

be top

MAGAZINE OF THE FRIEDHELM LOH GROUP

CREATING DATA SPACES

AND CONNECTING THEM

How can industry handle the pressure to become more efficient and productive, while at the same time mastering the energy transition? How can it get to grips with the skills shortage and digital transformation?

Data spaces for industry

Dear readers,

How do you personally define success? In the manufacturing industry, successful companies have long been regarded as the ones who supply the best product and can manufacture this with a high level of economic efficiency. Nowadays, however, more is expected. Industrial companies such as ours must be able to combine software and hardware to help our customers with their processes. The way products are manufactured is changing, too. The best product no longer just needs to be produced efficiently – energy consumption must also be kept to an absolute minimum. And what about the future? In the future, we will manage our manufacturing as a data space – and we may even gear it completely towards energy availability and costs.

Is that a radical approach? Absolutely. After all, the energy shortage, the transition to an all-electric society and the need to protect our climate demand radical changes – right now! In Germany, manufacturing operations already account for around 45 percent of overall electricity consumption. Energy efficiency is becoming a business-critical factor, and transparency regarding energy data the prerequisite for economic efficiency and competitiveness.

We can only achieve these things together. Industry is undergoing a transformation that cannot be accomplished by companies acting in isolation or with products and solutions used in isolation. From start to finish, we need to think in terms of processes and how to optimise them, in terms of data spaces and how to link them together. That creates real value for our customers.

This issue of the Friedhelm Loh Group company magazine focuses on industry as a transformation enabler. We take a look behind the scenes of some actual industry projects that are true success stories. These examples are drawn from you, our customers. You are at the heart of everything we do, and we have the privilege of helping you to be and remain successful.

Thank you for placing your trust in us and working with us. We particularly appreciate it in times such as these. Happy reading!

Kind regards,



Prof. Friedhelm Loh



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

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DIGITALISATION ENABLER DATA NEEDS SPACE

We are in the midst of a major social and economic upheaval. The only way forward if the digital transformation is to succeed is to adopt a solution-focused mindset when faced with challenges such as making a success of the energy transition. Industry requires future-proof concepts and new ways of boosting both efficiency and productivity. The key potential lies in digitalising and automating value chains – and for that we need open, connected data spaces.



Dr Carola Hilbrand
Director Corporate and
Brand Communications
Friedhelm Loh Group

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Write to us at:

betop@friedhelm-loh-group.com

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be top online

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

NEWS



RITTAL

New Chief Business Units Officer

Ulrich Engenhardt took up his post as the new Chief Business Units Officer at Rittal in June 2023. The 50-year-old has spent the past 20 years in top management positions at SMEs in the consulting, automotive, medical technology and mechanical engineering sectors. "In Ulrich Engenhardt, we are delighted to have found a top manager with a proven track record and a great deal of expertise in developing business units and giving them an international focus," says Markus Asch, CEO of Rittal International and Rittal Software Systems. What is it about the Friedhelm Loh Group that has captured Engenhardt's imagination? "Entrepreneurship and the mindset of always looking for opportunities impress me," he reveals.

AT A GLANCE

Rittal stance on the Energy Efficiency Act



Anna Klaf,
Vice President Solution Sales IT at Rittal

"Some of the energy-saving regulations imposed on data centres by the Energy Efficiency Act that was passed by the German Bundestag in September are excessive and may have a negative impact on digitalisation and the energy transition," says Anna Klaf, Vice President Solution Sales IT at Rittal since July 2023. As she also points out, however: "It offers opportunities, too. The strength of our industry lies in

making the most of the technical possibilities to ensure this legislation does not put the brakes on digitalisation. It's now up to planners, operators and suppliers such as us to find our customers solutions – even for requirements that sometimes seem unrealistic. I'm confident it can be done." Klaf is also Chair of the German Datacenter Association (GDA), which brings together operators and owners of data centres of all sizes.

MACHINERY AND EQUIPMENT MODERNISED

Upgrade for Stahlo Dillenburg

At its **Dillenburg site**, Stahlo has undertaken a groundbreaking upgrade of its own "muscle power" while modernising its machinery and equipment. Previously used 25-metric-ton cranes have been superseded by a new 40-metric-ton replacement that, together with an existing crane the same size, ensures much bigger coils and thus larger quantities of sheet steel can be picked up and transferred for further processing in the plant. As a result, reduced setup times are helping the steel service centre significantly improve and speed up its production processes. "We have also modernised a line that slits sheet steel and cuts it to length in accordance with customer requirements. Thanks to integrated control technology, many steps are highly automated. The resulting lower production costs also benefit our customers," says Tom Rosenberger, Head of Maintenance at Stahlo in Dillenburg.



CIDEON AND NTT DATA BUSINESS SOLUTIONS BECOME PARTNERS

Two partners for rapid migration

Cideon products, solutions and services are now included in the consulting and service portfolio offered by **NTT DATA Business Solutions**. These Cideon offerings support the SAP product development process based on the Engineering Control Center (SAP ECTR). Besides logistics and commercial information, the management of engineering data is now also possible in SAP. Thanks to the new partnership, companies will enjoy even more efficient support from a single source when migrating to SAP S4/HANA. It is envisaged that the resulting synergies will better meet the high demand associated with migration projects in the future. Sebastian Seitz (CEO of Cideon), Rolf Lisse (Managing Director of Cideon) and Peter Dussling (Head of Partner Management at NTT DATA Business Solutions) signed the relevant agreement on 6 September 2023 at the Cideon UpSpace in Düsseldorf.

NEW RITTAL APPLICATION CENTER IN GERA

Full speed ahead for energy infrastructure

Rittal Application Centers are "fitness camps" for panel builders and switchgear manufacturers, and also for speeding up the conversion and expansion of infrastructure for the energy transition. The latest one opened at the Gera site in September. Accompanied by experts from Eplan, Rittal and Rittal Automation Systems, existing and new customers can see for themselves how combining Rittal hardware and Eplan software makes their projects more efficient. Everything is done in the spirit of "Join.

Apply. Grow." This includes concrete support when it comes to meeting the growing demand for low-voltage switchgear. Customers making use of the Application Center can work with Rittal, Eplan and Ehrt on developing possibilities for utilising process automation, pre-assembled distribution systems and appropriate busbars to make switchgear manufacturing faster. In the face of the current skills shortage, manufacturers benefiting from this vital support can get through more orders – orders that need to



The Rittal Application Center in Gera opened to customers on 21 September.

Friedhelm Loh Group owner and CEO Prof. Friedhelm Loh, his wife Debora and the Rittal management team all helped cut the ceremonial red ribbon. They were joined, amongst others, by (from left to right) Uwe Scharf, Managing Director Sales Germany, Ulrich Engenhardt, Chief Business Units Officer at Rittal (2nd row), and Markus Asch, CEO of Rittal International and Rittal Software Systems.

be completed as a matter of urgency for the energy transition. "What the industry needs is high speed and standardised quality when it comes to upgrading energy infrastructure. Switchgear manufacturers have a key role to play here," says Markus Asch, CEO of Rittal International and Rittal Software Systems. "The major potential for optimisation lies in industrialised work processes, which need to be faster, more efficient and more standardised. The only way to achieve this is by ingeniously combining hardware and software through digitalisation and automation," he adds. Is it worth investing in an in-house automation solution, or will scarce personnel resources be freed up faster for value-adding processes in the current situation if Rittal system technology and copper busbars are bought in ready-made and pre-assembled from Gera for the time being? The answers to such questions relating to energy, power and process automation can now be found in Gera.

AAA PLATINUM EXCELLENCE AWARD

Top rating for Rittal Czechia

The Rittal subsidiary in Czechia is once again fully justified in calling itself a top company in 2023 – the seventh time in succession that it has received this accolade from business analyst Dun & Bradstreet, which uses an analytical model to measure the stability of businesses and issue

corresponding ratings. Receiving the highest rating of **AAA Platinum Excellence** means Rittal Czechia is one of the most stable companies in the Czech Republic and even in Europe – a real achievement, especially in fast-moving and difficult times such as these.

PRODUCTION OF VX25 LARGE ENCLOSURE SYSTEM IN CHINA | EXPANSION WORK STARTS

Production expansion at Rittal China

Maximum data quality and continuity boosts efficiency and productivity throughout the entire value chain. The VX25 large enclosure system is already a success in large parts of the world – and with good reason. In the future, this platform will also be available on the Chinese market. The initial foundation for this has been laid with the start of work on expanding production at Rittal Electrical and IT Systems (Shanghai) Co., Ltd. (Rittal China).

EXPANSION OF PRODUCTION AREA

To accommodate the “new” addition to the Rittal China portfolio, the company is expanding its existing production area of more than 24,000 m² by a further 10,000 m², split over two floors, to build large enclosures and climate control units. In the future, customers based in Asia will thus be able to benefit from short delivery times and the wide range of VX25 accessories. The premium large enclosure system will complement the existing lines in China. According to Ingolf Bauer, Business Unit Industry Project Leader, this investment further increases the focus on global customers. After all, adding the VX25 to the portfolio in China opens up new potential for these customers, who will be able



Markus Asch emphasises his confidence in the potential of the Chinese market.



Michael Galler, COO of Rittal Asia, regards the expansion project as a “huge opportunity” for the growth market of China.

to benefit from the VX25 worldwide in the future. “We are thus making a massive investment in the future,” emphasises Bauer. Markus Asch, CEO of Rittal GmbH & Co., had the following to say at August’s ground-breaking ceremony in the megacity of Shanghai: “Besides increasing the size of the Rittal China site, this expansion project also sends out a clear signal regarding our Group’s confidence and trust in the potential of the Chinese market.”

By stepping up the level of automation and efficiency in production, Rittal China is thus laying the foundation for further development in China. The market is highly dynamic, especially when it comes to electric vehicles and charging infrastructure. “We are looking to the future of our market with confidence. This expansion project will significantly improve the plant’s capacity,” confirms Michael Galler, COO of Rittal Asia. He refers to the undertaking as a “huge opportunity” and adds: “By expanding the plant in Shanghai, we are laying a foundation that will ensure we can optimally meet the needs of our customers in the growth market of China.” The new building will house a new profiling system, along with welding technology for the VX25 and the production of climate control units.



LKH TAKES CLIMATE PROTECTION TO THE NEXT LEVEL

LKH is neutral

On 1 July 2023, LKH became a carbon-neutral company, offsetting the entire carbon footprint of its plastics plant in Heiligenroth. Energy efficiency and climate protection have been playing a key role here for many years and LKH has now taken this to the next level, thereby systematically continuing a long-standing commitment to sustainability.

As part of a multi-pronged strategy, the company’s activities are based on an environmentally sound and thus forward-looking approach to both consulting and the selection/evaluation of solutions.

LKH FOCUSES ON ENERGY-EFFICIENT METHODS

LKH is already utilising renewable energies and energy-efficient methods – the Heiligenroth plant obtains 100 percent of its electricity from hydropower and solar power. Compressors in operation at LKH recover waste heat from processes and machinery to supply hot water and heat the buildings. The company also reduces its energy consumption by utilising hybrid injection-moulding machines and energy-efficient chillers.

MULTI-PRONGED CLIMATE PROTECTION STRATEGY

As already mentioned, however, the strategy is a multi-pronged one. The company’s activities are based on an environmentally sound and thus forward-looking approach – at its own plant and also when consulting and selecting/evaluating solutions. For example, LKH works with its customers to put environmental protection centre stage – right from the initial idea. It provides every customer with a recommendation explaining how the planned project could also be implemented using bioplastics or recycled materials. Achieving carbon neutrality thus also forms part of the company’s mission to continue offering innovations and optimum solutions for customers.

One particular way in which LKH is taking responsibility in its local region is by continuously driving technical innovations to cut carbon emissions. The increasing use of recycled materials and bioplastics, which have an 85 percent smaller carbon footprint than conventional plastics, is already a good start. This approach is very much in tune with the basic principle embraced by the Friedhelm Loh Group of taking responsibility for the environment.



ALEXANDER BÜRKLE BECOMES THE FIRST RITTAL + EPLAN APPLICATION CENTER PARTNER

Understanding customers

Alexander Bürkle, Rittal and Eplan have a close and long-standing working relationship. The technology service provider based in the Baden-Württemberg region of Germany has now become the world’s first Rittal + Eplan Application Center partner. This partnership is setting standards when it comes to forward-looking panel building and switchgear manufacturing. It also reflects the partners’ shared mission to understand the entire value chain of their customers and optimise this using state-of-the-art technology. Rittal needs partners such as Alexander Bürkle to wire, fit out and test enclosures. Another vital aspect is that the future of panel building and switchgear manufacturing – from engineering and automation through to assembly – lies in the systematic implementation of digital applications. The software tools supplied by Eplan are the key to achieving this. **(Find out more on pages 58 and 59)**



10 YEARS OF DIGITAL TECHNOLOGY POLAND

Happy birthday!

Digital Technology Poland (DTP) is a true success story. The workforce of this FLG company based in Zielona Góra has increased one hundred fold in the space of ten years, from just three to three hundred. Working closely with Eplan, Cideon, Rittal and German Edge Cloud, DTP develops innovative software solutions for industry. By advancing the interaction of hardware and software for and with its customers, it is also driving digital transformation. At the same time, the company reflects the growing importance of software within the Friedhelm Loh Group, which now has around 2,000 staff working in this field.

DATA NEEDS SPACE

Digitalisation enabler

The industrial foundations of Europe's economy have rarely been hit by so many changes at the same time. Industry is in upheaval – and not just in terms of technology. How can it handle the **pressure to become more efficient and productive**, while at the same time **mastering the energy transition?** How can it get to grips with the skills shortage and at the same time – or even because of that – implement **digital transformation?**

Text: Ulrich Sandler, Steffen Maltzan, Dr Carola Hilbrand

The energy transition, digital transformation and data exchange – how industry data spaces can help meet these challenges.

So how do you go about doing that? “We need to create data spaces for the relevant processes and link them together for overarching collaboration,” says Asch. “Energy supplies that are cost-effective and dependable over the long term, digital transformation in factories, and smaller product carbon footprints in industry – none of these can be achieved in isolation. We need transparency across entire value chains.”

“This is where the strengths of open data spaces as ecosystems really come to the fore,” explains Sebastian Seitz, CEO of Eplan and Cideon. “Enabling cross-sector collaboration requires more than just technical means. Equally important are definitions that generate consensus about relevant issues of data sovereignty, and software that safeguards this on a technical level.”

What does that actually mean and what role do data spaces play? And why is the energy transition not just a challenge, but also a driving force? Find out more in our interview with Sebastian Seitz, which includes practical examples of smart production at Rittal (shown above) and offers insights into the benefits of the Catena-X automotive ecosystem. ■

Investing in automation and digitalisation is crucial if a business wants to stay competitive. That much is clear. But does investing also solve the problems? Markus Asch, CEO of Rittal International and Rittal Software Systems, doesn't think so. “Technologies are the tools we need. However, the really important potential lies in optimising and industrialising entire value chains. That is the only way we can act faster with the resources available. Despite the skills shortage, there's no time to lose when it comes to expanding the infrastructure for energy networks and smart factories.”



Making data flows transparent

INDUSTRY AS A DRIVING FORCE

Whether climate change, energy shortfalls, the skills shortage or the transformation of global supply chains – digitalisation and automation are the most powerful levers for industry. Sebastian Seitz explains why standardisation and data spaces are such an important part of this, how **smart production and the energy transition** are linked, and how industrial companies can thus become enablers for their customers. **Sebastian Seitz is the CEO of Eplan and Cideon** and one of the **driving forces behind the industrial software operations of the Friedhelm Loh Group.**

Mr. Seitz, change is happening everywhere. The climate crisis, energy supplies, supply chains and diverging global trade – nothing is unaffected. How is industry to cope with that? **Sebastian Seitz:** Globalisation led many of us to believe that everything was available in unlimited abundance. The past few years have shown that to be a naive view. Industry needs to achieve a fundamental transformation at a time when, in many parts of the world, it is getting increasingly difficult to find people

with the necessary skills. The only solution is to incorporate extensive automation into planning, building and manufacturing processes. That means industry is part of the solution. The energy transition is a particularly good example of this. Electrical energy will replace other types of energy, and electricity networks are having to cope with much bigger loads and fluctuations. New infrastructure is urgently needed. Nonetheless, the days when sufficiently low-cost energy was available around the clock for industrial requirements are long gone. That poses a challenge for

manufacturing businesses. It's not just about boosting efficiency by a couple of percent. It's about achieving a whole new level of energy management – even as far as organising high-consumption processes on a flexible basis in line with the availability of energy or a sliding scale of costs. For that, you need not just the right infrastructure but also the right software architecture – the data infrastructure for digitalising processes, making dataflows transparent and managing those dataflows. At the Friedhelm Loh Group, we believe industry can be an enabler for this transformation.

What role is played by initiatives such as the Industry 4.0 platform that define sovereign data spaces?

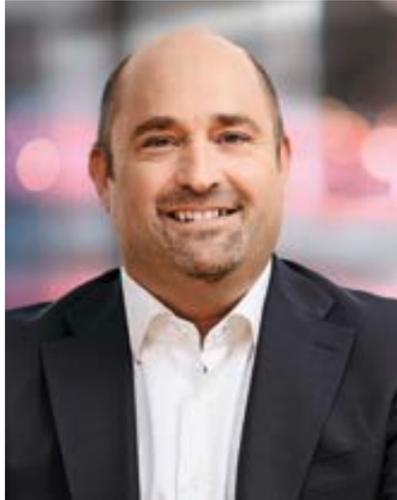
Seitz: The more that initiatives like these promote standardisation and agreement on reference architectures everyone will work with, the more effective they will be. We are playing our part and working hard on precisely that. However, what counts is the practical implementation of these concepts – including as a way of gaining experience faster and putting that back into the standards. At the Rittal plant in

“Carbon footprint and management based on energy availability will become a fourth key production parameter.”

