it possible to work extremely efficiently. The required geometries can be imported very quickly, and the punchings can then be arranged on the strip. One special feature is the PunchPRO nesting software, which optimises material utilisation when arranging the punched parts on the copper bus-

bar. We benefit from raw material savings of between four and five percent – a significant cost saving given the quantities we use,” explains Andrews.

The busbars always look the same. PowerCut makes it possible to define a whole host of variants in one program and select what is needed for a particular production operation from the range of geometries. As a result, numerous similar components can be programmed and managed efficiently. This, too, helps ensure the systems operate round the clock and don't need to wait for punching programs.

SOPHISTICATED HANDLING

Thanks to their gantry system, the punching machines offer a sophisticated handling solution that enables them to be supplied with different materials and widths. They then automatically load the appropriate blanks themselves, meaning different orders can be completed seamlessly, one after the other. Andrews is also planning further automation steps to make production even more efficient.

FURTHER MACHINES ORDERED

“We have an excellent opportunity to make a lot of money here,” says Andrews. “Demand for busbars will grow further still in the USA in the coming years. We have the necessary electroplating capacities, we have direct contacts with the raw material suppliers and we can produce – the more the better. The market is still far from being saturated, so I've already ordered further machines and am having them air-freighted to Houston. Every day that we can't meet demand, we're losing money!” he explains.

Meanwhile, Abreu is continuing to build up the RAC. “We're gradually getting the entire portfolio of machines from Rittal Automation Systems and can therefore provide our customers with comprehensive advice and support. However, demand for our machines is extremely high at present and we're working with company headquarters in Germany on ways of offering faster deliveries. Enclosures and machines from Rittal are highly sought after in the USA!” he says. □



Institut Cartogràfic and Rittal

FROM MAPS TO DATA

The **Institut Cartogràfic i Geològic de Catalunya** (ICGC) in Barcelona specialises in areas such as cartography, geology and geophysics. Its work generates more and more digital data, which is now hosted in a new **data centre** in the same building.

TEXT: DANIEL GIEBEL



The ICGC is housed in a property situated on the green hillsides above Catalonia's biggest city. Since 1982, the ICGC has been collecting and analysing information – about earthquakes and avalanches, from site management and from old maps and hiking maps – and making this available for a whole range of purposes. The institute stopped using paper a long time ago and now works with digital data only. To

store and process this data in an efficient, fail-safe manner, the ICGC needed to create a new data centre – but preferably without having to build an extension or new building. The aims of the project were to ensure ecologically sustainable operations and the security and integrity of the data.

Following a public invitation to tender, Spanish Rittal partner Abast won the contract and implemented the project as

State-of-the-art systems in a listed building: Impressions of the new ICGC data centre in Barcelona.

planned, within a period of just six months. One of the biggest challenges faced by the Abast specialists was that the new data centre had to be built next to the old one, in the tightest of spaces in a listed building – and all during ongoing operations.

SECURE, SUSTAINABLE AND MODULAR

The new data centre has been completely redesigned and built by Abast. Meas-

uring 78 m², it is a “room-within-a-room” solution based on a number of key criteria – sustainability, security, energy efficiency and observability. Boasting a tier 3 design and 22 racks in total, this state-of-the-art data centre offers availability in excess of 99.98 percent. Its fully modular system design helps protect the entire area against fire, water, gases, dust and even vandalism. In addition to a fire alarm system, the data centre has its IP access control system to ensure only authorised personnel can gain access.

Two 100 kW batteries have also been installed to safeguard against failure in the event of a power cut. There is also the option of installing a second, additional power generator. The cooling system consists of energy-efficient liquid cooling packages (LCPs) installed between the racks. Each LCP uses only as much energy as is needed to maintain a suitable temperature level. Thanks to the island structure with cold aisle containment, efficiency can be improved significantly and the cooling space kept to a minimum. Initial estimates indicate that this will result in energy savings of around 140 MWh per year. □

A STRONG PARTNER FOR RITTAL IN SPAIN

With 40 years of experience in the IT business, Abast currently has more than 450 employees and achieves sales totalling some 75 million euros per year. Our Spanish partner has sites in Madrid, the Mediterranean city of Barcelona and Palma on Mallorca.

MORE THAN 99.98% AVAILABILITY IN THE NEW DATA CENTRE



HIDDEN IT POWERHOUSE



In many situations, climate-neutral windCORES data centres run on electricity that would otherwise remain unused.

100%
GREEN ELECTRICITY IS BEING USED FOR DATA CENTRE OPERATION

Wind turbines produce so much **electricity** that this sometimes can't even be fed into the public grid, while the sheer amount of electricity required by data centres throws up major challenges for grid operators. **WestfalenWIND IT** has done the maths – and has got **Rittal** on board.

TEXT: DAVID SCHAHINIAN

The idea is a simple one – using electricity where it is being produced on a climate-neutral basis anyway, in the actual wind turbine. What started as an experimental project over ten years ago has, for some time now, been suitable for use on an industrial scale under the windCORES brand.

The successful upscaling of the project was by no means an easy task. Although utilising the existing wind turbine infrastructure and installing racks sounds simple, there are limiting factors. Besides structural, safety and fire load considerations, for instance, the confined space also needs to be taken into account. In collaboration with Rittal, WestfalenWIND IT developed a three-level model for building a multi-storey data centre in the bottom part of a turbine tower. This significantly increases the profitability for each wind turbine.

There is also good scope when it comes to fitting out the racks.

“LIKE A SHIP IN A BOTTLE”

You don't get very far with just a concept, though. A great deal of preliminary planning was required before putting the idea into practice. “It was a real challenge, like a ship in a bottle, because all the technical equipment needed to fit through a small entrance,” explains Dr Fiete Dubberke, Managing Director of WestfalenWIND IT.