Sebastian Seitz,
CEO of Eplan and Cideon

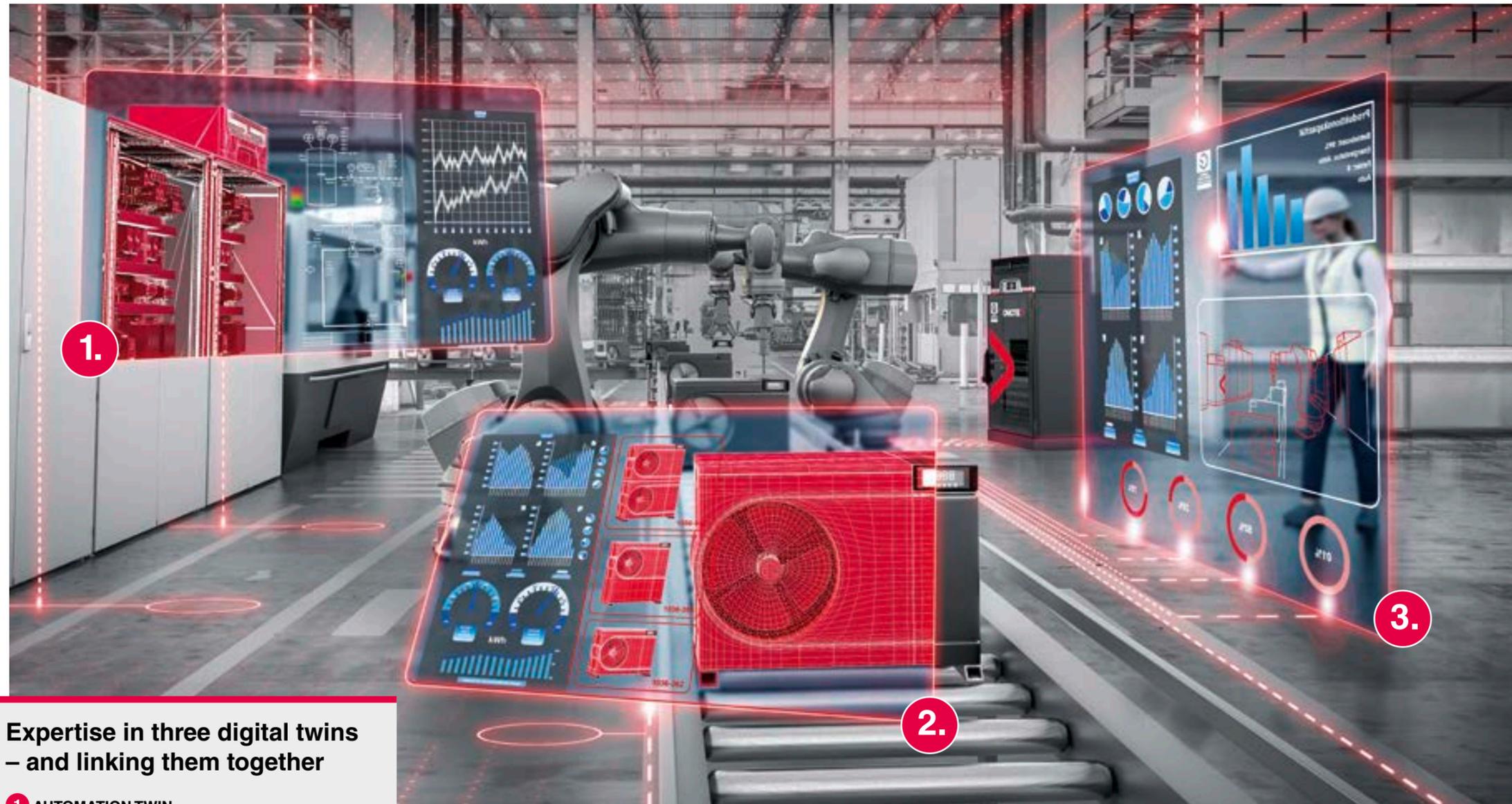
Haiger, after a huge amount of work and pain, we've learned to create data spaces and link them together to deliver smart production. To achieve that, the sister companies Rittal, Eplan, Cideon and German Edge Cloud pooled their experience and domain expertise relating to data from products, plants and production processes. Up to 18 terabytes of data are generated at the plant every day. However, it's only when you put this data into exactly the right context that you get the transparency you need to gain genuine insights and optimise processes. This approach has helped us forge ahead. Incidentally, this isn't the kind of work AI can do for you – it is actually the basis on which AI is deployed. The aim of smart production is then to utilise this data on an automated basis so that systems can respond to changes independently. Industry is only just getting started on this, but the outlook and roadmap are there.

You mentioned the energy transition. How essential is this type of smart production for that? **Seitz:** Let's take the example of energy consumption. At the moment, hardly anyone can break down a factory's energy consumption by production processes or the parts that are produced, much less according to a specific timeline. Usually, the only thing there is to work with is the energy supplier's consumption accounting. Until recently, that was all you needed. We firmly believe the concept of carbon footprint and management based on energy availability will become a fourth key production parameter alongside the traditional parameters of time, costs and quality. Conventional ERP and manufacturing execution systems are not designed for that. At the Rittal plant in Haiger, the software architecture of our ONCITE Digital Production System (DPS) has helped us both measure energy consumption in detail and correlate that ▶



“Achieving transparency means understanding data and linking it together. Energy monitoring needs the context of production, product and plant data.”

Sebastian Seitz
CEO of Eplan and Cideon



Expertise in three digital twins – and linking them together

1. AUTOMATION TWIN

Eplan and Rittal are working with panel builders, switchgear manufacturers and mechanical engineers to drive the creation of the digital twin for machinery and plants in the data space and are making the data suitable for operational use.

2. PRODUCT TWIN

Cideon is leveraging its experience in CAD/CAM, PDM/PLM and product configuration to increase connectivity options in the data space in relation to the digital product twin.

3. PRODUCTION TWIN

The ONCITE Digital Production System (DPS) utilises all data sources to visualise processes as the digital production twin. IIoT-supported production management then increases production efficiency and flexibility. Energy flows in the factory become transparent and thus suitable for optimisation.

terms, this means I can very quickly get started with the most important functionalities and then add new modules as necessary – modules that share data via standardised interfaces (APIs). We are experiencing an immense technological revolution right now.

consumption with production, product and plant data (see graphic and box). It is only by understanding what kind of load is being generated in which machine or plant that you can work out where changes need to be made to deliver improvements. That simply wouldn't be possible without transparency and data-flows between product development, production planning, production and energy suppliers.

What requirements does the software for that need to meet?

Seitz: Cloud-native software based on microservices makes all the difference. There are good reasons why the standardisation associated with that is currently the state of the art in IT software innovations. However, industry software often has longer development cycles and is used for longer periods. Most ERP and manufacturing execution systems come from an era when client-server technology was still being developed. Software like that works well for its specific purpose, but it lacks the flexibility for new requirements that is so urgently needed these days. That flexibility is offered by composable software, which can also gradually expand existing “brownfield” systems. In practical

One project that the automotive industry has launched to digitalise its global supply chains is Catena-X. How important do you think that project is?

Seitz: Catena-X along with Manufacturing-X, which is based on it and has been announced for the autumn, are really important for industry. We have been involved in both from the start. The opportunities are diverse, ranging from carbon footprint and the circular economy all the way to tracing specific parts through all the stages of the supply chain. You need standards to make all that possible. Besides digital continuity on a technical level, you also need to standardise data sovereignty and other legal agreements. That way, you can really bring this kind of ecosystem to life. Furthermore, there has been an uptick in the number of participants who are also laying the foundations for digital continuity in their own companies. We're working hard on both ends with ONCITE, including on pre-existing plants and systems. It is important that Catena-X continues to develop its international credentials, and that applies fundamentally to all forms of standardisation. The concept has to work for large economic areas, and

we need to ensure international recognition. It's a big challenge and we have to work very fast.

What advice would you offer a customer who wants to get to grips with their transformation now?

Seitz: Something we have long since learned from experience still applies – the greatest potential lies in optimising processes. Before you embark on digitalisation, you need to understand and describe the relevant processes with absolute precision. Next, you need to pursue standardisation and use solutions that are already available to you. Taking the best pre-existing solutions for each requirement and combining them in a way that enables digital continuity will help you make much faster progress compared to creating an in-house, all-in-one solution – even in a brownfield scenario. This speed is needed for at least three different reasons. Firstly, to get your company fit for the transformation. Secondly, to ensure the energy transition can become an energy efficiency transition for industry. And, thirdly, to make sure the necessary data spaces and international ecosystems such as Catena-X and Manufacturing-X can grow. ■

Upheaval in factories

MANAGING PRODUCTION DURING THE ENERGY TRANSITION

Factories are the beating heart of the manufacturing industry. Optimising them is one of the most important factors for the success of manufacturing companies – and that is as true now as it was in Henry Ford's day. While many requirements and opportunities have changed, the main focus is still on producing high unit numbers at the lowest possible cost.

Now the energy transition is causing upheaval in the midst of a transformation, and factory bosses are also having to manage production in line with the availability and price of energy. How does that all fit together? At the **Rittal Smart Factory in Haiger**, experts from several sister companies are working on the solution. The levers that will deliver the necessary transparency for all processes are **data spaces and their interlinking.**

Text: Ulrich Sendler, Steffen Maltzan, Dr Carola Hilbrand



Connecting together data spaces is a powerful lever in the manufacturing industry when seeking to master the "energy challenge."

Industry is facing a new, additional and perhaps even bigger challenge – energy. When cheap energy is no longer available around the clock – as it was just a few years ago – it is clear that manufacturing companies will have to work around the availability and price of energy in the future. That's a pretty simple concept to grasp – but is it simple to implement, too? "That depends on how transparent and coherent the data from plants, products and production processes is," says Sebastian Seitz, CEO of Eplan and Cideon, the software companies of the Friedhelm Loh Group. As he explains, measuring energy flows isn't enough. If you want to optimise processes, you need a high level of transparency and have to put data into the right context. That applies to energy flows as much as it does to production processes and all the related data. "For instance, before the energy consumption data for machines and plants can provide any useful insight as a parameter, it first needs to be put into the context of load profiles. Fully digital plant data provides a crucial building block for that," points out Seitz. To work out precisely where adjustments need to be made, all production processes need to be fully transparent and linked to data from energy monitoring.

The only way to achieve that is with smart production – even in Haiger. After all, the idea that enclosures are a simple, mass-produced product is not quite accurate. Some 8,000 of them leave the plant every day. The system platform comprises more than 100 standard options. Once you factor in special designs that customers order with customised cut-outs, for example, the number of options becomes virtually infinite. The factory generates up to 18 terabytes of data each day. This information comes from various sources, all of which need to be interlinked in several data spaces to ensure the transparency, flexibility and efficiency of smart production.

CONNECTING DATA SPACES

It all starts with the products. Every workpiece must have a high-quality and complete digital twin. The information for this comes from several types of software, such as CAD, PDM/PLM and ERP or configurators. To ensure all this data can be used as a digital product twin, it needs a shared data space. The experts at Cideon work on



ONCITE DPS combines diverse data almost in real time and this creates transparency for all processes.

the connections and interfaces. It is a similar scenario for plants. "The processes in panel building, switchgear manufacturing and mechanical engineering can already be digitalised and automated to a high standard. The skills shortage is driving this development forward," says Seitz. Eplan and Rittal support processes with coordinated hardware and software, and supply the data space basics for an automation ecosystem. The result is that a digital twin is created in engineering right from the get-go, continues to grow in its shared data space throughout the whole process, and subsequently comes into its own as a digital automation twin in the factory.

ONCITE DPS BRINGS DATA TOGETHER

Additional sources of data from all levels of the systems – from the overarching ERP to the basis of machine control (PLC) – are also fed into the data space for production processes. "In Haiger, the ONCITE DPS digital production system pieces together this diverse and varied data along with process information almost in real time," explains Bernd Kremer, COO Digital Industrial Solutions at German Edge Cloud. The result is transparency for all processes. Information from the data spaces for products, production plants and production is displayed on dashboards in the workshops to show precisely where each production step is currently running, the quality levels being achieved and where interventions are required. "It is a high-performance tool for immediate manual optimisation. More

importantly, it is the basis for increasingly wide-reaching automated responses to sudden changes in manufacturing conditions. Right at the top of the staircase leading to smart production is the fully self-regulating 'lights-out factory'."

EXPANDING DATA SPACES

What about energy? "The open architecture of ONCITE DPS based on microservices has helped us integrate data from energy monitoring into the system, even though that was a completely new requirement. Correlating that with data from the other data spaces doesn't just give us transparency over energy flows, but also helps us interpret them in the context of production," says Kremer. Where do expensive load peaks occur? Does the production process allow us to run machinery on a phased basis? How do changes to the settings and temperatures of the paintshop impact consumption? What is the energy consumption and, therefore, carbon footprint of each workpiece? Connecting together data spaces can provide answers. "As you work towards becoming a smart factory, that is the basis for introducing energy consumption as another parameter and being able to respond to energy availability forecasts with flexibility," points out the production and IIoT specialist. "High levels of digitalisation in as many factories as possible – including energy management – will help grid operators manage their distribution networks as smart grids in the future." And what is needed to achieve that? Even more overarching data spaces. ■



Good to go:
Catena-X: pools data from the automotive value chain and improves traceability.

Catena-X – how to make the digital future work

A HUB FOR DATA

Data spaces are not a theory. They are a very practical requirement if industry is to operate as successfully on a digital basis as it has done to date in analogue. Today's big **challenges** demand a new type of **collaboration and transparency**. This presents an opportunity. Value creation spans different companies, crosses national borders and can't be restricted to one section of a product's life cycle. Now, with the aid of standardised data spaces, this comprehensive value creation is being brought within grasp – and it is being driven by data. **Catena-X is the proof.**

Text: Ulrich Sendler, Steffen Maltzan, Dr Carola Hilbrand

Data spaces make it possible to use data collaboratively. It is much easier to share and process data via a data space than to coordinate it on a case-by-case basis each time you exchange data with another party. Why is that? When working in a data space, the technological and legal coordination process happens just once and for all and is then used as a standard for every subsequent action – and by all participants. Data spaces are therefore much more than "places" for the shared use of data. They are becoming increasingly relevant open data hubs for leveraging decentralised data. Things get much more commercially interesting when these kinds

of data spaces can be interlinked – and not just between manufacturer and customer. Catena-X is the best-known example of this approach to date. This European and international active ecosystem for the entire supply chain in the automotive sector is ready to go and already in the implementation phase. So what practical benefits does it bring? If we take traceability as a use case, we can see the benefits straight away. Value creation for an automobile starts with the concept design for the product and ends with the scrapping of all its parts. Between these two points come development, production, logistics, sale, utilisation, countless repairs, and reuse and recycling. At present, it is usually just direct

business partners who will be in contact with each other during each of these process steps. Nobody – so far – logs information throughout the entire life cycle. This makes it more difficult to act promptly, particularly when quality issues arise or recall campaigns are required.

TRANSPARENCY ACROSS ALL THE CHAINS

"Catena-X can change that. A use case (see box) offers a practical example of how a typical error can be traced back through all the stages while ensuring data sovereignty," explains Bernd Kremer, COO Digital Industrial Solutions at German Edge Cloud. That is just one of many Catena-X applica-



"Catena-X realises its benefits when the data space is really brought to life as an ecosystem. We make it easy for SMEs to access it."

Bernd Kremer
COO Digital Industrial Solutions
at German Edge Cloud

tions, which range from quality management through the circular economy to "Manufacturing as a Service" as a new business model. "However, the benefits are only realised when enthusiastic participation really brings the data space to life as an ecosystem. That's what is needed right now," emphasises Kremer. Systems from various suppliers are currently being certified by Catena-X so their software and services can be utilised on a standardised basis. There is also a Catena-X standard for the networking itself – the Eclipse Dataspace Connector (EDC). ONCITE DPS from German Edge Cloud, which is used in Haiger, has become the first system ever to be certified.

DRIVING DEVELOPMENT

"As an industry, we need to take a three-pronged approach to get Catena-X off to a strong start. Firstly, members must drive the development of the platform. Secondly, we have to ensure easily accessible connectors for new participants are more widely available on the market. Thirdly, we need suppliers and solutions that also help SMEs digitalise their overall processes and production so that digital continuity can actually be achieved in the first place, right down to the shopfloor," Kremer states. "When it comes to Manufacturing-X – the

Use Case:

Tracing parts

A workshop notifies a car manufacturer of a cracked flange on a gearbox. Catena-X provides transparency for the entire chain:

1. Car manufacturer
2. Gearbox manufacturer
3. Manufacturer of the gearbox components
4. Manufacturer that made the flange
5. Production data for the batch of flanges

By using track & trace in its own production operations, the flange manufacturer links together supply chain, component and process information. It can see the press force used in a part's production and identify error sources down to batch level. The benefit for the entire chain is the ability to trace back in the opposite direction, right down to the other individual cars that could be affected – ideally even across multiple manufacturers.

next major initiative – we will therefore devote even more attention to standardisation within factories. This is a much bigger challenge than we had with Catena-X, as it concerns the entire manufacturing industry and multilayered mechanical engineering worldwide." ■

THE POWER OF ENERGY

NEWS AROUND THE WORLD



ITALY POWER FOR WATER SPLITTING

Hydrogen is considered central when it comes to the climate-neutral energy mix; however, its production is not entirely simple and consumes a lot of electricity. BluEnergy Revolution is a solution provider for water demineralisation and electrolysis. As robust and reliable components are required, the Italians use **VX25 enclosures** and **AX compact enclosures** from Rittal. Since they manufacture their systems for different areas of application, the enclosures they use must be flexibly adaptable. Therefore, the VX25 system is the perfect basis for the modular electrolyser called "MOSE". The configuration was carried out using the Rittal RiPanel software, and VX25 enclosures house the BLUDEMI demineralisation units.

"We found the configuration via RiPanel very helpful, and it supported us in selecting the right components."

Manuel Anselmo,
Head of Products and Projects for Hydrogen Production at BluEnergy Revolution



The future of the **energy (transition) is smart:** Only a smart grid can guarantee the stability of the increasingly decentralised energy systems. However, the backbone of a successful energy transition is a robust electricity grid. Rittal offers the system solutions required to shape the transformation of energy supply, especially for the **Energy & Power** sector.



BULGARIA FAST-CHARGING STATIONS FOR ELECTRIC BUSES

Electromobility is a big issue for urban transport operators worldwide. In Sofia, **30 electric buses have been** in service since 2020. They were put into operation by Stolichen Avtotransport, the public bus company of the Bulgarian capital. The buses come from Chariot Motors, while the fast-charging stations are from Gemamex Motion Co. The charging infrastructure consists of **Rittal VX25 enclosures**, specially assembled into a three-unit combination for Gemamex, the manufacturer of the fast-charging stations. The charging stations can charge both supercapacitor and lithium iron phosphate batteries and are designed for AC or DC power.



DENMARK ENERGY-EFFICIENT COOLING FOR PRODUCTION

Danish food manufacturer **Lantmännen Schulstad** now relies on Rittal cooling units in its production facilities. The company is growing rapidly and still has older machines in its production. These systems are critical for production, and an optimal operating temperature could not be easily determined. Rittal's technical support found that the cooling was not sufficient to guarantee smooth operation. With the help of the **online tool RiTherm** the appropriate cooling output was calculated and a customised cooling solution was developed on this basis: So instead of the old units, **Top Therm Blue e models** with a total output of 1.50 kW now work in Lantmännen Schulstad's production halls.



GERMANY SUPERIOR OUTDOOR PROTECTION

Multi Chargepoint Solution GmbH (SMOPI) and Rittal have teamed up: For the outdoor use of the central unit of their charging infrastructure, the start-up is relying on Rittal solutions for protection against rain, sun, unauthorised access and vandalism. The company already uses the **Rittal VX25 for installation in underground car parks, for example.** In addition, Rittal recommended a **VX stainless steel application** for outdoor deployment, featuring a double mounting plate and a continuous roof plate. Due to the identical mounting plate, the interior installation is the same for outdoor and indoor use.

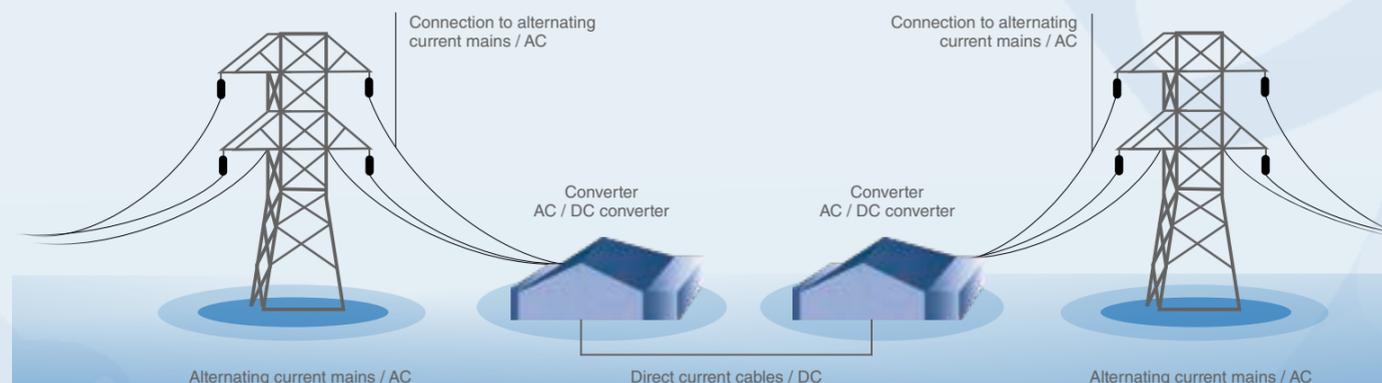


UNITED ARAB EMIRATES RITTAL INVOLVED IN POWER CONTROL PROJECT

Rittal's ability to deliver high volumes was the deciding factor: The **Abu Dhabi National Oil Company (ADNOC)**, one of the world's leading energy producers, is having Hitachi Energy equip four converter stations with a total of **608 VX25 enclosures.** In the "Lightning" project, electricity from renewable energy sources in the mainland of the United Arab Emirates is to be connected to ADNOC's offshore facilities. In the process, 3,200 MW of electrical power will be transmitted via two parallel HVDC (high-voltage/direct current transmission) systems.

3,200 MW

of electrical power is transmitted via two parallel HVDC systems; in these, four converter stations are equipped with solutions from Rittal





600

AX plastic enclosures ensure that the electrical technology in the solar park in Santa Luzia also functions even under demanding conditions. The project also includes Eplan software solutions.



BRAZIL

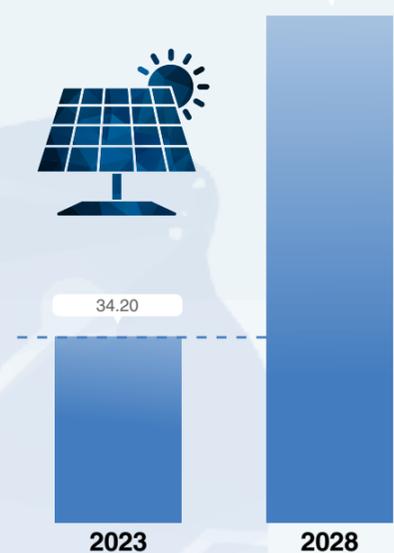
SUNNY PROSPECTS FOR 100,000 HOUSEHOLDS

Brazil now produces 80 percent of its energy from renewable sources such as hydropower, wind energy and biomass and with huge solar parks: photovoltaics are booming in South America. In order for solar energy to be used well and permanently, one needs, among other things, so-called string collectors. These are installed in appropriate housings that make safe operation possible. Brazilian-based Mombert Group specialises in the manufacture of high-performance string boxes under the product name TECBOX. The Brazilians are working closely with Rittal and EPLAN: Not only do they use the enclosures from the **Rittal AX plastic series**, the prototyping and machining of the enclosures is carried out using the **Eplan Pro Panel** software and the Perforex BC milling machining centre from Rittal

Automation Systems. The Mombert Group also manufactures the TECBOX for large projects, for example for the implementation of a solar park together with Neoenergia, one of the largest energy suppliers in the country. To ensure the electrical engineering equipment works reliably in challenging outdoor conditions 600 of the new AX plastic enclosures from Rittal are being used. With their high IP66 protection classification, the Rittal AX plastic enclosures are very well suited for use in large solar farms. The housing protects the electrical components inside safely and reliably from sunlight, humidity and dust. This is how the AX plastic series meets the discerning demands that our customers place on our solutions. The tight schedule was also kept in cooperation with Rittal and Eplan.

The Brazil solar energy market

Installed capacity in gigawatts
CAGR 23,30 %



AUSTRIA

RI4POWER VX25 TAKES CENTRE STAGE

Vienna's **Burgtheater** receives a comprehensive electrical upgrade and is being fitted with a new low-voltage main distribution system in two stages. During the process, **Rittal Ri4Power with 43 panels** plays the main role. A provisional installation was completed in 2022, and the final system is currently being installed – overnight, when the curtains are closed after the performance.



CHINA

RITTAL MOVES INTO SMART AUDI FACTORY

The market for electric vehicles is booming in China and **Audi FAW NEV Company** is also building a new manufacturing site in Changchun. More than 150,000 all-electric Audi models are scheduled to roll off the production line there from the end of 2024. **VX25 enclosures, plus AX/KX enclosures and Blue e+ cooling units** are deployed here as are power distribution systems. A total of 20 panel builders and switchgear manufacturers from Asia and Europe were involved in the project.



NETHERLANDS

ENCLOSURES IN THE DESERT

Rittal enclosures are very durable, as is well known. They prove their worth again in the desert of Abu Dhabi. This is where **TSS4U** and **VHE Industrial Automation** from Eindhoven only use **Rittal AX enclosures** in a large-scale project. Inside the enclosures, the components for the power supply on the large gas fields are optimally protected against the temperatures, strong sunlight and aggressive sand and dust – the ultimate durability test. Only extremely robust enclosures can withstand such conditions. "We produced 1,100 enclosures in six months. For the often required heat soak test, we use a climate chamber where we imitate the temperature fluctuations in the desert: 5 degrees at night and 55 degrees during the day. Only when we are sure that the enclosure can withstand this can it be packed and delivered to the customer," explains Niels van der Zanden from VHE Industrial automation. The two companies regularly co-operate on large international solar projects. "We supply electricity in places where there is no electricity," explains Jan-Willem Linsen of TSS4U, which carries out numerous projects mainly for the oil and gas industry. On these huge gas fields, energy is in demand: for example, for the valves on the pipelines,



In the desert of Abu Dhabi, enclosures are exposed to large temperature fluctuations.

the lighting and the telecommunications. Reliability is a priority here: the power supply must work, because in the event of a system failure, the lost income quickly runs into the millions. Not only that, but the facilities are often far from civilisation, and the nearest mechanic is miles away. Jan-Willem Linsen: "Rittal is very good. It has to be, when a system is located 200 kilometres in the middle of nowhere in a sand pit. And what many people don't know: The air in the desert is salty, just like at the sea. An enclosure made of metal would just rust away."



Enercon

ENGINEERING IN THE CLOUD

Enercon GmbH is Germany's biggest manufacturer of wind turbines. The company uses **cloud-based** infrastructure on the **Eplan Platform** to design its electrical engineering equipment – making it one of the first users of such infrastructure anywhere in the world. This infrastructure facilitates cross-site, multi-user engineering and even helps attract new skilled workers. When it comes to automating the assembly of its own enclosures, Enercon puts its trust in solutions from **Rittal** and **Rittal Automation Systems**.

Text: Gerald Scheffels

Successful cross-site, multi-user-engineering – with cloud-based infrastructure on the Eplan Platform.

On the market of the world's leading manufacturers of wind turbines, Enercon is unique. The company focuses on onshore systems, and its gearless direct drive concept is unrivalled – a strategy that has brought it worldwide success.

UNIQUELY ADVANCED

The new top model in the Enercon wind turbine range is the E-175 EP5, which boasts 6 MW of rated power and a maximum hub height of 163 metres. Its rotor diameter is 175 metres, making it one of the biggest available on the European market. Developed for (onshore) use in regions with moderate to light winds, this turbine is exceptional for its ability to generate low-cost electricity in these locations. Another key feature is the integrated, latest-generation electrical engineering technology – the enclosures are located in the nacelle rather than at ground level. Electrical development at Enercon is also uniquely advanced within the industry. When planning the E-175 EP5, the design engineers used the Eplan Platform, which is based in the Microsoft Azure cloud, for the first time. As Andree Rüländer, Head of Electrical Design, explains: "We set up an Eplan solution for multi-user

engineering that makes simultaneous engineering possible for staff at our development sites in Germany, the Netherlands, Poland and India."

ENGINEERING IN THE CLOUD – FOR USE WORLDWIDE

What was the key factor in the decision to shift the engineering platform to the cloud? "Our entire IT strategy is moving in the direction of the cloud, and this project was a pilot for this transition," Rüländer explains. "For one thing, it's much easier to manage. You don't need to worry about drivers, updates or administration – the cloud provider sees to all that. What's more, it takes only 20 minutes rather than days to set up a new computer." Even more importantly, however, multiple members of staff – including at different sites – always work on the same data model, which is always up to date.

In consultation with Eplan Consulting, Enercon decided against using a typical cloud solution. Instead, the on-premises processes and products are transferred to the cloud in such a way that they work exactly like a domain solution. With Microsoft Azure Marketplace as the starting point, the solution can be accessed via four different Eplan Solutions apps, depending on the particular requirement. ▶

Flying high: Some 1,300 Enercon wind turbines were put into operation last year.

VIDEO





In the data cloud: The design engineers used the cloud-based Eplan Platform for the first time when planning the E-175 EP5 wind turbine.

PIONEERING FEAT ACHIEVED

Configuring and installing this fundamentally new solution initially proved challenging. Detlef Harms, Project Manager at Eplan, explains: "This was a premiere, and we certainly learned a lot from it." The process therefore started with a proof of concept. The cloud-based electrical engineering solution only went live after that, in October 2022 – and is now working perfectly. What's more, all parties involved in this task – Eplan, Enercon and Microsoft – were breaking new ground. Harms explains: "Our goal was to create a scalable solution, and this is now

accessible to Eplan users worldwide, including in the Microsoft Azure Marketplace. In this case, we all worked together to achieve a truly pioneering feat." Rüländer adds: "Around 40 developers across multiple sites carry out cloud-based engineering work using Eplan – and they are highly satisfied with the infrastructure, operation and responsiveness." What's more, Enercon has redesigned its engineering structure and now works on the basis of libraries. In concrete terms, this means the engineers can select which modules they need for a particular wind turbine from a predefined library.

Another reason why migrating the ECAD infrastructure to the cloud was no mean feat is that Enercon makes very extensive use of the Eplan Platform. Besides Eplan Pro Panel (enclosure construction) and Electric P8 (electrical engineering design), the company also uses additional tools such as Pro Panel Copper (for power distribution systems). It makes intensive use of the Harness ProD module for cabling and has also recently started using the Rittal Wire Terminal to process wires and cables. Siemens Teamcenter, which is used as the PDM system, was also migrated to the cloud recently.

FUNCTION-BASED STRUCTURE

With the introduction of Eplan, Enercon has, at the same time, also established a function-based structure for its electrical engineering. This involves division into modules, such as tower, adjustment system and electric distribution. Besides being logical, this structure makes work easier and also complies with the latest international designation standard for wind turbines, the "Reference Designation System for Power Systems" (RDS-PS). Conveniently, Eplan supports this standard, which Enercon is now using.

In all its projects and investments relating to design and manufacture, Enercon strives to achieve a largely automated end-to-end value chain. This also applies to the transfer of the "digital twin" that is created

Better wiring with the Rittal Wire Terminal



Enercon uses various Eplan tools for planning purposes and has also recently started using the Rittal Wire Terminal in its manufacturing department to process

cables and wires. The fully automated wire processing machine from Rittal Automation Systems has become an important element of the production process and a genuine efficiency driver – because, when it comes to enclosure configuration, it is wiring that offers the greatest potential for improving efficiency and making savings. The Rittal Wire Terminal also makes it possible for companies to adapt and optimise their in-house processes quickly, and thus plays a key role in helping them maintain their competitiveness.

www.rittal.com/ras

Decision to opt for Rittal once more

During its development projects for the new E-160 EP5 and E-175 EP5 series – and in parallel with going cloud-based with Eplan – Enercon also reconsidered the enclosure issue, carrying out a benchmarking process amongst key suppliers and testing sample enclosures. Rüländer says: "The result was clear. The Rittal enclosures large and small continue to be our standard. One reason for this is the excellent mapping of Rittal solutions in Eplan. In the future, this will become even more important for us, as we increasingly automate the assembly of our enclosures.

www.enercon.de/en



"With the new cloud-based infrastructure for electrical engineering, we have taken a big step forwards and are now an industry-wide leader in this respect."

Andree Rüländer
Head of Electrical Design, Enercon

A BIG STEP FORWARD

After going cloud-based and following the practical experience of the initial months, the decision-makers' conclusion is resoundingly positive. Rüländer explains: "With the new cloud-based infrastructure for electrical engineering, we have taken a big step forwards and are now an industry-wide leader in this respect." What's more, a serious shortage affecting all companies is also being addressed: "The new infrastructure is also a plus point when it comes to attracting new skilled staff, because we are offering our employees a truly state-of-the-art, sophisticated design engineering environment." What's more, the managers are not only satisfied with the result of the cloud-based electrical design engineering – they are also very happy with the advice and training provided by Eplan: "Quite simply, the collaboration has been, and continues to be, good – just like with external colleagues." ■

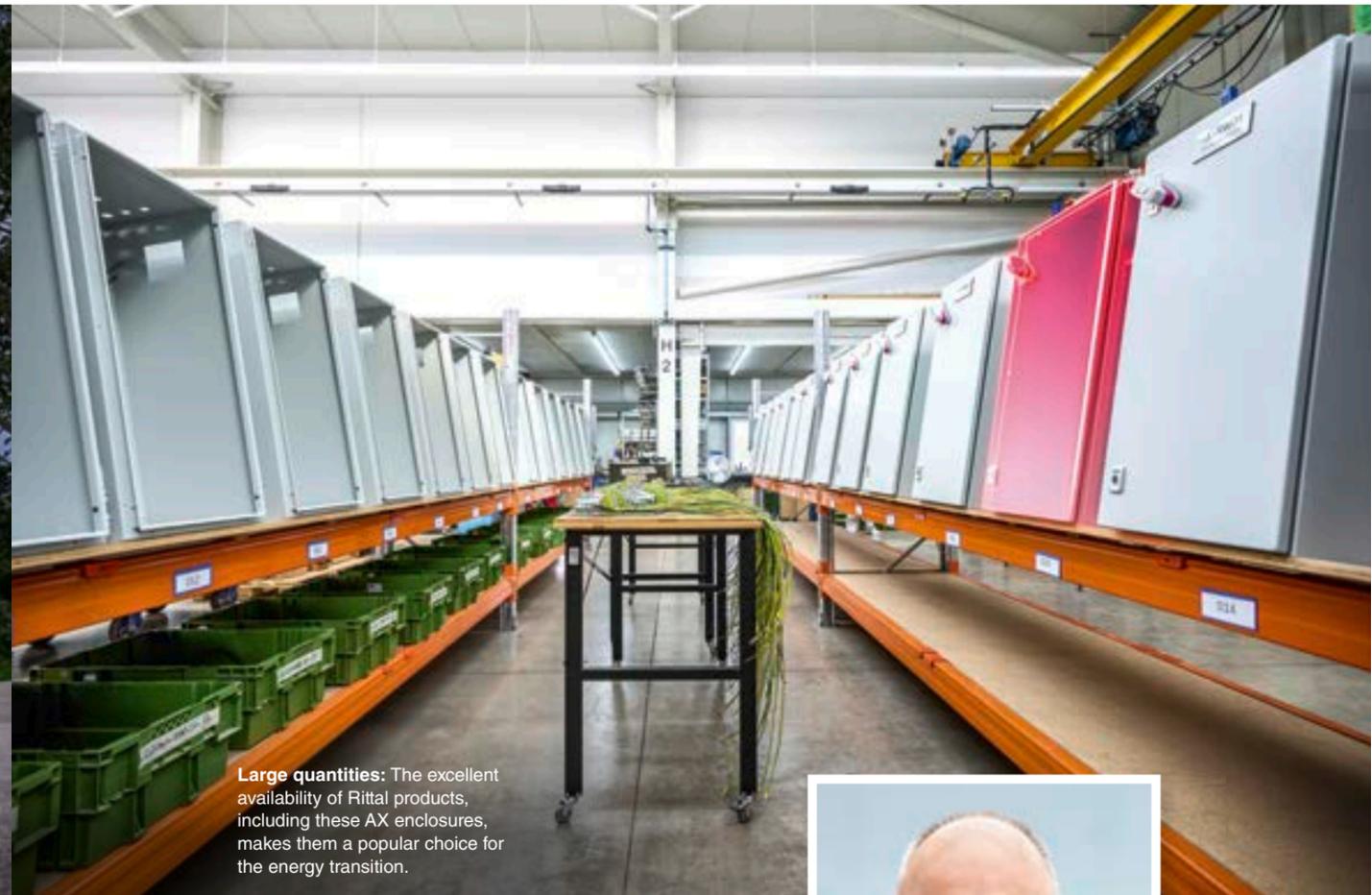


FIND OUT MORE

www.eplan.com



In demand for the energy transition – Rittal AX enclosures combine rapid fitting out with reliable availability.



Large quantities: The excellent availability of Rittal products, including these AX enclosures, makes them a popular choice for the energy transition.



“The energy transition is taking place in distribution substations.”

Ulrich Hепен
Vice President Business Unit Solutions,
WAGO

AX enclosures for intelligent distribution substations

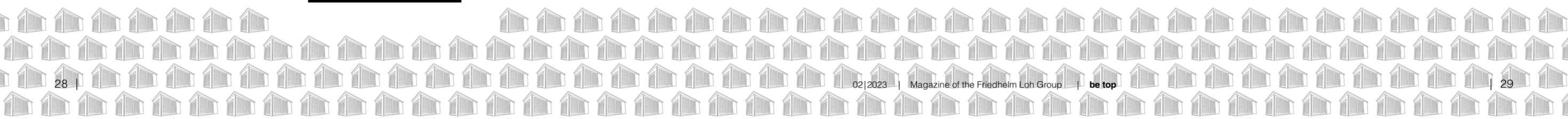
600,000 OPPORTUNITIES FOR THE ENERGY TRANSITION

Around 600,000 distribution transformers ensure a reliable power supply to sockets across Germany. If the energy transition is to succeed, a large number of these transformers need to become smart. The components used must be available in large quantities and, above all, have the ability to be fitted out and delivered quickly. **WAGO and Schaltanlagenbau GmbH H. Westermann** therefore use **AX enclosures from Rittal** for the series production of its complete systems for smart distribution substations.

Text: Dr Jörg Lantzsch

The energy transition is in full swing, but one aspect that seldom receives much attention is the need to convert distribution grids. “The energy transition is taking place in distribution substations,” emphasises Ulrich Hепен, Vice President Business Unit Solutions at WAGO, who is responsible for the energy, building and industry sectors. His business unit develops solutions that make local grids smart. Why are smart local grids even necessary, though? A variety of decentralised energy sources – from wind turbines to rooftop solar panels on houses – feed energy into the grids, with the amounts fluctuating depending on how windy or sunny it is. Combined with similarly erratic energy consumption, this leads to fluctuations in mains frequency and voltage. Such fluctuations must not exceed a few volts or millihertz, though. Otherwise, the transformer converting the medium voltage to low voltage for consumers will switch off, resulting in a power outage.

WAGO supplies its solutions for smart distribution substations as complete systems. These consist of compact telecontrollers from the PFC200 series that can be equipped with the necessary test terminal blocks for the individual low-voltage outputs on a modular basis. The measured data is transmitted to the distribution grid operator’s grid control technology. WAGO controllers can also handle the IEC 60870-5-104 protocol used for this purpose. WAGO has now commissioned a large German local grid operator to





Schaltanlagenbau GmbH H. Westermann has set up a separate standard production operation to supply WAGO with the complete systems quickly and reliably.