“Energy-efficient data centre operation has long been a focal point for us, so it made sense for us to collaborate with a producer of low-cost, sustainable electricity. It's a classic win-win situation that manifests itself in our shared creative drive. We don't look for problems, we solve them,” adds Michael Nicolai, Head of Rittal IT Sales in Germany. ▶



“The wind power infrastructure offers true added value for the data centre market.”

DR FIETE DUBBERKE,
MANAGING DIRECTOR OF
WESTFALENWIND IT



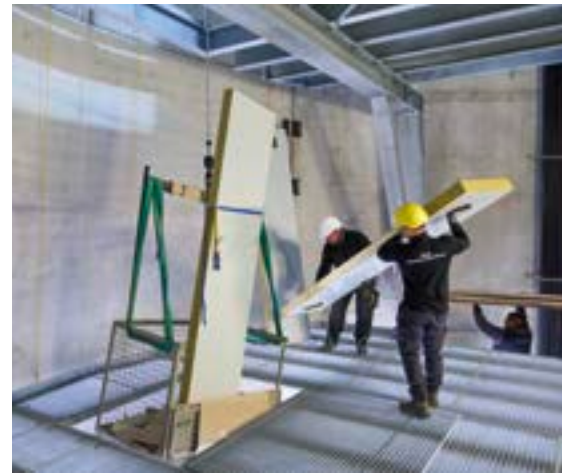
“There’s a right time for every new technology, and that is now.”

MICHAEL NICOLAI,
HEAD OF RITTAL IT SALES
IN GERMANY



Two Skadec cooling containers are located behind the wind turbine (above).

A glimpse deep inside the tower, where the Rittal security rooms are being installed.



**In 2019,
THE PILOT
PROJECT WON
THE GERMAN
DATA CENTRE
AWARD.**

A data centre’s power supply and grid connection are its lifelines. In the case of windCORES, the former is quite literally close at hand. The electricity comes directly from the wind turbine’s generator – during 90 percent of the year, at least. The rest of the time, it has to be obtained from the public grid. To ensure a high-quality power supply at all times, WestfalenWIND IT works with two different grid operators. In many applications, the timing of high computing loads can be controlled to coincide with windy periods. This means the data centre can be operated almost entirely using renewable power. WestfalenWIND IT also takes a doubled-up

approach when it comes to grid connection. Two backbone connections ensure redundant data highways to the DE-CIX Internet hub in Frankfurt. “Our infrastructure benefits from very low latency and a high-performance bandwidth,” emphasises Dubberke.

STEEP LEARNING CURVE

Technical implementation aside, there was a further initial challenge to be met. It took a while to obtain all the necessary approvals for the first windCORES installation in the Paderborn district, but windCORES II has now been commissioned in Lichtenau, in the North Rhine-West-

phalia region of Germany. The data centre will carry out high-performance computing (HPC) for AI as well as simulations for autonomous driving. While the infrastructure – security rooms, IT racks and climate control, for example – is supplied by Rittal, WestfalenWIND IT acts as a provider of sustainable IaaS, including complete cloud solutions.

Infrastructure is an important criterion in all economic efficiency calculations. It is clear that demand for computing capacity has been growing strongly for a number of years and that this trend will continue as a result of new technologies. However, it is sometimes hard to keep up with these requirements. In some cases, it can take years to build a conventional data centre – not to mention the additional land that is used up. Wind turbines are already built. “Although they are relatively small units, currently providing up to 1 megawatt of IT power, the infrastructure is in place and is available almost immediately. This offers true added value for the data centre market,” emphasises Dubberke. The number of wind turbine towers suitable for turning into data centres in Germany runs into four figures, and it goes without saying that they are an eye-catching option. With a little flexibility, however, there are also other ways in

which eco-friendly electricity can be used as close as possible to the point where it is generated. This is because WestfalenWIND IT invested massively in the entire power generation and transmission chain at an early stage. For example, Dubberke also considers container solutions at a wind turbine or one of the company’s transformer substations to be a suitable alternative if the turbine tower itself is not an option. In the Paderborn district alone, substations with a total capacity of around 450 megawatts are available. Whatever option is used,

10.75 GRAMS OF CO₂ PER KWH IS ALL THAT IS EMITTED, AS OPPOSED TO AROUND 420 GRAMS OF CO₂ PER KWH IN CONVENTIONAL DATA CENTRES.

there must be no compromises when it comes to safety. All the necessary precautions and measures are verified, as in any other data centre, and an additional goal of obtaining TIER 3 certification has been set.

SEEING IS BELIEVING

WestfalenWIND IT is now looking to win new customers for its innovative data centres. “On paper, many may still have their doubts, but anyone who has visited an actual installation is normally won over very quickly,” reports Dubberke. The

company is also intending to develop the concept further. Whereas work to date has largely taken place on an equity-financed basis, a three-year research project benefiting from a total of around 2.5 million euros in German government funding started in 2023. As part of this project, a consortium is looking to develop the infrastructure and management framework for an HPC cluster covering several wind turbines.

The current market is now such that windCORES can power ahead. The intelligent use of existing infrastructure with energy produced on a climate-neutral basis constitutes a marketable and scalable alternative. “There’s a right time for every new technology, and that is now,” says Nicolai confidently. □



Left: There is a raised floor for climate control purposes. Dr Fiete Dubberke (left) and Michael Nicolai in the Rittal security room, where the next stage will be to install the IT racks.

Below: Project staff from Rittal and WestfalenWIND IT discuss the next steps in the fitting-out process.





**RETHINKING
PLANT
ENGINEERING**
*How industrial
companies are
becoming more
competitive*

HARGASSNER AND RITTAL

TURBOCHARGING AUTOMATION

How can successful industrial businesses increase their proportion of in-house production? That was the question facing the Austrian company **Hargassner**. This leading supplier of biomass heating systems now manufactures its switchgear **on a highly automated basis** throughout the entire value chain – thanks to software and hardware solutions from **Eplan** and **Rittal**.

COURTESY OF THE X-TECHNIK PUBLISHING HOUSE / AUTOMATION

OVER 28,000 SYSTEMS PER YEAR

Biomass is playing a key role in the energy transition, especially in Austria. Almost half of this country is forested, and it is also home to one of the biggest names in the production of sustainable heating systems. Hargassner, headquartered in the Austrian municipality of Weng, has around 1,100 employees and each year supplies customers worldwide with over 28,000 biomass heating systems – for wood chips, pellets and logs, individually and in combination.



It goes without saying that any company manufacturing the majority of its products on an in-house basis is interested in further expanding its own production. At its headquarters and production site in Weng, in the north of Austria, Hargassner has therefore been investing in automation for some time – from the use of robots for sheet metal working to the introduction of driverless transport systems in its assembly department. The user-friendly operating software for its heating systems is also largely developed on site.

WANTED: MORE SOFTWARE

However, Hargassner was also looking to invest in enclosure manufacturing. The aim was to achieve greater independence and higher quality by increasing its proportion of in-house production. The company had long confined in-house manufacturing of the electrical part of its heating systems to smaller systems and had outsourced the production of en-

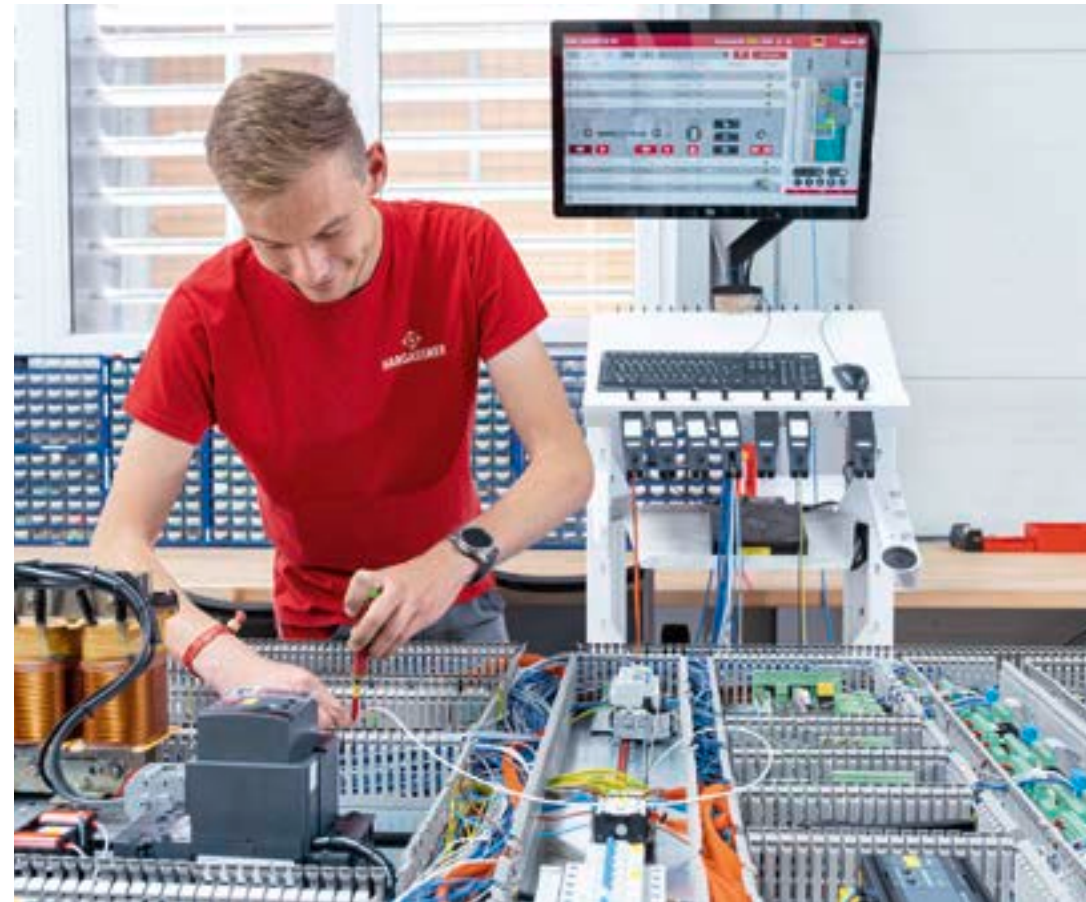
closures for larger systems. The decision was therefore taken to automate its electrical plant engineering operations. “We knew we needed to upgrade our software for that, because the only option for automating production to the extent we were envisaging was to use a digital twin,” explains Robert Burger. An in-depth market analysis produced a conclusive result. “The only way to meet our requirements was to combine solutions from Eplan and Rittal,” continues Burger, who is in charge of the electrical workshop at Hargassner.

STARTING POINT: THE DIGITAL TWIN

A wiring plan was clearly inadequate to create the digital twin of switchgear. In addition to the Eplan Electric P8 planning tool, Eplan Pro Panel was therefore also required for the 3D enclosure design. The design engineers at Hargassner now use the 3D models of the installed components for the digital twin. Many of these are available in ▶



Above: The digital twin of the enclosure is created in Eplan Pro Panel. It includes all the necessary information for downstream processes and makes this available for each subsequent process step.



Left: Eplan Smart Wiring visualises every step in the wiring process. Above: The Perforex drilling and milling centre from Rittal automates enclosure machining.



“The end-to-end solutions from Eplan and Rittal are enabling us to achieve a level of automation that is boosting our global competitiveness.”

ANTON HARGASSNER,
MANAGING PARTNER

the manufacturer-independent Eplan Data Portal, as are all Rittal products. Using Eplan Pro Panel, it is now possible to obtain all data – production data, for instance – based on the arrangement of the components and their connections. This includes deriving the programs for CNC milling centres, and for cutting top hat rails and cable ducts to the correct length. Cable and wire processing information is also covered.

DATA CONTROLS MACHINES

For example, the Perforex MT S CNC drilling and milling centre from Rittal utilises relevant production data from Eplan Pro Panel to drill holes, tap threads and make cut-outs in mounting plates, enclosure parts and doors in a fully automatic process. The system can also use the RiPanel Processing Center software from Rittal to compare orders and material consumption.