All components are fitted on a mounting plate, wired and then installed in the enclosure together.

offers engineering and manufacturing services. The enclosures in which all system components are installed come from Rittal, as the project partners find AX compact enclosures measuring 400 x 800 x 300 mm ideal for this application.

Availability and the ability to deliver play a key role for the entire project. In Hempen's view, another reason why WAGO specifications stipulate the use of Rittal enclosures is their long-term availability. "Previously, distribution grids were often required to use components that were available for up to 30 years. Even now, it must be ensured that spare parts can be supplied for a period of 15 to 20 years," he says. Partners such as Rittal are needed for that kind of delivery performance. According to Hempen, the straightforward fitting out and well-known high quality of Rittal enclosures naturally also play their part.

"Rittal is exemplary when it comes to delivery reliability. We are always able to order the enclosures as required to fit in with series production and they are delivered on time."

Uwe Friedrichs
Managing Partner, Schaltanlagenbau GmbH H. Westermann

AVAILABILITY IS VITAL
"For standard production, we purchase the enclosures complete with all the necessary cut-outs and holes direct from Rittal," reveals Finke's fellow Managing Partner, Uwe Friedrichs. This is the only way the medium-sized company can achieve the high production volumes. All the components, most of which are provided by WAGO, are fitted and wired on a mounting plate so that they can then all be installed in the enclosure together. The switchgear manufacturer has set up a separate series production operation for this project to supply WAGO with the complete systems quickly and reliably. It goes without saying that the delivery reliability of subcontractors is very important. "Rittal is exemplary in this regard. We are always able to order the enclosures as required to fit in with series production and they are delivered on time," emphasises Friedrichs. Especially given the current supply chain problems, this is an invaluable advantage.

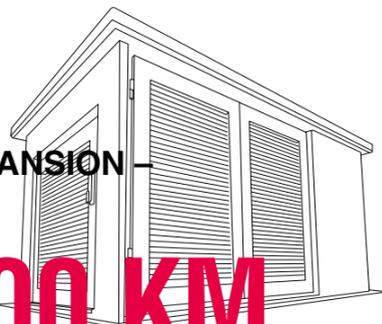
FURTHER GRID DIGITALISATION REQUIRED
The kind of parameter measurement in distribution substations that WAGO systems offer is, however, just the first step on the way to intelligent distribution grids. The new Section 14a of Germany's Energy Industry Act envisages a lower grid charge for customers who agree grid-oriented control of their consumption with the grid operator. This could mean, for example, that a charging centre only charges electric vehicles once other consumers are switched off or the wind picks up and the nearest wind turbine feeds more power into the grid. Further digitalisation of

distribution substations is required for this purpose. In addition to the currently installed measurement of parameters, that means bidirectional power regulation at the level of the distribution grids. Ever more progress is thus being made with local energy system conversion, too. ■

ENERGY GRID EXPANSION – A MAMMOTH TASK

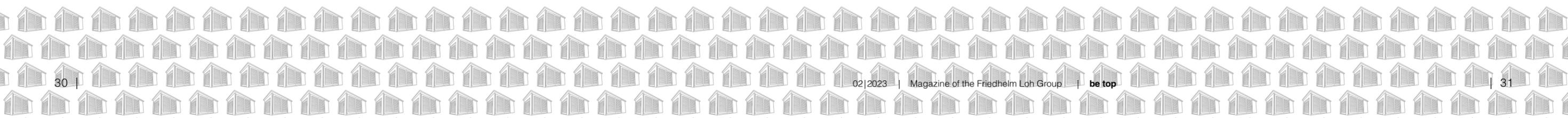
> 14,000 KM

is the total length of all current grid expansion projects



develop and produce a ready-to-install system that can take care of all measuring technology and data transmission aspects.

One particular challenge is the sheer number of distribution substations needing to be converted. Such large quantities call for strong partners, a high level of standardisation and series production. WAGO has tasked Schaltanlagenbau GmbH H. Westermann with manufacturing the systems. "A switchgear manufacturer must be able to handle high-volume production," says Heinz-Dieter Finke, Managing Partner of Schaltanlagenbau GmbH H. Westermann. Based in the northern German town of Minden, this company



LKH & Kaco

Seeing the big picture

When it comes to the design and production of **plastic parts**, the better the combination of influencing factors – such as material selection, design concept, production technology and functional integration – the more energy efficient and thus competitive products become. **Energy system specialist Kaco** is making the most of this. In a project with **LKH**, the company optimised components for its **inverters** and achieved a sustainable improvement in its **carbon footprint** along the way.

Text: Meinolf Droege

Can't the solution make light work of things for once? It can with optimised components from LKH!

Kaco is based in Neckarsulm, in south-western Germany. Part of the Siemens Group, the company is supplying the right products at the right time with its inverters. All photovoltaic systems require these devices in order to transform the direct current the systems generate into the alternating current that is needed for our energy grids. Kaco has been producing efficient, low-loss solutions of this kind for a number of years – primarily for larger, high-performance systems.

Kaco's technological enhancements are just as dynamic as the development of renewables. These enhancements also optimise user-friendly operation, production costs and the carbon footprint. Potential improvements were investigated as part of a new development called blueplanet 125 NX3. Amongst other things, the pedestals – which are also used to secure the inverter in place at the location of installation – were potentially to be made from injection-moulded plastic instead of die-cast metal. As Kaco Managing Director Matthias Haag explains: "The inverter was developed on a totally new platform. During this process, the market trend towards much bigger PV installations intensified, so we've designed the new device for an output of 120 kilowatts. However, doubling the power required us to completely redesign the housing. The die-cast aluminium pedestals were another topic of discussion."



"Even before it got the order, LKH was very proactive and started optimising our design and carrying out calculations."

Heiko Daub
Head of Mechanical Engineering at Kaco

REDUCED CARBON FOOTPRINT

LKH has optimised the pedestal, which is subject to high mechanical requirements, for various load scenarios. Significantly reducing the wall thicknesses made it possible to reduce the weight, while still ensuring the component is highly robust for industrial use. LKH had also recommended a stiffer – recycled – material with an increased glass fibre content of 30 percent, and had used this in series application. This significantly reduces both costs and the carbon footprint on a sustainable basis. A further benefit of the new design is that the pedestals emerge from the injection-moulding machine as ready-to-install components with a wide range of integrated functions and no longer need to be assembled from several different parts, which leads to further cost savings.

Kaco had previously almost exclusively used metal for its designs. As Heiko Daub, Head of Mechanical Engineering at Kaco, explains: "Due to the size of the device and the expected quantities, we started predominantly developing components made of plastic for the inverter – even before LKH came into the picture. To start with, we designed the pedestal itself in plastic, for instance, and LKH very quickly confirmed the project's feasibility." He also reveals that, thanks to appropriate simulations for a variety of load scenarios, LKH eliminated any concerns regarding high



Pedestal 3TL1400
28% LIGHTER
It was possible to reduce the weight of the multifunctional pedestal from 420 to 303 grams, thus saving around 2,340 kg of material each year.

Fan frame 3TL1100
33% LESS WARPAGE
The redesigned fan frame not only benefits from less warpage, but is also made from recycled material.

Cover plate M8 3TL1400
30% LESS WARPAGE
Design-related measures also reduced the warpage of the cover plate by around 30 percent.



Source: LKH

mechanical stresses and fatigue strength. Haag comments on the thinking behind the various load scenarios: "We wanted to integrate several functions – namely, by also using the pedestal as a handle and a wall bracket. That makes handling much easier during assembly." Daub describes how the project continued: "Even before it got the order, LKH was very proactive and started optimising our design and carrying out calculations. It also considered UL approvals for the plastic, long-term stability and the use of recycled material."

FURTHER COMPONENTS OPTIMISED

With this first order, LKH proved its credentials to Kaco – not just as a supplier, but also as a development partner. One way in which it achieved this was to highlight further optimisation potential for the new inverter, for example relating to the fan frame and its cover. Design measures and filling simulations made it possible to drastically reduce the warpage of both components and thus improve the assembly process at Kaco.

Further tweaks are still to be made. For example, it is conceivable for LKH to supply the cover already equipped with a

foamed gasket in order to simplify subsequent steps at Kaco and potentially achieve considerable savings as a result.

Something all the new components have in common is their added value. Besides their robustness and suitability for industrial use, this includes cost-effective production, an assembly-friendly design with a high level of functional integration, and favourable eco credentials. What's more, all components are made from the recycled material.

Daub sums up the collaboration as follows: "The excellent and, in some cases, pre-emptive preliminary work involving calculations and the like was just as vital as the equally impressive expertise relating to materials, design and plastics production." ■

How LKH optimised the components

- Saving on weight by significantly reducing the wall thicknesses
- Cutting costs and reducing the carbon footprint by using a stiffer (recycled) material with an increased glass fibre content of 30 percent
- Eliminating the need to assemble various separate parts by producing the pedestals in an injection-moulding machine as ready-to-install components with a wide range of integrated functions

New Rittal fan-and-filter units

FROM FAN TO SECURITY GUIDE

The new Rittal fan-and-filter units are becoming smart – and actively enhancing safety and efficiency in enclosures.



Higher performance and a new look: Claudia Christine Ronzheimer with the new Rittal fan-and-filter units in completely new design.

Fan-and-filter units are the most commonly used climate control solution. They offer a **cost-effective alternative to cooling units** in all sorts of scenarios where the ambient air can be used to regulate the temperature in the enclosure. Despite this, however, many customers don't see them as innovative products that offer added value. We caught up with **Claudia Christine Ronzheimer**, Product Manager Cooling Technologies at Rittal, to talk about small, smart innovations that have a big impact – and we introduce the new generation of fan-and-filter units.

Text: Alexandra Lachner

Many customers simply see fan-and-filter units as a must and don't pay much attention to them.

So why are you putting so much energy into their ongoing development?

Ronzheimer: Fan-and-filter units are a commonly used climate control solution, and it's true that people often only consider the air throughput, dimensions and connection voltage. In many cases, price also plays a part in the purchase decision – but that's not our approach. We thought about the factors that matter most to our customers – namely safety and security in the enclosure, followed by efficiency in terms of handling and consumption.

The new generation essentially takes on the role of a security officer in the enclosure. How did you come up with that idea?

Ronzheimer: In enclosures, excessive temperatures are one of the biggest risks that components are exposed to. There can be various causes of this, from excessively high ambient temperatures in summer to a faulty fan or a blocked filter that needs to be changed. If the temperature remains too high over the long term, this can cause system failures with high cost implications for our customers. It was therefore important to us that the new fan-and-filter units should have a sensor to detect excessive temperatures and an emergency cooling function that would give the operator time to resolve the issue.

This protects the installed components against overheating – and so saves a lot of money when something goes wrong. Another great thing is that these small helpers can do much more besides.

What are the other highlights of the new fan-and-filter units?

Ronzheimer: Even though sustainability isn't the top priority for such a small component, we have succeeded in developing a highly efficient solution that saves energy and resources in lots of respects – thanks, for example, to the service life of the pleated filters, which is now two to three times longer, and the reduced amount of maintenance that is needed. To my mind, this is a great example of looking to the future – because, ultimately, every detail counts. ▶

WHAT CAN THE NEW FAN-AND-FILTER UNITS DO?



The mechanical components have been completely redesigned for tool-free handling.

TOOL-FREE HANDLING

The previous generation of fan-and-filter units was already designed for tool-free installation and maintenance. Now, the mechanical components have been completely redesigned to allow for tool-free handling. The new design boasts snap-in hooks that click reliably into place during installation and an opening mechanism for changing the filter that is even more user-friendly than before. Tried-and-tested features, such as the simple way of changing the direction of airflow and flexible positioning of the electrical connection, have been retained. Besides the mechanics, the Rittal design has also been updated. The louvres of the grille on the new fans run vertically – while the protection category has, of course, been maintained.

SPEED CONTROL AND FAN MONITORING

Rittal fan-and-filter units are available in five sizes and eight air throughput classes ranging from 20 m³/h to 1,160 m³/h. The AC/DC models have been kept simple, while the EMC versions comply with special requirements relating to the electromagnetic shielding of enclosures. EC fan-and-filter units with brushless DC motors boasting the highest level of efficiency for fans were launched onto the market in 2012. There's an additional plus point, too – thanks to EC technology, speed control and fan monitoring via an analogue interface are possible. This means the temperature is controlled in line with actual needs – a smart function that saves energy and extends the service life (see box about "green facts"). The new generation offers all this and more. Additional benefits include wide-range input (100–240 V) and a ModBus interface that supports monitoring, control and an alarm function.

ACTIVE COOLING FUNCTION

Every EC fan-and-filter unit that is covered by the Rittal IoT Interface provides information about status, capacity utilisation, operating hours and energy consumption, along with many other functions, too. For example, in a bayed enclosure suite with several fan-and-filter units, temperature sensors can be incorporated at the most critical points and assigned to the respective fan-and-filter unit via the Rittal IoT Interface. If the temperature unexpectedly rises above the alarm threshold, the plant operator is notified and the fan-and-filter unit's emergency cooling function is activated. The fan speed is ramped up to the maximum – which means an increase in the air throughput of between 16 and 40 percent, depending on the model. It will therefore take longer for the components to over-heat, thus gaining valuable time. If the temperature drops back down below the threshold, the fan returns to normal mode.

40%

- The operator is notified automatically and the emergency cooling function is activated (16 to 40% increase in air throughput)
- Sensor detects when the temperature is exceeded
- Automatic return to normal mode
- Monitoring, control and alarm function available via the interface
- Information about status, capacity utilisation and operating hours transmitted via Rittal IoT Interface



AUTOMATIC FILTER CLEANING

In addition to the safety and security features, the EC filters boast two further highlights that relate to a long service life. One is an automatic filter cleaning function. This is activated several times a day, gently blowing out the filter to remove fine dust particles, thus extending the service life of the filter. The other is a feature whereby operators can enter a virtual operating period as appropriate to the applicable conditions. Rather like a fuel gauge in a car, the system shows when the next filter change will be due, depending on both runtime and speed. The result is maintenance on demand instead of a regular maintenance schedule, thus cutting costs and workload alike.

LONGER SERVICE LIFE WITH PLEATED FILTERS

Filter materials have a fine balancing act to perform – they need to let through as much air as possible, while keeping as many particles as possible out. However, Rittal has risen to this challenge and found a solution in the form of its new pleated filters, which are setting new standards in terms of air throughput. The pleated design increases the surface area by a factor of six, and the surface is, on average, 40 percent more air-permeable than a chopped-fibre filter. For some applications, this even means that a smaller fan will be sufficient. The filtration performance is also more than 50 percent more efficient. This means components fail less often, since even the tiniest of particles are caught by the filter. The service life of the pleated filters is two to three times longer and they also need less maintenance, because the larger surface area and choice of filter material mean they have a higher dust retention capacity.



Green facts – pleated filters safeguard resources

Thanks to the greater efficiency of their motors, the EC models already use up to 60 percent less energy. The pleated filters reduce the fan's operating hours by an additional 22 percent, because they allow 40 percent more air through. What's more, they boast a service life that is two to three times longer than that of a conventional chopped-fibre filter. And, thanks to the automatic filter cleaning function, the filter service life can be increased even further – by around 20 percent.

NEWS

INNOVATIONS FROM THE FRIEDHELM LOH GROUP



NEW DESIGN TOOL FOR CLIMATE CONTROL

RiTherm software for optimum climate control

Customers have long since been able to use “Therm” software to plan climate control systems for their switchgear. However, needs have changed considerably due to very stringent requirements in respect of energy efficiency and reliable carbon emission figures. Now, at SPS, Rittal is launching “RiTherm” – a completely new design tool developed on the basis of the Eplan cloud. Offering many new benefits, this tool will ensure even more coolness and sustainability along the entire value chain in the future. The software specifically calculates energy efficiency during operation and factors in custom environmental conditions as well as project data. It can thus provide a heat dissipation certificate as evidence of failsafe operation and a certificate verifying the system’s carbon footprint. RiTherm suggests highly customised cooling solutions from Rittal that help customers boost their efficiency very quickly and easily. These features – and others besides – are available free of charge from 13 November. Pre-existing projects can also be processed in RiTherm.

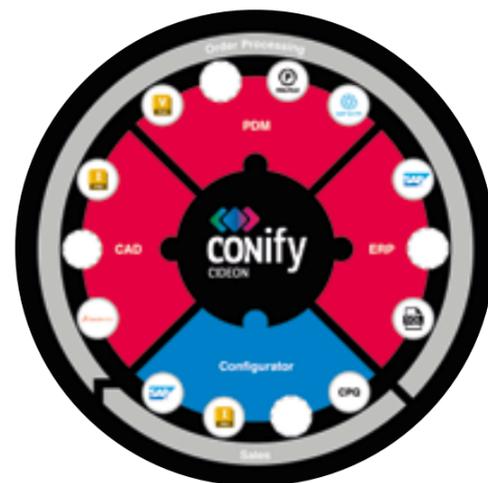
THINGS ARE GETTING MECHATRONIC

Cideon Conify – now with an eCAD add-on

With Cideon Conify, mechanical engineers can generate design data and parts lists automatically by using a product configurator. This makes it much simpler to document and supply variants. For example, mechanical engineering departments can already generate complex designs, log them in a PDM system and supply parts lists in an ERP system – all at the touch of a button.

However, there’s now a new feature – linking up with Eplan. Thanks to the Cideon Conify eCAD add-on, the electrical engineering planning can also be generated automatically. This means that a genuinely mechatronic parts list can now be generated – one that brings together mechanics and electronics. And that’s not all, either. By also using EEC (the Eplan Engineering Configuration system), mechanical engineers can also generate the wiring schematics and electrical engineering documentation with a single click. While the sales team works with the customer to configure the sought-after machine, the circuit diagram and parts list for the machine are created almost as a by-product.

This is engineering automation at its most advanced. In addition to enhancing process reliability and significantly simplifying and speeding up the design engineering process for variants, it also rationalises workflows in production and procurement. This module enables mechanical engineers who produce variants and work with configurators to implement an overarching digital process with the highest possible degree of automation – from sales through to dispatch.



EVALUATION BY INDEPENDENT ANALYSIS

ONCITE DPS is again “Best in Class” in PAC Radar

Process expertise, a high level of standardisation with flexible modules and access to overarching data spaces – software providers need to meet all the latest requirements from industry. It is therefore no coincidence that these criteria also play a part when independent experts evaluate providers to gain an overview of the market. In September, renowned market research and consulting firm Pierre Audoin Consultants analysed 105 relevant platform providers for its PAC Innovation Radar “Open Digital Platforms for the Industrial World 2023”. The result was that the ONCITE Digital Production System from German Edge Cloud was rated as “Best in Class” for the second time in a row. Only ONCITE and GEC partner Red Hat achieved a Best-in-Class position in their segment. What’s more, German Edge Cloud is a competence leader in this sector.

The PAC analysts evaluate providers’ platforms and capabilities in nine segments and position them on the well-known radar graph based on the key criteria of

competence and market strength. German Edge Cloud, with its ONCITE Digital Production System (DPS), earned a place in the top group in the “Open Digital Platforms for Industrial Hybrid/Multi-Cloud Application Management” segment in respect of both criteria.