The Secarex AC 18 cutting centre, too, utilises data from Eplan Pro Panel. Wiring ducts and their covers, support rails and busbars (NLS-CU 3/10) are cut to the correct length with speed and precision, while an integrated label printer takes care of labelling. The Secarex AC 18 can also take over data directly from Eplan Pro Panel. What’s more, the system optimises waste across projects.



“Thanks to Eplan Smart Mounting and Eplan Smart Wiring, we can cover peak periods in production and even use non-specialist staff.”

ROBERT BURGER,
ELECTRICAL WORKSHOP MANAGER

KEY CHALLENGE: WIRE PROCESSING

When it comes to automating switchgear, wire processing is the key challenge. “Being able to obtain wires of the correct length with the right wire end preparation and labelling and then only needing to install them saves time and eliminates sources of error,” insists Burger.

Hargassner achieves this using the fully automated Wire Terminal WT from Rittal – a multifunctional machining unit that carries out all wire processing steps, from the reel to the ready-to-install article. “Output in the form of chain bundles is ideal for delivery to our external production sites. This fact and the decision taken by Rittal to involve us in the later stages of development as a beta tester led to a quicker decision to invest on our part,” continues Burger.

A FULLY DIGITAL PROCESS

By combining hardware and software from Eplan and Rittal, the Austrian company succeeded in creating an entirely digital process. The data from Eplan Electric P8 is used for the design stage in Eplan Pro Panel. It is here that the digital twin of the switchgear is created, and the data from this digital twin controls all subsequent steps. The Perforex MT S thus produces the machined metal parts, the Secarex AC 18 cutting centre the support rails, bus-

bars and wiring ducts, cut to length and labelled, and the Wire Terminal WT C the ready-to-install assembled wires – all in a largely automated operation.

However, the switchgear manufacturing process is still not complete. Eplan Smart Mounting software helps the fitters at Hargassner fit support rails, busbars and wiring ducts by providing precise, fully graphical visualisations of the relevant steps. The same applies to the wiring process, which is carried out using Eplan Smart Wiring software.

ENHANCED QUALITY AND FLEXIBILITY

“Insourcing with a high level of automation gives us better control over availability and quality, but that’s not all. The Eplan Smart Mounting and Eplan Smart Wiring software tools also enable us to use staff who aren’t trained electricians in production during peak periods,” explains Burger, who is clearly impressed. Managing Partner Anton Hargassner has also been won over by the new fully comprehensive solution. “The end-to-end solutions with software from Eplan and equipment from Rittal based on a digital twin enable switchgear manufacturing with a level of automation that matches other areas of our production operation. The decision to use a solution of this type and quality is boosting our global competitiveness,” he confirms. □

**STATE-
OF-THE-ART
SPARE PARTS
MANAGEMENT**

How can ordering processes be simplified?

Cideon and kolb Cleaning Technology

SPARE PARTS? PROCESSING...

Spare parts can also be ordered on a tablet or mobile phone – a real advantage for modern production operations.

Cideon found the perfect partner for developing a state-of-the-art solution for ordering spare parts – kolb Cleaning Technology GmbH. The result is a **digital spare parts catalogue** for kolb customers – and a **fully developed standard solution** for all Cideon customers.

It's a win-win!

TEXT: SABRINA HAMMER



“Working with Cideon, we found the approach that best suits our needs.”

CHRISTIAN VAN DER STEIN,
HEAD OF PRODUCT
MANAGEMENT AT KOLB

Nowadays, it's impossible to imagine any industry without electronic systems – and companies like kolb are there to ensure these systems keep working perfectly. With its machines and cleaners, kolb covers all processes involved in the cleaning of electronic components – using innovative technologies and placing a high value on sustainability.

FROM PAPER TO A DIGITAL SOLUTION

kolb and Cideon have been working together successfully since 2011. Christian van der Stein, Head of Product Management at kolb, recalls: “Back then, we decided to design exclusively in 3D – and since then, I have been in regular contact with Cideon whenever we need some-

thing.” This was also the case when, over the last year, kolb received customer requests for a digital spare parts catalogue.

The company previously supplied printed lists of the relevant spare parts with its products. However, as van der Stein explains: “Needless to say, we kept an eye on what was happening on the market. For example, there is a VR headset that lets you look inside a machine and see what spare parts are available. That's great at a trade fair, but not very practical for everyday use.” Instead, kolb wanted a pragmatic solution that would keep both workload and costs within reasonable limits.

Around the same time, Cideon came up with the idea of offering companies a digital spare parts catalogue as a standardised product. ▶

Inner values:
Every spare part
is visible on the
PC screen.



Found quickly, thanks to the clear digital display.

wanted to make a collective upload possible for all machines in Cideon Sparify – in the standard solution, only one upload per machine was envisaged. This means the spare parts catalogue can be updated with just a few clicks, even in the case of major changes.

SIMPLIFIED COMMUNICATION

The solution went online in April 2024. Denise Knorr, who is a designer at kolb, is very enthusiastic about its user-friendly operation. “It’s easy to use, and uploads are quick and straightforward. You simply upload the model and store the data – and you can even change things afterwards. The spare parts are displayed nice and clearly, too” she says.

At kolb, the spare parts shop is embedded on the website via iFrame, and customers receive the information they need when their products are delivered. “We provide our customers with QR

codes that they can use to access spare parts and the manual for their machine online,” Knorr explains.

For Cideon, the work with kolb was useful, as it will enable the company to offer other customers more functions and enhanced usability in the future. kolb, meanwhile, continues to be impressed by Cideon. “Together, we found the most pragmatic approach,” van der Stein emphasises. “The channels of communication were always kept short. What’s more, our close collaboration had a very practical slant and we always reached a common denominator,” Knorr adds. It’s what you might call a clean solution. □

KOLB CLEANING TECHNOLOGY GMBH

Headquartered in Willich in North Rhine-Westphalia, kolb is one of the world’s leading manufacturers of cleaning solutions for the electronics manufacturing industry, including the automotive, aerospace and railway industries, and the high-end consumer electronics sector.