This was thanks to various factors, including extensive expertise in relation to digital factories and applications based on standardised microservices – expertise that enables customers to get started quickly and allows for flexible expansion as new requirements emerge. According to PAC, another factor is the role played by German Edge Cloud as a stakeholder and provider in overarching ecosystems such as Catena-X.

SYNERGIES WITH SISTER COMPANIES PROVIDE MOMENTUM

The analysts also see clear signs that ONCITE is influencing the market, especially in the automotive sector. Schuler is one example of this. In the Smart Press Shop in Halle, Schuler and



GEC are optimising the production of pressed parts for Porsche, using track-and-trace right down to the level of specific data for each component. What’s more, at Hannover Messe in 2022 and 2023, PAC observed strong momentum in relation to the ONCITE DPS solution – especially thanks to the relevant synergies with the competencies of sister companies Rittal, Eplan and Cideon.

RITTAL SMALL ENCLOSURES AND COMPACT ENCLOSURES

Market launch for AX/KX stainless steel

Right on time for SPS 2023 in Nuremberg, Rittal is launching its new stainless steel versions of the KX small enclosures and AX compact enclosures. This market launch sees the new generation of wall-mounted enclosures complemented by two variants that offer a whole host of benefits for customers. Similarly to enclosure systems, they offer multiple possibilities for a customised interior fit-out – and these are now available on the basis of the AX and KX enclosure platforms. Customers can still save themselves time by using RiPanel for project planning and configuration in the usual way. The AX and KX enclosures already exhibit a great deal of resilience as standard and can withstand the rigours of challenging environments. The use of stainless steel now adds an extra level of robustness. What’s more, this material is easy to clean and, above all, is resistant to corrosion.



The stainless steel versions look good and are also robust and resistant to corrosion.

HD Hyundai Global Service

Boosting efficiency

To ensure everything runs smoothly, the technology on board freight ships must be absolutely reliable. However, the greatest challenges for plant engineers are currently external – supply bottlenecks and rising costs are increasing the pressure to be efficient.

HD Hyundai Global Service from South Korea therefore utilises a single installation platform for its control and automation solutions – based on standardised enclosure technology from Rittal.

Text: Jannick Bangard

The South Korean port city of Ulsan is home to one of the largest shipyards in the world. Around 25,000 workers build as many as 100 giant freight ships here every year. In the belly of each of these ships is a huge amount of electronic and automation technology that will later be used to control the key functions of these massive floating beasts. This is where HD Hyundai Global Service (HGS) comes in. The company has made a name for itself in the shipping industry as a “total solution provider”, supplying maintenance, repairs and technical support, for example, throughout the entire life cycle of a freighter. Falling under the

responsibility of the Digital Solution division, another core competence of HGS is providing smartship and digital control solutions that are needed for optimising routes, monitoring and analysing large machinery, including the primary and generator engines, freight management, and the loading and unloading of liquid gas tankers, for instance. However, global supply bottlenecks and rising cost pressure are creating strong headwinds, and the shipping industry is a tough business. Plant engineers such as HD Hyundai Global Service have to meet the most stringent requirements of their customers and rely on suppliers who account for these require-

ments in their products and solutions. The aim is to achieve the highest levels of reliability, quality and flexibility, so as to provide a solid basis for the rest of the value creation process. That is why HGS uses standardised enclosure systems from Rittal when it comes to installing the technical infrastructure.

PUNCTUALITY AND QUALITY

The benefits are already being seen in Ulsan. Ships are built there using the block assembly method, and there is a strict timetable for installing all the components in each block. It is almost impossible to install equipment retrospectively, so HGS depends

Everything on board, apart from pressure – when **punctuality, quality and reliability** come as standard.



The TS 8 enclosure system for LNG IAS Hull no.8196, being built at HD Hyundai shipyard, offers comprehensive expansion options.

on enclosures and other items being delivered absolutely on time. In the belly of the ship, Rittal enclosures also offer the dependable quality that is required. “We value the solutions from Rittal because we can rely on their high quality standards in our projects. For example, there can be strong vibrations in the engine room, meaning our infrastructure is subjected to high stresses. We need absolute dependability, and that’s what we get from Rittal,” says Kim Suhyun from the Quality Control Team at HGS.

In addition, technical flexibility is a top priority when it comes to the interior fit-out of the enclosures. After all, the packing densities in enclosures on ships are particularly high due to the lack of space. On

top of this, ever more complex applications for control and automation technology and power electronics also require maximum extendibility. Rittal makes this possible with its enclosure system and comprehensive range of accessories, which together offer a wide variety of expansion options.

A SINGLE INSTALLATION PLATFORM FOR EVERY SITUATION

To achieve a higher level of efficiency in the value creation process, HD Hyundai Global Service has opted for standardised plant engineering. “We can use standardised solutions from Rittal as a common installation platform for a whole host of control systems, for example,” says Kim. “They can be used to create customer-specific solutions that are tailored to the requirements of individual products. Without these solutions, it would be very difficult for us to configure a variety of customer requirements.” This makes it clear what a deciding factor standardisation has become, as it not only cuts costs for the customer, but also makes it possible to optimise engineering, production and supply logistics. For HGS, the advantage is that the Rittal enclosure system is already certified for maritime applications by DNV, Lloyd’s Register and Bureau Veritas. As a result, there is no need for the plant engineer to undertake complicated and time-consuming certification processes. “In a globalised world that is becoming increasingly unstable, the standardised processes and products from Rittal therefore provide stability, reliability, and ultimately a decisive competitive edge,” says Hendrik Lehmann, Solutions Sales Manager Maritime & Aviation at Rittal. ■

HD Hyundai Global Service

HD Hyundai Global Service (HGS), based in Seongnam (HQ) and Ulsan (Digital Center), offers its customers services that extend the service life of their ships, machinery and power plants. The HGS one-stop service center ensures that the Hyundai-branded ships and products are repaired, optimised and upgraded to meet industry standards throughout their entire service life. Customers can access all kinds of technical support, such as genuine spare parts from original equipment manufacturers (OEMs), performance optimisation for long-term efficiency and retrofits where necessary.

Interview



“We can use standardised solutions from Rittal as a common installation platform. They can be used to create customer-specific solutions.”

Suhyun Kim
Quality Control,
Hyundai Global Service



“Standardisation is a deciding factor, as it not only cuts costs for the customer, but also makes it possible to optimise engineering, production and supply logistics.”

Hendrik Lehmann
Solutions Sales Manager
Maritime & Aviation, Rittal

AX plastic enclosures from Rittal

Keeping tunnels lit in an emergency

Speeding into a tunnel at 300 km/h in an ICE (InterCity Express) train is always an experience. Even though the train is well sealed, you can still feel the pressure wave. **A tunnel's safety technology** needs to withstand huge stresses, as does the equipment powering the emergency lighting. In the event of a power failure, this equipment ensures the emergency lighting operates reliably so that rescue teams and escaping passengers can find their way. The demands on the enclosures used are high. **Safety technology manufacturers such as HERMOS Systems** must also be able to provide proof of this reliability with appropriate certificates.

Text: Ralf Steck

VIDEO

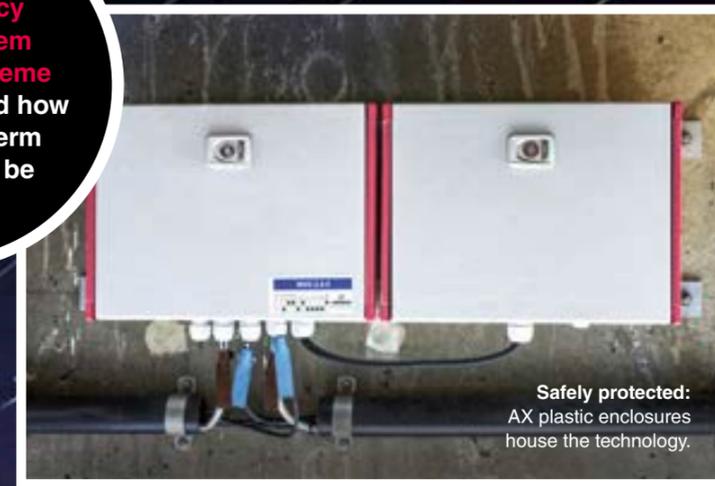


Passengers have been gazing out of the train window as they speed past picturesque landscapes. Suddenly, everything goes black. It's a tunnel, but not quite as dark as they think – thanks to HERMOS Systems GmbH. This company is responsible for much of the safety lighting in the tunnels of Deutsche Bahn's rail network in Germany. "We have now installed around 25,000 enclosures in Deutsche Bahn tunnels," reveals Veit Demel, Managing Director of HERMOS Systems GmbH, giving an indication of the scale of the task. "They are fitted in pairs to create an emergency lighting power supply unit," he adds. Battery-powered emergency lighting systems are installed in the

tunnels in sections 16 metres long. Every power supply unit is connected to two sections and, if the power fails, will therefore light up 32 metres of tunnel so that escaping passengers and rescue teams can find their way. One enclosure houses the battery, while the other accommodates the electronics that continuously monitor and control the power supply units. Up to six of these emergency light power supply units are connected via a tunnel power distributor to a master cable. HERMOS uses Rittal AX standard enclosures to house these and other distributors. "As we see it, the enclosures need to meet two key requirements," explains HERMOS Authorised Representative and Project Leader Robert Berndt. "Firstly,

How does an emergency lighting system withstand extreme conditions? And how can its long-term functionality be ensured?

300 km/h
and above is the speed of ICE trains in tunnels



Safely protected: AX plastic enclosures house the technology.

-20 to +40 °
temperatures and high humidity are typical in tunnels

Massive
pressure front ahead of the train and vacuum behind it

they must be robust and certified as complying with the provisions stipulated by the customer. And secondly, they must be available over a period of many years, because any change to our products – such as a new enclosure model – entails a lengthy and costly recertification process by Germany's Federal Railway Authority," he continues.

TUNNELS ARE SUBJECT TO HIGH DEMANDS

The demands are high, especially when the enclosures are installed in high-speed rail tunnels. In some cases, ICEs travel through these at speeds of over 300 km/h, creating a huge pressure front ahead of the train and a vacuum behind it. If trains pass each other in a tunnel, the pressure conditions become even more challenging. "Strange as it may sound, only 95 percent of tunnel sections are underground," explains Berndt. "In the portal area, the enclosures we use are installed in the open air, meaning they are exposed to the weather and to temperatures of between -20 and +40 degrees Celsius. Although temperatures are mostly constant inside the tunnels, conditions are very damp," he adds.

The ability of enclosures to withstand these environmental conditions over a period of many years isn't the only important consideration for HERMOS, though. The company also requires certificates guaranteeing compliance with the relevant standards. In some cases, the certification process is very extensive. For example, suction and pressure resistance is tested in the same kind of wind tunnel that is used in automotive engineering. Rittal has these tests carried out on its products and supplies the necessary certificates.



Because safety counts: Rittal AX plastic enclosures are installed in pairs to create each power supply unit for the battery-powered emergency lighting. Numerous mounting bosses ensure the interior fit-out can be customised.



WHY HERMOS USES AX PLASTIC ENCLOSURES FOR DEUTSCHE BAHN

1. Full outdoor capability thanks to high UV resistance and UL F1 outdoor rating (UL 746C)
2. Personal safety ensured thanks to protective insulation (DIN EN 61140 protection class II)
3. High protection category up to IP66 and NEMA 4X
4. Internal components can be screwed directly into place
5. UL approval for industrial enclosures
6. Made of halogen-free material: no corrosive or toxic gases are produced in case of fire
7. Tested for suction and compression strength



AVAILABILITY OVER A PERIOD OF MANY YEARS

"We have been using plastic enclosures from Rittal since 1999, because they come with all the certifications we are required to submit to the Federal Railway Authority to obtain approval for our products. That means an important part of the approval process is completed quickly – we can simply forward the certificates supplied by Rittal and rely on the enclosures performing as specified in the standards," says Demel.

Long-term availability is also ensured. The recently launched series of AX plastic enclosures is just the third enclosure generation for which HERMOS has needed to obtain certification in a period spanning almost 25 years. "Any change to the products necessitates recertification by the Federal Railway Authority. Besides time-consuming checking of documentation, that also involves a one-year practical test. If we don't have at least one year's notice before a change in the supply range, we therefore face a lengthy period during which we can no longer supply products to customers," explains Berndt.

With its new plastic enclosures, Rittal offers an ideal solution for outdoor applications. Made from halogen-free materials, they do not emit any corrosive or toxic gases in the event of a fire. They also boast fire protection corresponding to the UL 94 V-0 standard, an UL F1 outdoor rating, UL approval for industrial enclosures, a protection category up to IP66/NEMA 4X for the encapsulated space, and class II protective insulation.

A SERIES THAT WITHSTANDS STRESSES

Thanks to its robust design and stable construction, the AX series withstands aggressive environments, damp conditions and pressure/suction forces. The sensitive electronic circuits inside the enclosures are also ideally protected against flying debris. Numerous mounting bosses in the enclosure ensure the interior fit-out can be customised on a 25 mm pitch pattern, for example using punched sections and rails. Initial experiences with the AX series have been good, as Berndt explains: "The AX enclosures are even more robust than their predecessors. For example, the locks and hinges are made from metal rather than plastic, which also creates a higher-quality feel. We initially tested a special enclosure with two locks due to the high pressure and suction forces, but it turned out that a standard series enclosure with one lock



"Robust products, comprehensive certifications and excellent delivery reliability are the key factors that also help ensure the success of our company."

Robert Berndt
HERMOS Authorised Representative and Project Leader

withstands these stresses just as effectively. That's naturally far more economical and simplifies the supply process," he emphasises. In addition, the mounting points for the AX series are much more solid than those of the predecessor model. Instead of eight screw fixings, four fastening points are now sufficient to hold the enclosure securely in place, whatever the stresses. "Only having to tighten half the number of screw fixings significantly shortens the installation time," says Berndt.

ABILITY TO DELIVER IS ESSENTIAL

The ability to deliver is an equally important aspect for HERMOS when selecting a supplier, because the timeframe during which fitters can install the products in a tunnel is very tight. "Tunnel construction is tightly synchronised. We often work around the clock and only have a few days for installation. That means equipment needs to be ready on time – a real challenge when several hundred enclosures are being installed in a tunnel. Rittal reliably delivers its products within eight weeks, a timescale that doesn't pose a problem given that we plan a long way ahead. Delivery reliability is more important to us than a lead time one day shorter," explains Demel. "We have been using the plastic enclosures from Rittal since 1999 and have had nothing but good experiences with them. That's important, because you can't just 'nip into' a high-speed tunnel to rectify a defect – you need to be able to rely completely on the components you use. Robust products, comprehensive certifications and excellent delivery reliability are the key factors that also help ensure the success of our company," he concludes. ■

HERMOS Systems GmbH

HERMOS Systems GmbH has been offering engineering services for automation technology in industry, building technology and infrastructure systems for 25 years. Not tied to any particular manufacturers or products, the company offers open solutions and standards. Its portfolio includes programmable controllers, project planning, and the creation of networks and software solutions for control rooms, including the necessary hardware. The parent company HERMOS AG supplies software such as FIS, a vendor-independent platform for the integration of technical plants.



AX
COMPACT ENCLOSURE
WITH PLENTY OF
DESIGN FREEDOM



How can
 (additional)
 components be
 ideally and simply
 accommodated?
 By using a
 system!



“Thanks to its extensive upgrade and retro-fit options, the AX truly is a system-based enclosure.”

Natascha Tremel
 Product Management Industry Solutions, Rittal

Enclosure technology

Accessories that save time

Fitting out a compact enclosure is a challenge. Terminals, relays, fuse holders and more all need to be installed in the tightest of spaces, and room needs to be found for lights and sockets, too. The **AX has a range of accessories** that ensure users can upgrade and fit-out their enclosures quickly and neatly.

Text: Hans-Robert Koch

The purpose of any enclosure appears at first glance to be pretty straightforward: It basically protects the electrotechnical components on the inside from influences or conditions on the outside. An enclosure that is resistant to moisture and dust and complies with the appropriate standards should pretty much do the job. To help plant engineers, the process of fitting out the enclosure should also be as straightforward and quick as possible. The reality, however, is often different. In many cases, a great deal of time is invested in improvised solutions as a work-around and often also rigged-up and devised at a moment's notice. However, if you calculate all these additional steps, the time, effort and cost start to really add up. Sometimes, the result does not even meet professional standards. The situation becomes especially critical when holes need to be drilled in the wall of the enclosure to attach components and approvals are invalidated as a result. Consequently, this can result in a time-consuming and costly inspection of the entire installation. Not so with the AX compact enclosure, which offers well thought-out and ingenious solutions. ■

Customer benefits at a glance

- Thanks to its accessories, the AX is the first compact enclosure with a system of its own
- Versatile installation and fit-out capability due to the 25mm pitch pattern system replicated from the VX25 large enclosure giving VX component compatibility – for example VX punched section with mounting flange, VX support rails, VX cable clamp rails
- Improved use of space in the enclosure thanks to additional mounting levels
- Simple installation with no need to drill the enclosure – protection classifications are maintained
- Increased load-bearing capacity up to 100 N, automatic potential equalisation

PATENTED MOUNTING LOCATORS

The AX offers a patented system of stamped mounting locators and, together with its interior installation rail, replicates the familiar 25 mm pitch pattern system of the VX25 large enclosure. This means that the AX compact enclosures ready for any upgrading and retrofitting requirements. System components and accessories can be installed and retrofitted on rails easily, quickly and securely, with no drilling required.

UL CERTIFICATION IS RETAINED

AX compact enclosures carry UL approval and meet the technical standards for the North American market. If the user drills holes into the enclosure wall in order to attach accessories, re-certification will need to be carried out – except when the components that are used have an FTTA certification in accordance with UL, which the accessories for the AX compact enclosure do.

EVERYTHING NEEDED FOR INSTALLATION

Smaller enclosures often need to be installed on a wall or installation pole. The accessories range also includes the appropriate components for these needs. UL certification is retained after installation because the fastening components themselves are also UL-certified.

INTERIOR INSTALLATION RAIL

Rittal has developed an interior installation rail that can be fitted to the mounting locators and therefore installed easily on the side or roof surfaces without having to machine the enclosure. It clamps itself to the enclosure for a stable and secure hold. The rails provide additional space outside of the mounting plate for the application.

CABLE GLANDS

Cable glands are often installed in the base. Increasing levels of automation and the growing numbers of sensors introduced by Industry 4.0 applications mean that more and more signals are being sent back and forth. Since these signals are usually carried by cables, the number of cable glands needed in an enclosure is also increasing. Rittal has a wide range of suitable solutions that ensure great flexibility.

ACCESS PROTECTION

There are also ideal solutions for access protection, such as a lock cylinder with a security key. Locking system accessories, such as multi-point locks or lock box covers, complete the access protection range.

Industrial partnerships, such as the one between thyssenkrupp Steel, Andritz, Stahlo and Rittal, give rise to intelligent, innovative processes

Digitalisation and data spaces help industrial ecosystems grow.

E2CO SYSTEM

in focus

No glamour, no spotlight, no Steve Jobs presentation – in practice, industrial excellence sometimes comes about quietly, without any fanfare. One such example is the 3,500 or so **Rittal enclosures** in FBA 10, the new hot-dip galvanising line at **thyssenkrupp Steel** in Dortmund. These enclosures may look simple on the outside – but appearances can be deceptive.

Text: Markus Huneke



Interdisciplinary collaboration (from left to right): Axel Pohl (thyssenkrupp Steel), Oliver Sonst (Stahlo), Adrian Martin (Andritz), Dr Dirk Pieler (Rittal).

It's what's on the inside that counts. Fitted out with control and automation technology by Austrian technology group Andritz, the enclosures form the complex "nervous system" of the galvanising line – without these internal fittings, the 250 million euro investment would essentially be a lifeless steel structure. The process that leads to the finished galvanising line provides an illustration of how industry is strengthening its technical position by combining innovations from different areas in its approach.

ACCOMPANYING PROCESSES ARE DRIVING VALUE CREATION

The new galvanising line shows that steel is a high-tech product nowadays and that a huge amount of research and development work goes into it. However, this expertise is not restricted to the material itself. For a long time now, the associated processes – from logistics to finishing – have also been driving value creation. In particular, digitalisation and the new data spaces that go with it have been adding a ▶

A shining example of industrial collaboration: The control system of the hot-dip galvanising line at thyssenkrupp Steel in Dortmund.



The Rittal enclosures form the complex "nervous system" of the hot-dip galvanising line.

great deal of momentum to the development of industrial ecosystems. While, in terms of technology, Germany has by and large been lagging behind on the B2C markets, which are dominated by top dogs such as Amazon, German-speaking companies in the industrial sector are often global leaders – and are showing how the challenges of our times, such as digitalisation, the green transformation and the skills shortage, can be addressed successfully.

INDUSTRIAL PRODUCTION WITH POTENTIAL

The FBA 10 control system provides proof not only of industrial performance capability, but also of the potential offered by industrial collaboration. That's because, in order to build functional and robust enclosures out of galvanised steel – steel that was, of course, produced by thyssenkrupp Steel – to house the sensitive circuits, the steel coils passed through a highly specialised network in which the individual participants worked hand in hand.

The first step centred around precision when cutting the steel to size. At Stahlo, part of the Friedhelm Loh Group and one of the biggest independent steel ser-

vice centres in Germany, the raw material was cut into precisely dimensioned blanks for further processing. "As specialists in material usage, we are the link between steel producers and steel processing companies, and we bring resources, people and technologies together efficiently," explains CEO Oliver Sonst. He is keen to prospectively develop the steel service centre as a green steel provider and has already entered into an agreement with thyssenkrupp Steel regarding supplies of CO₂-reduced bluemint® steel. The next step – reshaping the blanks to create the frames and enclosure parts needed – was carried out by Rittal.

ADVANTAGE OF A DIGITAL TWIN

Use of the popular Eplan software tools – which Andritz used in the design process right from the outset – showed the advantages that the combined hardware and software expertise of the Friedhelm Loh Group offered for this complex project. During the digital engineering process, a digital twin is created, with all the relevant information relating to the future galvanising line. When all the different trades involved can work with this digital twin via a shared data space, this significantly speeds up steps such as fitting out and wiring the enclosures – which is a huge benefit, especially in view of the growing skills shortage.

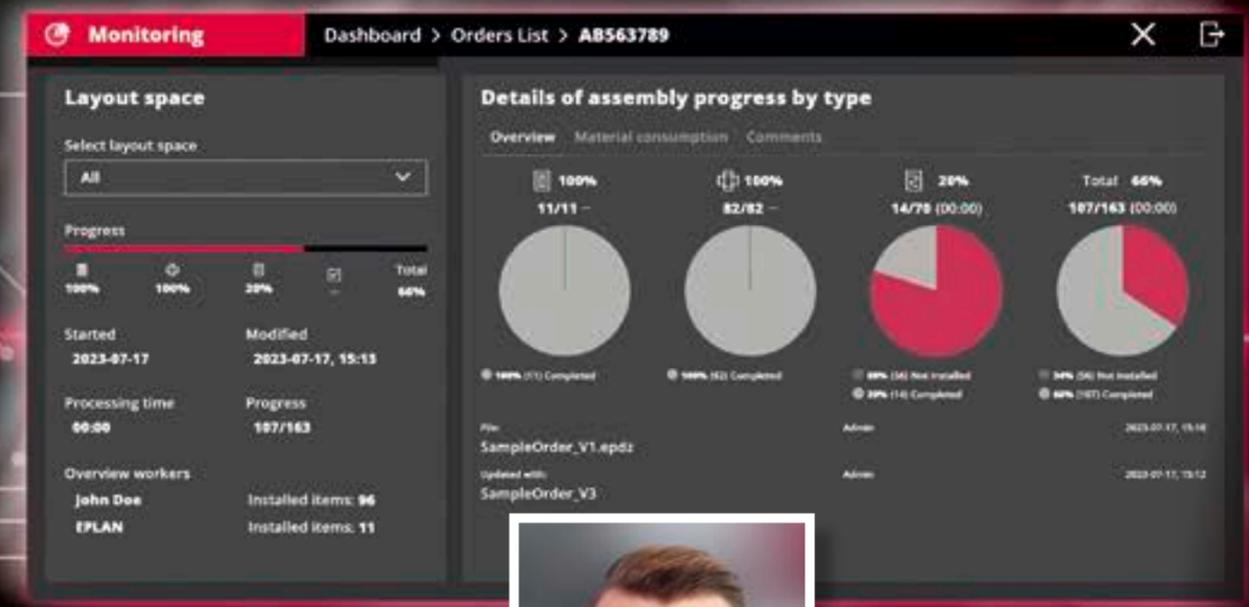
In the last step in the process, the steel enclosures, which were now built but still empty, were transported to Austria, home to international technology group Andritz. Once there, the requisite "intelligence" was finally added in to the complete system. As part of its overall delivery of the FBA 10, Andritz delivered the finished enclosures to thyssenkrupp Steel and started up operations, thus completing the short value creation cycle.

To overcome the challenges associated with the industrial site, clear insights are therefore also needed. In the context of smart production and digital twins, one such insight is undoubtedly: "It all comes down to the (eco)system." ■



"As specialists in material usage, we are the link between steel producers and steel processing companies."

Oliver Sonst
CEO of Stahlo Stahlservice GmbH & Co. KG



Eplan Smart Mounting

New dashboards display full progress details for individual orders.

From planning and monitoring to calculating KPIs – more transparency in enclosure production with Eplan Smart Mounting 2024.

A COMPLETE OVERVIEW

The 2024 version of **Eplan Smart Mounting** makes manufacturing enclosures even simpler. The new dashboards now give production managers an overview of all orders so they can make the best possible use of their resources. The software also guides production staff step by step through the **assembly of rails, cable ducts and electrical engineering components**. Precise visualisation of the wiring is possible, too, thanks to Eplan Smart Wiring.

Text: Birgit Hagelschuer

Eplan Smart Mounting 2024 now makes the process of manufacturing enclosures even easier. It guides workers through component assembly and indicates where to position each part. New: Production managers benefit from a complete project overview, as this new version now depicts the entire order process in the production department. Various dashboards show them all the orders that are being worked on, including how these are progressing. They can see all rele-

vant information in a single overview. If they wish, production managers can select a particular (current) order and obtain full progress details. Besides helping them plan resources and communicate with employees, this also saves them having to make time-consuming tours of the production department. Another innovative feature is that both Eplan Smart Mounting and Eplan Smart Wiring now concurrently evaluate previous jobs that have already been logged in the system. The software in-

dicates how many orders have been processed in a specific period and calculates KPIs such as the average time required for each component or connection. This data can be used to optimum effect when costing new orders and is an easy way of testing new workflows to optimise production. If the component labelling process is modified, for instance, the time per article can be checked after a few orders. Detailed tracking of the individual steps provides an ideal overview in this context.

SIMPLY SCAN!
Furthermore, the system's simplicity means the briefest of inductions enables even semi-skilled workers to take care of both component assembly and – in conjunction with Eplan Smart Wiring – the wiring of enclosures. To make this even more straightforward, the solution provider Eplan has incorporated a further innovative idea based on practical experience into the 2024 version – components can simply be scanned to make them easier to identify. As Tobias Kratz, Business Owner Rapid Design, explains: "With the newly integrated scan function, each component is identified unambiguously and positioned correctly in the enclosure. This prevents mix-ups between components that look similar, and it also speeds up the workflow."



"With the newly integrated scan function, every component is identified unambiguously and positioned in the enclosure."

Tobias Kratz
Business Owner Rapid Design

SIMPLER WIRING
Workers previously had to identify the components themselves based on the article number or using a 3D macro, which required a certain level of specialist knowledge. "They now simply take a component, pick up a hand-held scanner and scan the EAN code, and the digital twin then indicates where the component needs to be installed," explains Kratz. In conjunction with Eplan Smart Wiring, the wiring process is also supported on a standardised, system-wide basis. What's more, an interface to the Rittal Wire Terminal WT C ensures

that the amalgamated information is synchronised with the wiring list, and that the wires are displayed in exactly the same sequence as they are output by the fully automated wire processing machine. All data can be synchronised between the engineering and production departments – based on the digital twin in Eplan Pro Panel. All this is supported by the smart systems from Eplan. For example, ERP numbers can be displayed, customised search or filter criteria can be set and 3D views can be adapted. Production managers and users can decide for themselves which of these features they require. In this way, applications can be perfectly coordinated with internal processes, and personal preferences can be taken into account. ■





How can you build a new data centre without any nasty surprises? By using a modular room-within-a-room standard solution from Rittal.

Building a new data centre

When the best solution is a standard one

When companies are planning and building new data centres, the crucial question is whether a customised design planned from scratch or a standardised solution is better. **Elbe Kliniken Stade-Buxtehude GmbH** chose a standardised solution for good reason – and saved a huge amount of time and money in the process.

Text: Harald Lutz

Never change a running system – IT managers still firmly believe in this old pearl of wisdom. If a new data centre does need to be built, however, it often means entering completely uncharted territory. After all, projects of this magnitude and relevance are not part of the normal day-to-day work of IT managers. Once the decision to build a new data centre has been taken, the fundamental question is whether to plan a customised design from scratch or opt for a standardised solution. In the experience of Dr Armin Ortlam, Head of IT Strategy KHZG Controlling (KHZG = Hospital Future Act) at the hospital, there is no shortage of arguments against planning from scratch.



Helping to lighten the load: Choosing Rittal and a standard solution for the new data centre means Dr Armin Ortlam can focus on his day-to-day tasks.

REDUCED OUTLAY AND COMPLEXITY

As he sees it, the imponderables resulting from the large number of people involved – such as architects, technical specialists and data centre experts – are partly responsible for making a lot of things more expensive than they really need to be and thus more difficult to cost. “We therefore decided to go for a ‘ready-made’ option and ultimately found what we were looking for in the form of a room-within-a-room solution. I didn’t want us to have to concern ourselves with things such as connections to the water and power supply or cooling,” says Dr Ortlam, recalling the initial stages of the collaboration with data centre specialist Rittal. “Nowadays, building a new data

centre really doesn’t need to be as complicated as it used to be. It’s no longer necessary to spend seven-figure sums or factor in unexpected developments that suddenly increase the planned project budget from one to three million euros,” he adds. According to Dr Ortlam, opting for a standardised data centre is more a case of getting everything from a single source. “A hospital merely has to provide data, water, electricity and, if necessary, refrigeration and we handle everything with just one Rittal planning specialist.” ▶

he explains. This concept is making standardised data centres increasingly appealing, especially to small and medium-sized enterprises (SMEs). "In any case, everything went smoothly here in Stade – from logistics, planning and project management all the way through to installation and, ultimately, commissioning," he emphasises. The renowned reliability and commitment of the Rittal project team also really helped lighten the load for Dr Ortlam. Instead of him being pre-occupied day and night by his data centre redundancy project, he was therefore also able to focus on the main aspects of his actual job. "I knew we could call anyone at Rittal who was involved in the project at any time, from sales staff to the project leader, and we also always obtained solid and reliable feedback," he comments.

For the time being, the Basic Protection room in Stade accommodates eight VX IT racks. Aisle containment ensures warm and cold air are kept separate (bottom photo).

The technical room is also accommodated in a Rittal security room (top photo).

MODULAR AND CERTIFIED

The core concept of the modular room-within-a-room standard solution from Rittal is to set up a certified room for the future data centre in an existing building – a room that meets all security criteria stipulated by the legislator and the relevant associations. This creates a multifunctional "shield" protecting against most physical risks relating to data centre applications. "Our Basic Protection room in Stade measures 34 square metres and, for the time being, is equipped with eight VX IT racks and the Liquid Cooling Package or LCP. We also have a special technical room measuring eleven square metres, amongst other things for the UPS, which is not itself part of the Basic Protection room. Room-within-a-room standard solutions are nothing short of ingenious, especially for existing buildings with sufficient free space. Fortunately, after a long search of the hospital's lower floors, we found the necessary space and got the go-ahead from the management team to use this as a new data centre. It currently still provides redundant capacity but will, in the future, become our primary data centre," explains Dr Ortlam.

Why does a data centre even need to be located in a specially equipped Basic Protection room when space is available in the basement? "The problem is that the structural fabric of a normal building with its specific masonry already falls far short of meeting the structural requirements of Germany's Federal Office for Information Security (BSI)," reveals Dr Ortlam. Customised retrofitting would, he says, be required. "A Rittal room-within-a-room standard solution, on the other hand, complies fully with the legal criteria and requirements from the outset, and



"A medium-sized hospital can achieve savings of 60 to 70 percent with a standard solution."

Dr Armin Ortlam
Head of IT Strategy KHZG Controlling
(KHZG = Federal Hospital Future Act)

FIVE BENEFITS OF THE RITTAL SECURITY ROOM

- 1.**
System-tested security concept based on European standards (ECB-S certified)
- 2.**
Ideal for use in existing buildings
- 3.**
Three design variants
 - Basic Protection room (GSR)
 - Basic Protection Plus room (GSR+)
 - High-Availability room (HVR)
- 4.**
Short implementation
- 5.**
High level of protection against physical risks such as fire and water

the operator has little left to do for everything else – from structural engineering and ventilation through to all the various aspects of basic IT protection," he emphasises.

60 TO 70 PERCENT LOWER COSTS

Another big plus relates to the associated costs. "Thanks to the room-within-a-room solution, we were able to carry out our data centre redundancy project in Stade at a fraction of the cost involved in planning a customised solution from scratch, and it was also much faster," says Dr Ortlam, who is convinced he backed the right horse from the outset. "We have so far spent around a quarter of a million euros on our project. That sounds like a lot, but if you opted to plan a customised solution from scratch, you wouldn't get something on the same scale for less than a million," he insists. However, the exact cost saving varies from project to project depending on the cooling medium used, the planned level of redundancy, which servers and other IT equipment are selected, etc. Dr Ortlam reveals the rule of thumb applied by the experts involved in the project: "A medium-sized hospital can achieve savings of 60 to 70 percent with a standard solution – savings that can be spent on other things." ■

Elbe Kliniken

Located in Stade and Buxtehude, this state-of-the-art healthcare service provider treats patients in the region of northern Germany known as the Elbe-Weser triangle. Around 3,000 staff provide high-quality medical and nursing care for approximately 45,000 inpatients and over 85,000 outpatients every year. More than 20,000 operations are carried out at the hospital each year. The Elbe Kliniken academic teaching hospital forms part of the University Medical Center Hamburg-Eppendorf (UKE) and is one of the region's largest training providers, offering around 400 places for students and trainees.





Expansion of partner programme

EXPERIENCING AND IMPLEMENTING DIGITALISATION

Alexander Bürkle, Rittal and Eplan have already been working in close collaboration for some years. In July, this collaboration was taken to the next level. The technology service provider, which is based in Baden-Württemberg, is now the world's first "Rittal + Eplan Application Center Partner" – and is thus a springboard for increasing efficiency and productivity for the entire industry.

Text: Jannick Bangard

Driving the transformation of the industry through partnerships – this is the aim of the Rittal and Eplan partnership programme, which is currently being expanded in a variety of formats. These include the "Rittal + Eplan Application Center Partnership", which was launched for the first time this summer with technology service provider Alexander Bürkle and implemented in the company's new production centre in Malterdingen in Baden-Württemberg.

EXPERIENCING EFFICIENCY BENEFITS LIVE

The special thing about an Application Center, which has now also been installed at a number of Rittal locations, is that it gives customers a direct, on-site opportunity to

try out and experience the efficiency benefits that can be achieved in the workflow along the entire value chain by combining hardware from Rittal and software from Eplan. In this case, Alexander Bürkle, with its extensive experience and expertise in automation, is the crucial multiplier. This all benefits the customer directly, since the partnership is based on the shared insight that the future of panel building and switchgear manufacturing lies in the consistent implementation of digital processes. "Our partners therefore act as a springboard for digitalising the entire industry. After all, what the industry needs is high speed and standardised quality – including when it comes to upgrading energy infrastructure and building technology. With partners such as

Alexander Bürkle and our partner programme as a whole, we are going to drive this development," says Uwe Scharf, Managing Director of Sales in Germany at Rittal.

MODEL FOR THE EXPANSION

The "Rittal + Eplan Application Center Partnership" with Alexander Bürkle is both the flagship and the model for the continued expansion of the partner programme. In our interview, Klemens Isenmann, Managing Director of Alexander Bürkle GmbH & Co. KG, and Thomas Basler, Managing Director of Alexander Bürkle panel solutions GmbH, explain how this close partnership was born of many years of collaboration and which benefits they see in this model, for both their companies and their customers. ■

Interview "There's no future in egoism – because collective efficiency is what matters"

Interview with Thomas Basler and Klemens Isenmann from Alexander Bürkle on the subject of the "Rittal + Eplan Application Center Partnership"

There was collaboration long before the current Application Center Partnership was set up. How did this come about and what has made this alliance such a successful one?

Klemens Isenmann: Initially, we worked together with Rittal in our capacity as an electronics wholesaler of components. In 2011, we carried out a restructuring exercise to align ourselves with customer groups and started looking for partners. We were aware that we needed targeted strategic partnerships and a close network to enable us to develop further. As the leading player in the enclosure sector, Rittal became one of our first strategic partners – and this was based on a high level of trust right from the outset.

Would it be true to say that Eplan plays a supporting role in your day-to-day business?

Isenmann: It's more than that. Over the years, Eplan, as the central engineering tool, has become the interface that has played a major part in driving our own development – something it is still doing to this day. Our employees don't just create drawings – they use Eplan to produce designs and generate functional circuit diagrams. We go right to the limits of the software and endeavour to get everything possible out of it – and this is valued in the industry.

Why are you entering into this partnership with Rittal and Eplan? What do you expect to gain from it?

Basler: Not only are Rittal and Eplan strong partners, but they also have the same strategy and the same mindset when it comes to breaking new ground – namely ensuring a rigorous under-



Thomas Basler,
Managing Director of
Alexander Bürkle panel solutions GmbH



Klemens Isenmann,
Managing Director of
Alexander Bürkle GmbH & Co. KG

As – quite literally – an "Eplan Power User", you recognised the importance of product data at an early stage. Based on what we know now, that was pioneering work for the industry, was it not?

Isenmann: Yes, we contributed about 90 percent of the Eplan data standard (EDS). And, somewhere along the way, we realised that success does not come from guarding secrets, but rather from sharing knowledge. If our customers continue to develop, we benefit from that, too. We take a proactive approach to handling our know-how and work on the basis of trust – including with our competitors. A network is really important to us. There's no future in egoism – because collective efficiency is what matters. We all need to understand that it's also about Germany as a business location.