+ Scan here to go to the interview:



Then it's simply a case of installing the relevant spare part in the kolb machine.



“It’s easy to use, and uploads are quick and straightforward. The spare parts are displayed nice and clearly, too.”

DENISE KNORR, DESIGNER AT KOLB

A workshop was subsequently organised in 2022, with four Cideon customers – including kolb – invited to take part. Although it emerged during the workshop that customer requirements varied a great deal, there was one thing that stood out for Cideon Solution Manager Sebastian Cordes as a result of the workshop. “There is definitely a market there!” he declared. And that’s how the Cideon Sparify product was given the green light.

PROOF OF CONCEPT IN TIME FOR THE TRADE FAIR

“As the development of Cideon Sparify was progressing in mid-2023, we reached out again to all the customers who had attended the workshop. kolb immediately had the idea of using Sparify to build a service portal,” Cordes recalls. van der Stein adds: “Our expectation was that we would edit 3D models that had already been created for production so that customers could see at a glance what spare parts they could order.”

kolb had a specific goal – to set up a proof of concept with Cideon Sparify in time for Productronica, the leading international trade fair for the electronics manufacturing industry, due to take place in

autumn 2023. The configuration of the solution showcased at the trade fair was almost identical to the one that is in use today. As van der Stein reports: “Customers really liked the concept. Many said that, at last, they would no longer have to search for images and mark them in order to select spare parts. Now all they need to do is click on the part they want and add it to their shopping cart.”

CREATING THE SOLUTION – STEP BY STEP

Cideon Sparify is implemented as a “basic solution” – the 3D CAD models come from Autodesk Inventor, and the spare part metadata from Autodesk Vault. Even though kolb also uses Autodesk Vault, the spare part metadata is taken directly from the ERP system. Cordes explains: “For this purpose, we’ve created a tool that extracts the metadata and converts it to the correct format. It can then simply be uploaded to Cideon Sparify.”

Moreover, kolb wanted to ensure that customers can also select available spare parts that aren’t visible in the CAD assembly. Now, cross-selling articles can be linked in the ERP system and selected during the ordering process. kolb also

Stahlo

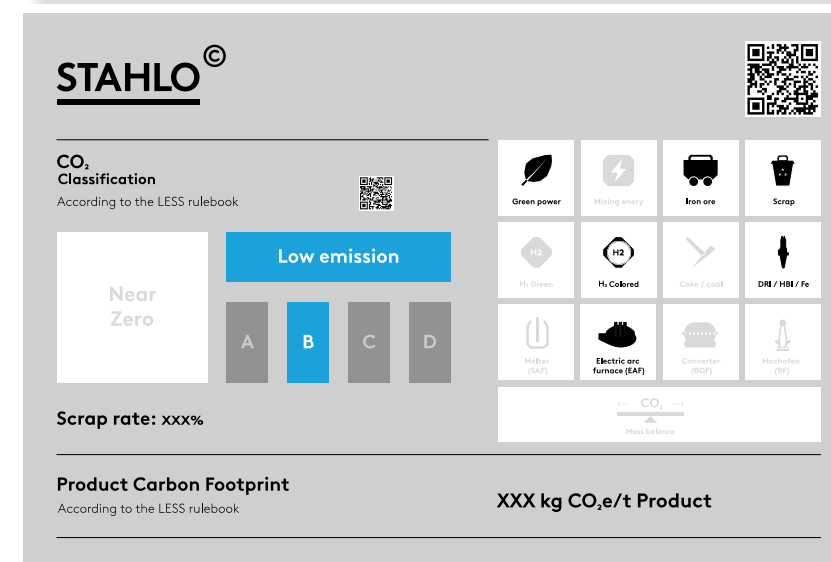
COMPARING GREEN CREDENTIALS

The new **Low Emission Steel Standard (LESS)** is supporting the transition to green steel and promoting **comparability across all parts of the steel industry**. As a result, sustainable progress can be measured and rated. **Stahlo** is leading the way.

TEXT: ANNEDORE BOSE-MUNDE AND STEFFEN MALTZAN



Oliver Sonst, CEO of Stahlo, a Friedhelm Loh Group company



GREEN STEEL:
How binding standards are being developed

The new Stahlo label combines the LESS labelling system with other helpful details.

The issue of what green steel actually is and how you define it has long been a topic of debate. LESS now aims to provide some clarity, along with a classification and calculation framework for low-carbon steel. Germany's steel industry created LESS on the basis of international regulations and standards in order to improve comparability. According to Robert Habeck, Federal Minister for Economic Affairs and Climate Action, it is "Key in creating transparency and incentives for climate-friendly raw materials and products." The objective is clear – to boost demand for low-emission steel and tap into new markets.

TRANSPARENCY PIONEER

Digital transparency in the supply chain has been an integral part of business operations at Stahlo for a few years now. The Friedhelm Loh Group's independent steel service centre was quick to develop its green steel expertise and establish its own, neutral label to indicate the carbon footprint of specific steels. The company's "Steel Compass" has made this steel-related data accessible to customers in an optimisation tool. The software clarifies the current situation regarding Scope 3 upstream emissions from past deliveries and highlights potential optimisations. Customers can specify their carbon targets and are given cost and material options for implementation. Validated to ISO 14067, the tool provides an

accurate overview of the available carbon-optimised flat steel products the steel service centre can source, along with their partial PCF.

Stahlo has gone one step further with its Digital Material Pass (DMP) for steel coils, which includes all product data in a machine-readable format. This ensures seamless integration into future real-time automation of material data and provides the technical basis for transparency in value chains such as Catena-X, an ecosystem in the automotive sector. Data exchange is already possible, too.