You are now the world's first Rittal and Eplan Application Center Partner. What does that mean for you and your customers?

Basler: It is a hallmark that attests to absolute top quality. We can't imagine a better reference. In terms of the state-of-the-art implementation of our specialist discipline, we are currently a long way out in front. We are also one of the few companies to combine electrical design engineering expertise with production know-how. We are therefore proud of what we have achieved and of our entire team at Alexander Bürkle. We also take pride in the fact that we have consistently pursued our strategy of modernisation and ongoing development – with our strong partners at our side. ■

Thank you very much for talking to us!

standing of the entire value chain in switchgear manufacturing and optimising it so customers can benefit. We pull together, because we know that it is by focusing on more efficient, cost-optimised enclosure construction that we will continue to enjoy success in the future.

Eplan Platform 2024

BETTER PROJECT PLANNING MADE SIMPLE

Today's **engineering software** must guarantee holistic solutions and end-to-end data flows, and that's exactly what you get with the tried-and-tested **Eplan engineering platform**. Available since September, the next generation offers new mathematical calculation functions, easier terminal management, unprecedented possibilities for navigating through the **3D model of the enclosure** and simpler **machine cabling**.

Text: Birgit Hagelschuer

These days, companies need to get results fast when it comes to automation. They are increasingly relying on overarching standards and platform solutions that ensure end-to-end data flows. One such solution is the well-established Eplan engineering platform, which results in speedy project planning thanks to cloud-based article management, multi-standard support for schematic macros and a fast 3D graphics core. Eplan is now embarking on the next chapter with its launch of the 2024 version, which first and foremost ensures the software is easier to use. ■

QUICK CALCULATION

Calculation functions for block properties

If you want an easy way of interlinking objects such as motors and circuit-breakers in the wiring schematic, look no further than the proven "Block Properties" function of the Eplan Platform. Basic arithmetical and mathematical functions are now available, along with statistical comparison operations. If users want to calculate the current based on the motor power, for example, the new system support ensures quick results. Important design decisions based on the calculation of electrical parameters – such as selecting the appropriate protective device – can already be made when creating the schematic. This saves time and ensures results are correct.

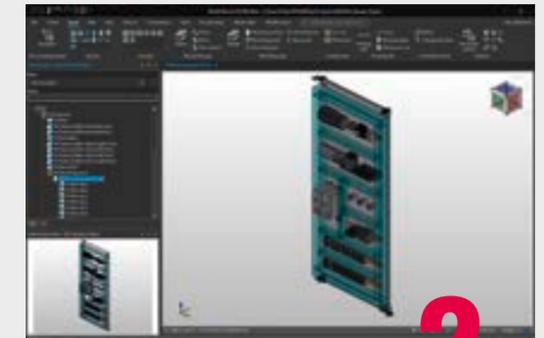


1.

USER-FRIENDLY DESIGN

3D navigation for the enclosure layout

A further exciting new feature for design engineers is the new 3D Navigation Cube, which simplifies the process of viewing the 3D layout of an enclosure. This also makes it much easier to create the digital twin in Eplan Pro Panel. With this function, it couldn't be simpler to select and rotate 3D views and 2D surfaces in the design. Another key practical advantage is that users have the option of getting the software to automatically remove any gaps that occur when placing components on a DIN rail. The components being used are then located next to each other in the best possible space-saving configuration. This frees up more space on the rail, results in a well-ordered structure and offers greater flexibility for positioning additional components.



2.

BETTER CABLING

Machine cabling factored in from the outset

The market launch of Eplan Platform 2023 already simplified machine cabling for enclosures containing actuators and sensors. In the 2024 version, it is now also possible to automatically connect spare cables. Spare terminals are automatically created for this purpose, which the system then connects using spare cables with just a click. To calculate the drop in voltage, the above-mentioned calculation functions for block properties come into play again to ensure results are correct. If the cable lengths required to reach the machine need to be calculated, Eplan Harness proD is used for precise planning.

3.

EASY MANAGEMENT

Optimised Terminal Editor

Traditionally, terminals and terminal strips are planned using the Terminal Editor in Eplan. The 2024 version makes terminal management even simpler. With the Terminal Editor, users can manage terminal accessories more easily. They can also check and validate terminal strips directly. This means terminal connections can be viewed in the schematic and individual parts can quickly be selected or added to the terminal strip. It's simple and convenient, saves time and ensures results are correct.

4.

Speed is everything in engineering, so it's good when software provides ideal support.

Regulation / refrigerants

NEW RULES OF PLAY FOR GLOBAL PRODUCTS

A trend towards greater regulation can be observed in many countries and regions around the world. Higher sustainability targets coming from governments and the effects of both the COVID pandemic and the war in Ukraine are changing the applicable **rules of play on the markets in relation to the use of products**. Internationally operating companies are facing a plethora of new regulations – and it is often difficult to get to grips with them all. One example is the **new EU regulation on refrigerants** that is being planned – and this affects cooling units, too.

Text and interview: Jannick Bangard

What's the best way to deal with the increase in regulations? **Scrutinise your products and improve them.**

Whether it's a case of massive industrial policy subsidies under the Inflation Reduction Act in the USA, systematic difficulties in accessing Asian markets, or special regulations for importing products into the UK as a result of Brexit, examples of regulatory measures are both diverse and ubiquitous. The European Union's tightening of measures for protecting the climate and the environment also has far-reaching consequences for industry. Existing regulations for products are being reviewed with a much more critical eye.

SCRUTINY OF REFRIGERANTS

In the last year, for example, a review of the regulations governing the use of certain substances in refrigerants has been initiated. Specifically, the substances under scrutiny are fluorinated greenhouse gases (F-gases) and "forever chemicals" – per- and polyfluoroalkyl substances (PFAS). These substances are also used in cooling units and recoolers. In both cases, restrictions will be introduced in the coming years, although it has already been agreed that contractual transition periods will apply in respect of the F-gas

regulation. However, one thing is absolutely clear – manufacturers such as Rittal will need to come up with alternatives.

GROWING COMPLEXITY

The situation is becoming more complex, especially for companies that develop and manufacture global products. The more national and regional regulations companies engaged in worldwide sales and service face, the more time-consuming and costly the underlying processes become. What's more, in the majority of cases, it's not just about the product itself. Worldwide, customers benefit from system solutions and standardisation – in other words, a comprehensive portfolio that combines consistent functionality with top quality. However, when new regulations in different markets are constantly being introduced, managing day-to-day business becomes more and more complicated.

What then? "Changes in conditions always present an opportunity, too," says Philipp Guth, CTO of Rittal. "SMEs, in particular, have really adopted this mindset. It's a case of acting in customers' interests and offering solutions," he continues. Read on and find out more in the interview that follows. ■



Interview

“The use of alternative refrigerants is coming”

Interview with Philipp Guth, CTO of Rittal

01 As CTO of Rittal, what's your take on the global increase in regulatory measures?

Philipp Guth: There's no doubt that we've observed a sharp increase in recent years, and I believe there are two reasons for that. First, we're seeing a break-up of the global economy into large blocks – and these blocks are trying to cut themselves off from each other by introducing regulations of their own. This often involves technical specifications, which have a knock-on effect on our products. The second reason is that increasing importance is being attached to environmental and climate protection. When this factor is combined with the high product safety standards that have always applied, the result is much higher requirements in relation to our products than in the past – including aspects that are specific to particular regions and countries. As a consequence, we need to adapt to these policy requirements, not only when developing products, but also when it comes to product updates and the service we provide throughout a product's life cycle – in other words, for existing products. This takes more time and has higher cost implications, because the approval processes are also more complex.

02 Let's take the example of the EU regulation on refrigerants. What new rules of play are cooling unit manufacturers such as Rittal facing?

Guth: The focus is on refrigerants that the industry has been using for a long time now and that are found in a whole host of everyday applications, such as fridges, ice machines and air-conditioning units. We also use these refrigerants in our cooling units and recooling systems for enclosures, machinery and data centres. The substance group and gases of this refrigerant are extremely efficient and non-combustible – in other words, their properties are practical and safe for use in the industry. However, more and more concerns are now being raised about these substances – which are also known as "forever chemicals" –



because they do not break down in the environment. Another factor is that these substances are harmful to the climate – and the impact of this can be huge in the very rare event of a leak. For us at Rittal, this means we consistently gear our business activities towards environmental and climate protection. In the future, we will also be using alternative refrigerants such as propane. This will mean increased safety requirements, but that's a downside of the substance we just need to deal with.

03 What impact will this have for Rittal customers? What questions are they asking? And what answers is Rittal providing?

Guth: Needless to say, the topic is causing disquiet on the market – and our customers' main concern relates to safety. It is now generally agreed that propane offers one of the best alternatives to conventional refrigerants. We all know how to handle propane, whether our experience comes from camping or using a barbecue, for example. Even so, a combustible substance causes concern in an industry where it's vital to minimise potential risks in the machine environment. That's why we're working really hard to allay these concerns through the safety concepts and technical solutions we offer. We're not only developing safe technology, but also directly advising customers about

the engineering of enclosures, machinery and similar applications. This extends right through to the installation of the system, with due consideration of the prescribed on-site risk assessment. What's more, in cases where the use of propane is not advisable, there are alternative solutions, such as using recoolers at a distance from the system and in conjunction with air/water heat exchangers. In a nutshell, we are ensuring maximum safety for our customers.

04 What impact are different regulations worldwide having on the development of Rittal products?

Guth: Our aim is – and will always be – to produce global products. After we sell our products, they pass from one location to another, so we can't generally predict where the ultimate destination will be. It's therefore vital that our equipment can work anywhere in the world. This is why dealing with so many varying regional requirements, which often differ from one another completely, poses a challenge for us. It is conceivable, for example, that the worst-case scenario would involve us having to use alternative refrigerants in Europe that have not yet been approved in the USA. Equipment that works in both regions alike would then, in effect, be ruled out. We would need to produce our equipment in two locations and our customers would only be able to use it in specific regions. We are campaigning to prevent this situation from arising.

05 Generally speaking, as a global company, how does Rittal deal with regulatory changes?

Guth: We are very closely following what's happening worldwide in terms of regulations. What's more, we are constantly expanding our network so that we can be as close to developments as possible and play a part in the legislative process as an affected stakeholder. Although this means a lot of work, we don't regard this as a burden. After all, political guidelines generally reflect the will of society, and this has always brought about change. As a company well aware of its responsibilities, we are part of this society and gear our actions towards it – especially when it's a case of protecting people and our environment. It is with this principle in mind that we at Rittal work day in, day out to offer the very best products and solutions possible, so both we and our customers can move forwards into a successful future. ■

Thank you very much for talking to us!

Capturing complete building data using laser scanning

HOME SMART HOME

Will the new process line fit in the old production workshop? How can modifications be planned better? When it comes to maintenance, what can we optimise? These are all everyday questions in architects' offices and for facility management specialists.

Cideon, the CAD/PLM specialist in the Friedhelm Loh Group, uses the **3D building twin** to provide answers. The building twin is not a plan. Rather, it is a map of the current state of a building, based on laser scanning technology. What's more, it's now becoming even smarter.

Text: Ulrich Kläsener

Jaqueline Dietrich (left) and Alena Jakob (right) standing facing the building twin of the Loh Services headquarters in Haiger, Hesse.



Learning from the live status – a building's digital twin documents its status and reveals potential for optimisation.

It can be no coincidence that, following the search for a lighthouse project for digitalising all the Friedhelm Loh Group premises, it was the Loh Services headquarters in Haiger in the German state of Hesse that were chosen. A flawless survey was carried out in front of a camera here in spring 2023. Cideon used 3D laser scanning technology to transfer the main building of Loh Services GmbH & Co. KG, the adjacent building extension and the former Loh Academy from the real world to the digital 3D space. Within just two weeks, some 900 scans recorded the as-built situation in all three buildings, which are up to four storeys high – and all while administrative operations were ongoing. The 3D model comprising exactly 20,413 objects was then generated from the scan data. "The 3D laser scanning process didn't disturb anybody here," says Alena Jakob from the Loh Services department responsible for safety, energy, the environment and buildings.

DETAILED. MULTI-DIMENSIONAL. DIGITAL.

Given the technology used, this comes as no surprise, since 3D laser scanning is a contactless technology designed to capture three-dimensional data with precision. This data is recorded by a scanner that is placed in the room and rotates around its own axis. The process takes from three to six minutes, depending on the level of detail required.

To put it in simple terms, the scanner creates what are known as "point clouds" – millions of precisely measured XYZ-markers that define the position of the object in the room – by projecting laser light onto these objects. "The simplest form of the digital twin is the geometric model," explains Andreas Janson, Head of Consulting AEC/BIM at Cideon. "We've had laser scanning expertise in the Group for years now, and there were already firm plans to survey the FLG buildings. Recording the complex in Haiger in 3D was therefore the logical next step." ▶



It fits in well, then, that Cideon is an Autodesk partner, in addition to having the technological capability to map analogue realities, since this means that Janson and his colleagues use and market all the important CAD and BIM (Building Information Modelling) software solutions that are needed for high-performance digital designs of buildings and infrastructure themselves, in the form of the Autodesk Architecture, Engineering & Construction Collection (AEC).

ALWAYS UP TO DATE

Janson himself comes from the factory and plant planning division. In this field, 3D laser scanning of entire production environments has been common practice for years now – whether it is used for machine equipment collision checks, replanning production lines or the legally prescribed as-built documentation in the process industry. However, why is this technology now being applied to an administrative building? Stefan Tatsch from Cideon Account Management explains: “Loh Services commissioned us – one of its sister companies – because, after many building alterations and a large amount of additional construction work, it was unable to produce a fully up-to-date model of the building.” Jaqueline Dietrich from the Loh Services department responsible for safety, energy, the environment and buildings adds: “What we’re concerned with is the building itself.

Jaqueline Dietrich and Alena Jakob are delighted, because the model will make it possible to plan modifications more precisely and organise trades and external service providers more quickly in the future.

Before now, we only had 2D drawings and, given the large amount of new and additional construction work that’s been done, we couldn’t be totally sure that all the dimensions were correct. We needed a new model to bring us up to date.”

BUILDING ONE – SMART HOME

The gains in efficiency can already be envisaged. “Based on this model, we can now plan building modifications more precisely, organise trades and other external service providers more quickly and tell them exactly what needs to be done.” The comprehensive process expertise is opening up completely new opportunities for Loh Services (and, therefore, for other companies, too), because the BIM model is now being made even smarter, step by step. Intuitive access is provided via a user cockpit available to every specialist discipline with the relevant authorisation.

Jakob explains: “We are currently in the process of incorporating intelligence by means of digital room stamps with full information.” This takes place in BuildingOne, a digital room and building book with a direct API connection to the BMI from ArchiCAD. “We can use the room stamps to incorporate every possible detail into the 3D model – floor areas in square metres, volumes of wall and window areas, doors, views, room designations, lighting, air conditioning, heating and much more besides.”

Using 3D laser scanning, Cideon transferred the main building of Loh Services GmbH & Co. KG in Haiger, the adjacent building extension and the former Loh Academy from the real world to the digital 3D space.



A NEW DYNAMIC IN FACILITY MANAGEMENT AND MAINTENANCE

Janson takes this thought a step further: “A possible next step might be to shape this model dynamically to enrich sensor data.” This could make it possible to visualise energy consumption, record current temperature or humidity, and connect everything to a control system, so the heating switches off automatically if it’s too warm in the room, or the ventilation system switches on in the event of excessive humidity in the room. What’s also clear is that, in an energy transition era such as this, the electricity being produced by the building’s photovoltaic system can be incorporated into the digital twin of the premises at any time.

In the department responsible for safety, energy, the environment and buildings, staff are in no doubt about the opportunities that first and foremost reduce lag time and extend beyond original facility management. Dietrich runs through a possible scenario. “Let’s imagine the maintenance team receives a notification that light xy in room 116 has stopped working. All it takes is a quick click on the digital stamp and it immediately becomes clear which spare part the maintenance staff need to take with them when they go to repair the light. The program even offers the option of sending an automatic e-mail to external companies when routine maintenance of the revolving doors is due, for example, or when it’s time to check the filters of the air conditioning system. Equally, the calculated window area can be used to obtain a full quote for cleaning. Last but not least, the 3D model also makes it easier to supply the fire brigade with the information it needs to work out suitable escape routes when new offices are being set up or when building modifications and additional building work are being carried out.”

Stefan Tatsch outlines the big picture once more. “When you’re planning to carry out smart mapping of an administrative building by means of a digital 3D



“A possible next step might be to shape the model dynamically to enrich sensor data.”

Andreas Janson
Head of Consulting AEC/BIM, Cideon

model, you need to bring the right sparring partners together. As the Friedhelm Loh Group, we are in a position to play around with such visionary ideas. As a company, we really can map this. It’s fascinating.”

And that’s not all – it’s also exactly what the market needs at present. Companies are realising that complete, end-to-end digitalisation based on digital twins is the only thing that makes major optimisations – in relation to resources, for instance – possible. Tatsch points out: “Needless to say, the idea of digitalising premises caught on in SMEs a while ago, as is clear from the positive flood of enquiries we are receiving from the market.” ■

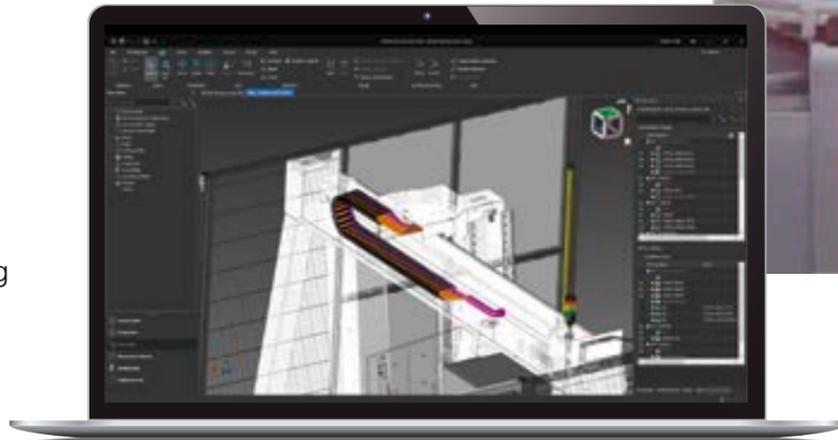
Machine cabling

Planning instead of guesswork

How can you plan the cables for a machine with precision? By using a digital twin!

When looking at a project as a whole, it is often machine and enclosure cabling that kills efficiency. Trial and error – the standard method at present – is, unfortunately, an error-prone and time-consuming approach. Help is now at hand with **Eplan Harness proD**, which is bringing clarity to machine cabling.

Text: Birgit Hagelschuer



Eplan Harness proD makes it quick and easy to determine field cable lengths (from enclosure to machine).



Eplan Harness proD creates clarity regarding cable lengths – on the right, an actual energy chain in a machine and, on the left, the digital twin.



“The digital twin of the cabling in Eplan Harness proD is an important data source for production, assembly and service.”

Michael Widmann
Business Development
Manager at Eplan

Mechanical engineering companies face a delicate balancing act. Customers increasingly require one-of-a-kind, made-to-measure machinery and equipment. Delivery deadlines are also tight. Further challenges include the growing competition from low-wage countries and the worsening skills shortage. All this makes efficiency the order of the day.