CREATING COMPARABLE DATA

As a cross-company standard, LESS now provides an even broader foundation for

ensuring the comparability of green credentials. Oliver Sonst, CEO of Stahlo, supports this standard, which numerous steel manufacturers helped to develop. "We are pleased that, by acting quickly to adapt to LESS, we can help spread the principle of clear comparability even further in the market," he says, adding that Stahlo is also keen to provide customers with added value in the form of information. "We are adding further details to the classification and have developed additional icons for this purpose, for example to map the manufacturing route and more besides," he reveals.

SUSTAINABLE QUALITY

LESS-certified companies will be required to disclose their scrap quota, their product carbon footprint (PCF) and other indicators. This will give steel users all the information they need to ensure the sustainable quality of products for their customers – a strong argument given that "environmental liability" is set to become more relevant, especially in the case of public tenders.

"It is important that LESS becomes a standard based on actual processes and reductions, ideally creating a values and pricing system. First, though, everyone needs to accept the standard, and it's also clear that, besides transparent content, there must be an economic perspective for everyone involved as well," concludes Sonst. □

"We are pleased that, by acting quickly to adapt to LESS, we are helping to make the market comparable."

OLIVER SONST, CEO OF STAHLO

HOW SUSTAINABLE
is a plastic product really?

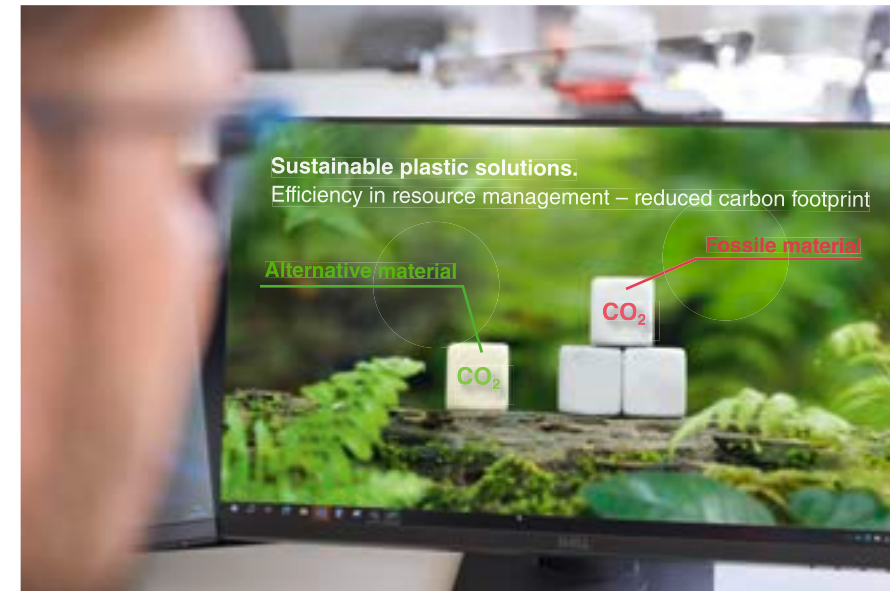
LKH

PLASTIC

REDUCING THE CARBON FOOTPRINT

When developers decide on their choice of **material for plastic products**, they are tying themselves down for years to come. Once operations are up and running, it is very difficult to make changes to the material later on so as to **reduce the product carbon footprint (PCF)**. To help customers lay the right foundations from the very outset, **LKH** offers support during the early quotation and planning phases, complete with **precise forecasts as regards the sustainability and costs** of product variants. This means the PCF can be kept as small as possible.

TEXT: MEINOLF DROEGER



“We can provide our customers with precise statements about the degree of sustainability and the associated costs very early on in the product creation process.”

THOMAS RITTER, DIRECTOR OF ENGINEERING AT LKH

There is an ever growing demand for specific details about a product’s carbon footprint, e.g. in product datasheets. Manufacturers who can make well-founded statements on this topic have a clear competitive advantage. However, it is not possible to give a reliable ad hoc answer to the question of how sustainable a product really is. Many different factors in the complete process chain have an impact on the product carbon footprint. Besides the material, multiple production conditions need to be taken into account – these range from raw material and product logistics to packaging, energy consumption during production, and mould engineering, and all the way through to the service life of the product.

LAYING THE RIGHT FOUNDATIONS

LKH has now made the knowledge it has accumulated over many years digitally available. This expertise comes from projects involving conventional materials or recycled materials and from conversion projects that have involved replacing conventional materials with recycled ones. “This means we can provide our customers with precise statements about the degree of sustainability per product or per kilogram of processed material for multiple product variants very early on in the product creation process,” explains Thomas Ritter, Director of Engineering at LKH. “What’s more, costs can be predicted quickly and reliably at the same time, too. This gives our customers an early opportunity to lay the right foundations for sustainability – in other words, at the very time when important changes can still be made,” he continues.

SOUND AND RELIABLE DATABASE

A product’s carbon footprint depends first and foremost on the choice of materials. For a number of years now, LKH has been using a software tool to consistently pool the relevant data from all material suppliers. As a result, the company now has a dependable database for reliably and knowledgeably evaluating the performance and costs of recycled plastics, bioplastics and virgin plastics – including with regard to their carbon footprints.

Thanks to the LKH in-house energy management system, it is possible to predict energy consumption precisely for all products – and the same applies to comparisons of various mould types, too. LKH runs its production operations exclusively on green electricity, so the conditions are particularly good for generating a small carbon footprint.

INDEPENDENTLY TESTED

In 2023, LKH asked the renowned plastics institute Kunststoff-Institut Lüdenscheid to put its evaluation tool to the test. The institute concluded that the database and working method produce realistic results that are borne out in practice. With this database, plastics expert LKH therefore offers its customers useful support during a very early project planning phase for new plastic products. This enables customers to weigh up costs and sustainability for different product variants and ultimately make the decision that offers the greatest possible benefit. □

NEWS COMMITMENT

From local initiatives all over Germany to projects in India and other corners of the globe – the charity work of the **Rittal Foundation** supports people worldwide. The shared goal of all these activities is to **help communities**.

Lisa Ahlert (Rittal) has had enough of watching the native forest dying. Together with other volunteers from the Friedhelm Loh Group, she has planted a little bit of hope for a better future.



Tree planting by the Friedhelm Loh Group

For a better future

Together, just under 60 volunteers from the Friedhelm Loh Group have planted more than 800 trees in Ewersbach in the German region of Hesse – and all in the interests of a better future. In the past, woodland in Dietzhölztal had to be cleared completely due to extreme heat and a bark beetle infestation. The “forest of the future”, which is a long-term project, will remove around 15 metric tons of CO₂ from the atmosphere on an annual basis and release over 10 metric tons of oxygen each year. Thanks to its ability to store water, it will also not only help renew the groundwater, but also protect against flooding.

It’s still a depressing feeling when you drive through one of the many bleak lands-

capas in the region where mighty spruce trees stood not so long ago. If, like Rittal Foundation Managing Director Rainer Reissner, you drive from Dillenburg to Rittershausen via Ewersbach, you will quite literally see this treeless landscape approaching – the grim result of extreme heat and bark beetles. As Reissner explains, this sight was the trigger for the tree-planting campaign in collaboration with the state forest management company HessenForst. “And I’m delighted we are taking joint action and can help counteract forest decline in the region,” he says. Around a hectare of deciduous trees were planted on the big day – over 800 trees in total, including species such as sweet chestnut, red oak and Norway maple.

65,000 euros for people affected by flooding in southern Germany

Dehumidifiers for flood damage

Torrents of water have again wreaked havoc, destroying livelihoods once more. Entire towns in southern Germany were flooded in June. The water slowly receded, but left devastation in its wake. Even though most people were able to return to their homes before long, they still faced one major challenge – drying out and repairing their houses and flats. The Workers’ Samaritan Federation (ASB), a relief and social welfare organisation active throughout Bavaria, therefore appealed to the Friedhelm Loh Group’s charitable foundation for help. The Rittal Foundation responded immediately – and the Friedhelm Loh Group donated 100 industrial dehumidifiers worth over 65,000 euros to help those affected. “We wanted to help people – quickly, decisively and with minimal red tape – so they could return to their familiar surroundings and their homes,” says Rainer Reissner, Managing Director of the Rittal Foundation. The dehumidifiers, which were delivered directly to flooded areas of Bavaria, are making a big difference to those affected – each dehumidifier removes 52 litres of water in 24 hours.



The donated industrial dehumidifiers each remove up to 52 litres of water in 24 hours, and dry out people’s cellars in the areas affected by the floods.

Personalised support for children

Help for inclusive daycare centres

For many years now, the Rittal Foundation has been supporting children’s villages and daycare centres at the Group’s locations. This spring, the inclusive daycare centre was given 10,000 euros from the annual employee donation to buy equipment for children with special needs. There are plans to set up a sensory room and purchase a special noise reduction chair – ideal if any child finds that things are getting a bit loud for them. Rainer Reissner, Managing Director of the Rittal Foundation, believes support at an early stage is crucial. “This is why education is one of our top priorities. We’re delighted if we can make a real difference in this area,” he says.



Digital offerings for seriously ill patients

Participation in everyday life

The von Bodelschwingsche Stiftungen Bethel organisation has set out to enable seriously ill people and palliative care patients to participate in everyday life to the greatest extent possible. With this in mind, the “Haus Zuversicht” hospice has rolled out a new media concept, thanks to a donation in excess of 25,000 euros that the Rittal Foundation received from the annual employee donation. All rooms have been equipped with smart TVs and an “in-house channel”, so patients can now participate digitally in the organisation’s church services or cultural events. “This is invaluable when it comes to the digital inclusion of seriously ill people,” says Linda Bulthaupt, Director of the Sarepta and Nazareth foundations in Bethel.



The Debora Foundation particularly wants to support girls and young women with the education it offers.



600

CHILDREN ARE CURRENTLY BENEFITING FROM THE EDUCATION PROVIDED

Debora Foundation

WE BUILD ON **HOPE**

In the villages around the Indian city of Bangalore, children and young women from poor backgrounds face complete inequality of opportunity. The **Debora Foundation** wants to change this. Having **already** set up **15 education centres in villages**, it is now planning to **build a school**.

TEXT: SARAH BENSCHIEDT

A schoolbook, a few exercise books and a bit of support – it sometimes doesn't take much to enable a person to break the vicious circle of poverty. Rainer Reissner, Managing Director of the Rittal Foundation, and Dietmar Roller, a development expert and CEO of the International Justice Mission (IJM), have often seen this when working on development tasks together. Along with a team based in India, they are continuing to expand the projects of the Debora Foundation there. They are also looking at where and how the aid is growing and having an impact.

Founded in 2019 and named after Debora Loh – the wife of Prof. Friedhelm Loh, owner and CEO of the Friedhelm Loh Group – the Foundation's vision is to

enable children and young people from poor backgrounds to receive an education. After all, many have no qualifications whatsoever, can't continue their education because of their family's financial circumstances, and end up doing menial work or – worst of all – unemployed. Girls are particularly badly affected. This is where the Foundation's work starts. Besides providing ongoing emergency aid, sewing courses and tutoring, the big vision is to build a school – and this goal is getting ever closer. A plot of land has been purchased and the concept for the school is being developed.

BUILDING ON TRUST

"We are essentially building a model school – in the sense that this type ▶



"Opening routes to help the poorest children stay in education is revolutionary."

DIETMAR ROLLER,
DEVELOPMENT EXPERT
AT IJM



COOPERATION WITH THE BAPTIST HOSPITAL

Besides the construction of the school, emergency aid and projects such as the sewing schools are still ongoing. The collaboration between the Debora Foundation and the Baptist Hospital is a new initiative. Doctors from this hospital go out to the villages and offer free medical care. During the first pilot project, 500 children in 15 villages were examined and provided with any medicines they needed.

In the villages around Bangalore, the Debora Foundation runs projects to support children from poor backgrounds. The team is keen to maintain close dialogue with the local people at all times.



The Debora Foundation offers sewing courses and tutoring in the villages around the city of Doddaballapur on the outskirts of Bangalore – and the Foundation donates all the necessary equipment.

THE PRINCIPLE OF “SEWING SCHOOLS FOR HOPE”

Hope is turning into reality. With support from the Debora Foundation, Majaa and Nilay (names changed by editors) were able to take part in one of the sewing courses set up by the Foundation. These courses teach participants skills with the aim of ‘helping people help themselves’. Many women have already acquired vital opportunities to earn an income by completing one of these courses. “A small return on investment, as it were,” comments development expert Dietmar Roller. During his visit, he and Reissner met women who have completed one of these courses and found out a great deal about their current situation – at their very own clothes-making business. Majaa and Nilay have set up independently and, in addition to school uniforms and blouses, they also make typically colourful saris. “Seeing that women are joining together and setting up businesses, that children are making huge progress at school thanks to our tutoring, and that life is going in a different, positive direction, really touches you,” says Reissner.



“Trust forms the basis of our Foundation’s work.”

THOMAS RAJKUMAR, HEAD OF THE DEBORA FOUNDATION ON THE GROUND

of educational concept doesn’t exist in India yet,” says Reissner. Based on his many years of experience, Roller also comments: “Enabling poor people to stay in education for longer is revolutionary.” This is why the team working with Reissner, Roller and Thomas Rajkumar, who runs the Debora Foundation’s projects on the ground, is receiving academic support from Christ University in Bangalore during the concept development phase. This has included jointly setting up a feasibility study involving local people in the villages, for example. Questions are being put to the people directly affected – parents, children and teachers from the villages around Doddaballapur.

As Reissner explains, the concept has been adapted again as a result, and the original idea of building a secondary

school that would include a great deal of practical work in addition to teaching subjects such as English and maths has been expanded further. “During our work here, it is becoming clear to us that support is needed at an earlier stage,” he says. The plan is now therefore to establish a type of school that incorporates both primary education and the possibility for gaining qualifications for accessing higher education. “We want to start with the very youngest school-age children and potentially educate them for a full twelve years – in other words, we want to cover a pupil’s entire school career. Gifted pupils who want to obtain qualifications for accessing higher education will be able to do exactly that, but there will also be the option of vocational training after year 10.” This is a concept that takes

individual needs into account – with the aim of achieving a sustainable impact. This aim of sustainability applies not only to education, but to the actual building, too.

GREEN IS THE COLOUR OF HOPE – THE SUSTAINABLE SCHOOL

“We are planning to build a green school,” explains Reissner. In practical terms, this means the building is being created in collaboration with architects and geologists and will be run using a sustainable irrigation, ventilation and energy system – making use of rainwater and generating electricity from photovol-

SEWING COURSES ARE OFFERED IN 15 VILLAGES AROUND BANGALORE.

taic installations, for instance. What’s more, it is envisaged that only building materials from the region will be used. In early September, the Indian government granted the Debora Foundation the much-desired licence that will enable it to repurpose the purchased plot of arable land for development and then use it for educational purposes. “We are optimistic that building work will commence in the spring.” The team is certainly impatient to get started. “This school has the potential to open up whole new worlds for the children. Education means access and opportunities for a life far removed from poverty.” □



Issue 01 | 2025:

A SECOND LIFE

The future lies in electric mobility. At present, however, electric car batteries still have a limited service life. Enter e.battery systems. This company, based in the Vorarlberg region of Austria, is committed to giving these batteries a second life – after all, it takes a lot of raw materials and energy to produce them in the first place. These second-life energy storage systems, which have been developed with support from Rittal, can be installed in containers, for example, and used to store electricity generated by an on-site photovoltaic system – a truly outstanding example of an innovative concept in sustainable energy management.

Find out more in the next issue of be top!

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NATIONALES AUTOMUSEUM

85,000 VISITORS FROM ALL OVER THE WORLD

In summer 2024, Nationales Automuseum – The Loh Collection celebrated its first birthday. Over 85,000 visitors have flocked to the museum in Ewersbach since it first opened on 23 July 2023. Many visitors come from far afield – from the USA, Mexico, Dubai and Indonesia, for example. One visitor even came all the way from Australia to fulfil a long-held ambition of getting up close to a special Mercedes touring racing car. One Japanese fan was so impressed by his visit that he is making the museum the future highlight of organised tours for groups of visitors from Japan.

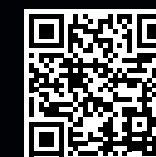
150 VEHICLES – AND NO TWO DAYS ARE THE SAME

The museum has even played host to a surprise marriage proposal that was made in amongst the DTM racing cars. Even though the team obviously has regular tasks to do, no two days are ever really the same at this museum. After all, which other museum drives its exhibits along the local roads to get them up to “running temperature” and check them over? At Nationales Automuseum, this is completely normal – so in the small town of Ewersbach, with its population of 3,000, it’s not that unusual to see a rare Ferrari roaring past.

The institution’s unique academic commitment as an official campus of Nürtingen-Geislingen University (HfWU) is also well established. Besides certificate courses in car design and vintage car appraisal, the university offers a Master’s course in engineering sciences at this campus – and the first students arrived immediately after the museum opened.

During the museum’s first year, a number of its 150 high-performance exhibits have become firm favourites with the public, including a Maybach Exelero as seen in a music video by rapper Jay-Z, and two Formula 1 cars that were driven to World Championship glory by Michael Schumacher. Overall, though, visitors agree that the really special thing about this museum is the international variety of the vehicles exhibited and the fascinating history of each one. It’s a perfect place for a family outing. □

+ Scan here to find out about the museum:



Boasting various themed areas, a cinema, an engine gallery, a technical centre and special exhibitions that change regularly, Nationales Automuseum attracts visitors from all over the world to the heart of the Rothaar Mountains.



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