That applies to machine planning, the enclosure and, last but not least, the connection between machine and enclosure – an aspect that clearly requires some attention. After all, cables are now a significant cost factor. If they are too short, too long or – worse still – incorrectly planned, the outlay increases. The standard mechanical engineering approach to date is based on trial and error, which results in a correspondingly high risk of errors. If cable planning is done by eye, things can certainly get tricky.

If a cable is too long, for instance, it is typically tucked away or hidden in coils under the enclosure or machine. The resulting bending radii and require-

ments relating to electromagnetic compatibility (EMC) are often not factored in. Interfering signals can lead to malfunctions and lengthy commissioning processes. Besides being difficult to pinpoint, they are also extremely time-consuming and costly.

EASIER WITH A DIGITAL TWIN

Wouldn't it be better to know the exact cable lengths in advance – especially with a view to ensuring fast, error-free Plug & Play installation using the kind of pre-assembled cables that are now standard? It certainly would, but that requires appropriate tools and data, ideally based on a digital twin. The 3D software Eplan Harness proD can now be used to create just such a digital twin that serves as a basis for machine cabling. The cable planning process couldn't be simpler. Design engineers use Eplan Electric P8 to plan the necessary cables in the circuit diagram (schematic), while also specifying the articles required for cabling inside the machine “along the way”, as it were.



FIND OUT MORE

www.eplan.co.uk/solutions/eplan-harness-prod/

NO CHANCE OF ERRORS!

These engineers simply link the Eplan project and the 3D enclosure layout in Eplan Harness proD, where the 3D geometry of the machine or system can also be imported. Based on the information from Eplan, the equipment is positioned in the 3D environment, and the design engineers obtain a digital twin of the cabling in its entirety. This brings the electrical engineering and mechanical worlds closer together. Everyone is using the same data as a basis, but they remain flexible in their own particular working environment.

With this integrative process, things become evident much sooner that would otherwise only be revealed at the physical prototype stage when using the traditional working method. Any changes – when creating a prototype, for instance – can be implemented on the PC with just a few clicks of the mouse. A real-life counterpart is no longer required in production or the workshop. ■

The benefits are plain to see

- **Planning precision:** The digital twin dispenses with the physical prototype
- **Data clarity:** For planning, work preparation, production, assembly and service
- **Increased productivity:** Pre-assembled cables make for quick and reliable assembly
- **Lower costs:** No cable offcuts or warehousing
- **Planning certainty:** No incorrect cabling during commissioning

These benefits cut costs and ensure data is both clear and correct. That's far from all, though – mechanical engineering companies and customers can use the digital twin to engage in constructive dialogue – during the specification process, development and production and also for marketing purposes.

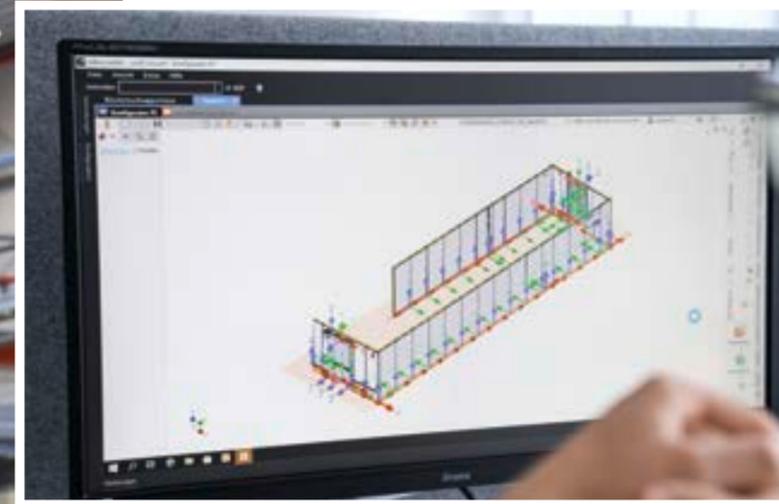
How can you ensure reliable, automated data exchange between CAD applications and ERP, PDM and PLM systems?

Teledoor

Cool configuration

It's similar to **no-code "programming"** that allows non-experts to put together operable software applications by simply clicking on different elements. Since November 2022, each of the 220 employees of **Teledoor Melle Isoliertechnik GmbH** has been able, in principle, to create CAD designs, parts lists and work plans. What's more, they don't even need an engineering degree to do so – all they have to do is enter standard details in the brand-new **Teledoor configurator**. Behind the fully automated design is the complete power of **Cideon Conify**.

Text: Ulrich Kläsener



Teledoor is using the Cideon Conify solution to combine sales and engineering data in one configure-to-order solution and integrating the relevant systems, such as ERP, CAD and PDM. The CAD design process is fully automated.

within the team, since complex tasks also mean extra work. This increases exponentially as more and more orders come in, which is why Teledoor started looking for opportunities to boost efficiency – especially in view of the in-house realisation that the design department, with its 27 CAD workstations, was becoming more and more of a bottleneck and was no longer managing to use the full capacity of production.

FOCUSING ON PAIN POINTS

When potential was analysed, three weak points were identified – the CAD department, the processes and the strategy. First of all, the design department was failing to keep pace with incoming orders because too much repetitive work was proving both hugely time-consuming and prone to errors. As Daniel Krämer, Head of IT & Digitalisation at Teledoor, explains: "Only a tiny fraction of the work actually involved the task at hand, i.e. design." There was also a mismatch between the amount of work involved and the return it produced in the spare parts business, because this always had to be approved by the design department so that the standard interfaces to the ERP could be accessed. "What's more, we needed to do something, because we were expanding our database unnecessarily," Krämer continues. "Many components were identical and yet had multiple article numbers due to being copied in the PDM system. Finally, an overview and a clear line were lacking, because certain standards were getting lost in a design department of more than 20 people." Interdepartmental communication, for example when changes are made to an order at short notice, was the acid test. "Such changes can lead to complete chaos if data redundancy occurs, too – from creating the order in text form and implementation in a CAD design to information for production, for example," Krämer adds. ▶

Teledoor Melle Isoliertechnik GmbH

- Year founded: 1986
- Sales: EUR 40 million
- Employees: 220
- Managing Partners: Eckhardt Bowenkamp (Senior Partner & Founder), Veit Bowenkamp

If you compare the three-man start-up from the 1980s with today's SME with a global reputation, you quickly realise that it's not its size that has made Teledoor Melle Isoliertechnik GmbH the great company it is. Rather, the success of this classic manufacturer of variants has been due to its determination to supply every customer with the correct solution to the highest standards and never to say "no" to a customer – a mindset that continues to this day. Teledoor Melle Isoliertechnik GmbH,

which is based in Lower Saxony, has been producing chiller and freezer cells and chiller and freezer chamber doors – products that have been tried and tested many times over – for more than 30 years. However, when a business refuses to lower its standards in any way whatsoever in terms of its focus on customers – just as Teledoor has always done – it can encounter problems when it comes to traditional engineering-to-order. These problems can relate to margins, competitive ability or even issues



In the high-bay warehouse: This is where the preliminary products for the cells are stored. They are made from CFC-free foamed individual elements. Tongue-and-groove profiles and foamed hook closures ensure form-fit connections.



Customised production: As a classic manufacturer of variants, Teledoor supplies every customer with the right solution to the highest standards.

FACTS & FIGURES



70%

is the percentage of orders that Teledoor ultimately wants to cover with its “no-touch process”, with the remaining 30% being handled by the design department.



15 min

is the length of time between the product parameters being entered by the sales staff and the start of production.



8 months

is the amount of time it took to launch the configure-to-order process – which is more than three months faster than Teledoor was expecting.

A NEW ERA IN ENGINEERING

So what is the answer? “It quickly became clear that we needed to opt for a disruptive approach if we wanted to make real progress,” says Krämer. This led Teledoor to scrutinise entire process chains more than individual work steps. When looking into variant design in the PDM/ERP segment, Krämer came across Cideon, one of the few system integrators with combined CAD, PDM and ERP expertise. “We were particularly attracted by the Cideon assertion that the engineering-to-order principle does not preclude automation,” explains Krämer. After initial talks, Cideon and Teledoor got down to work straight away. It took them less than eight months to achieve what they had set out to accomplish – a no-touch process from customer enquiry to production, whereby the fully automated design process does not require a single stroke of manual work, at least in the case of configurable standard products. The configure-to-order solution that Cideon and Teledoor got up and running in record time is based on Cideon Conify. This customisable and configurable software solution combines the Teledoor sales and engineering data and integrates the various systems involved, such as ERP, CAD and PDM. In terms of the process, the product is configured by the sales team using the user interface that has been set up. It is then generated automatically in the form of a CAD data set and saved in a PDM-compliant format. This all takes place in no-touch mode, because documentation,

parts lists and work plans are generated automatically and passed on to the order processing and production departments.

DIFFERENT – AND SIGNIFICANTLY BETTER

Although the route taken to achieve configure-to-order was not easy, it was coherent. Teledoor divided the project into three work steps – first, entering the mother elements into CAD, followed by the actual CAD automation via iLogic and, finally, handing over the production documents. With help from Cideon, Teledoor designed the intuitive configurator cockpit for the in-house sales team. After just eight months, the new process “spat out” the first tangible product. This was a pleasant surprise for Krämer. “We had initially scheduled around a year to achieve a productive working environment with full automation,” he explains. “In practice, a member of the sales team goes to a front end in the ERP, enters the relevant product parameters in the user interface and presses a button. In theory, the order can be launched on the downstream machine 15 minutes later, without any further human intervention. In the past, this sometimes took up to two weeks, part-



“We had initially scheduled around a year to achieve a productive working environment with full automation. After just eight months, the new process ‘spat out’ the first tangible product.”

Daniel Krämer
Head of IT & Digitalisation at Teledoor

ly due to delays in the process,” he continues. What’s more, extra work due to changes to an order is now a thing of the past. “And, of course, the design work for 50 percent of our standard products – that’s the current figure – was cut from 100 percent to zero percent. One direct effect is that, by eliminating the time spent on design work, we are now competitive in the freezer cell segment once again. We offer top-quality, precisely dimensioned cells at outstanding prices – whereas some other suppliers only offer off-the-shelf cells that are available in their catalogues.” As

he also explains, Teledoor is ultimately aiming to cover 60 to 70 percent of all orders via the no-touch process, with 30 to 40 percent being handled by the design department. He is keen to emphasise that manual design work is definitely here to stay, even if this is to be reduced to a minimum by means of a hybrid design method called “no touch plus”. The aim here is for the Teledoor design engineers to use the configurator to achieve a 70 percent approximation, before designing the remaining 30 percent – which usually involves much more complicated execution – themselves.

In any event, nobody will be aware of the new design method at Teledoor. Krämer explains: “The process is so seamlessly integrated that no questions will be raised.” In terms of business economics, use of the Cideon Conify solution at Teledoor is already producing outstanding results. “The project was, without a doubt, implemented exactly as we envisaged. The ROI can be achieved within one year – I can see that really clearly on the live dashboard,” says Krämer. He then continues: “We didn’t even use up our entire budget, which is really unusual for projects such as this.” ■



Easy and faster implementation – the Eplan Engineering Standard offers proven templates, examples and best practices.

Eplan Engineering Standard

THE STANDARD GIVES YOU WINGS

Every electrical engineering project requires a project template. Design engineers mostly develop this themselves, which can be a time-consuming and error-prone process. Wouldn't it be better to use predefined standards? Yes, says **Tom Wolff, Head of Eplan Engineering Standard, in an interview** with the German trade magazine "Konstruktionspraxis".

The ultimate aim is to be able to select and download a project and then simply get started!

Text: Birgit Hagelschuer

Mechanical and plant engineering projects are becoming increasingly complex, and the range of software functions is also steadily growing.

Do users have any hope of keeping up?

Wolff: The fast-moving nature of the electrical engineering sector makes this a real challenge. New trends, issues and products keep on creating new requirements. For one thing, software always needs to offer a state-of-the-art solution and the best possible support for electrical design engineering. For another, article data – in the Eplan Data Portal, for instance – has to be available for the engineering

system and include all relevant information. The concept of training still plays a key role, too. The benefits of consulting and training simply can't be underestimated when it comes to mastering these tasks as effectively as possible.

How does Eplan support users?

Wolff: We support our users in a number of ways. For example, we always keep our software up to date for subscription customers. A new version of the Eplan Platform is released every year, with features and functions that support the latest trends and workflows. The standardised article data in our Eplan Data Portal also helps design engineers – so we offer the perfect combination of software, engineering data and services such as consulting.

"You could say we provide users with a basic project. Around 80 percent of the standards are thus already predefined."

Tom Wolff
Head of Eplan Engineering Standard



What actually is the Eplan Engineering Standard?

Wolff: The Eplan Engineering Standard combines all our practical know-how and provides data in the form of standardisation templates, application examples, best practices and industry examples for users to download. In this way, we are looking to help them get started as quickly as possible, with the maximum value creation. In conjunction with the Eplan Data Standard, which has been around for a few years now, we thus create added value for users.

What are the benefits for customers?

Wolff: Our aim is to provide added value for our customers, while also acting as an enabler and partner. To do so, we supply them with ready-to-use examples and initial, simple standardisations in template format – with predefined solutions for getting started quickly. We also exchange knowledge directly with our customers, something that I personally am a big fan of. We are delighted about the level of commitment being shown by our customers and hugely appreciate this type of collaboration.

Where can Eplan users find the relevant information?

Wolff: At the moment, users will find it in our Eplan cloud, on our eplan.com website, but we are planning to gradually make access easier. The Eplan Platform 2024 user interface already has a button taking users to where they can download the data. Looking ahead, we want to increasingly merge everything so that example data is available to users directly from their engineering environment. They will also find standardisation templates, because every new project starts off with a project template. You could say we provide a basic project based on the relevant technical standards and the typical Eplan settings. Around 80 percent of the standards are thus already predefined. The highest configuration level also contains complete industry examples that reflect typical tasks from a variety of sectors.

What industry examples are currently available, and where does the data for them come from?

Wolff: There is currently an example from the building automation sector relating to heating, ventilation

and climate control. It provides a fully engineered project with typical VDI-compliant preliminary planning. Schematics generated using Eplan Electric P8 are also integrated, including the digital twin of a 3D enclosure in Eplan Pro Panel. And at this year's SPS trade fair, we are intending to launch an industry example relating to energy.

Absolutely all the data comes from practical experience – nothing has been invented, as it were. The impetus for projects of this kind is the result of close contact with experts from the relevant sectors, who are also actively involved. What we envisage is that the project could, in theory, be rolled out immediately – in other words, simply make a start, order articles, hand over to the Rittal Application Center and have the enclosure, for example, manufactured.

New customers will definitely benefit most from this service, won't they?

Wolff: Absolutely – new users will benefit because they will be able to work productively with the software in no time at all. However, even existing customers who have experienced all the various versions of Eplan with us will benefit. Even if they have potentially worked hard to develop their own standardisation templates, they will often still find a good tip in these examples. ■

Creating added value

1. **Application examples** for specific insights into how typical tasks can be implemented in Eplan
2. **Practical templates for basic or macro projects** as an initial basis for working in a standardised way
3. **Access to typical project examples** that are frequently used in a variety of sectors
4. **Best practices as suggestions** for the systematic implementation of specific software functions

NEWS



DEBORA FOUNDATION IN INDIA

Help is growing

“Something is happening. Something is growing – especially people’s trust in the Foundation and in us,” says Dietmar Roller. During the past year, Roller, who is CEO of the International Justice Mission, and Rainer Reissner, Managing Director of the Rittal Foundation, travelled together to Bangalore. For the last three years, they have been working with a local team to expand the Debora Foundation’s projects in India. The vision of this Foundation, which was set up in 2019, is to give children and young people from disadvantaged backgrounds the chance to get an educa-

tion. In addition to providing ongoing emergency aid for landless people, the Foundation also provides tutoring for children from educationally deprived backgrounds. There are also projects such as stitching schools, where women from particularly disadvantaged backgrounds learn how to make school uniforms and other items of clothing. At the end of the course, they are given their sewing machine free of charge and, along with it, the chance of a better future. “In some cases, these women then earn more than their husbands and generate sufficient income to feed their entire family.” There’s also news about another crucial project of the Debora Foundation, namely the construction of a school for children and young people from disadvantaged backgrounds. The plot of land for the new school has been purchased. Building work is scheduled to start in February – and the concept for the project will be developed in parallel with it. Feasibility studies are already being conducted locally in collaboration with a university in Bangalore so that the education offered can be optimally geared to the young people and their future.

Facts & figures

- **500 people** with no fixed abode are being supported with emergency aid in camps
- **600 children** are currently being helped with tutoring
- **90 women** so far have successfully completed a sewing course

SUPPORT FOR THE AHR VALLEY

Continuing the journey together

Ever since the catastrophic floods of 2021, the Rittal Foundation has been providing support for people and projects in the Ahr valley and helping with the rebuilding work. Immediately after the disaster, the Foundation made an initial donation of 930,000 euros to help the victims of the flooding – thus launching the biggest fundraising campaign so far in the Group’s history. A further donation of 112,500 euros has now been made from this fund. According to volunteers such as Nick Falkner (30) and Mario Falkner (51), this support is urgently needed. As Nick points out: “The task we are still facing here is enormous.” He goes on to explain that rebuilding is going slowly, with understaffed authorities, bureaucracy and a shortage of skilled tradespeople all obstructing a return to normality. This father-and-son team set up the donation distribution centre of the Ahrtal Foundation, whose projects the Rittal Foundation is now supporting with funding of 25,000 euros. With more and more victims of the flooding now moving back into their homes, there is a particular need for furniture and electrical equipment. A special highlight of the project is that victims just need to register in the online portal once to gain access to all the goods the donation distribution centre currently has in stock.

€ 25,000

DONATED BY THE RITTAL FOUNDATION TO STIFTUNG AHR TAL



Managing the Ahrtal distribution centre: Nick Falkner (centre), Mario Falkner (r.) and Till Bauer (l.).

DONATION OF 10,000 EUROS FOR THE COMMUNAL KITCHEN IN CJD GERA

More room for apprentices

The Rittal Foundation – the charitable foundation of the Friedhelm Loh Group – is increasing its commitment to the region around the Rittal and Stahlo sites in Thuringia. Its donation of 10,000 euros to the Christliches Jugenddorfwerk Deutschlands gemeinnütziger e.V. (CJD) in Gera is making dreams of additional living space in the newly built residence come true. “The timing couldn’t be better,” says a jubilant Stoyan Dimitrov when the cheque is officially handed over. The accommodation available in the CJD vocational training centre in Gera was expanded at the start of the new training year. Part of the training hotel was converted into residential accommodation and living space comprising ten single rooms, each with en-suite facilities. “This new area has specifically been set up to offer trainees who have a special need for a private space somewhere they can retreat to. At the same time, it is an ideal



addition to the facilities on offer for participants in the independent living scheme,” Dimitrov explains. The large communal kitchen will be at the heart of the new accommodation. Best of all, the young people have even designed the kitchen themselves. The new kitchen will be installed in the coming weeks in close collaboration with the companies involved in providing the vocational education.

A € 10,000 donation in aid of the CJD vocational training centre in Gera. Pictured at the handover of the cheque (l. to r.): Oliver Sonst (Stahlo Gera), Marion Hamann (Rittal Gera), Rainer Reissner (Rittal Foundation), Maxi Süß (Head of the Vocational Education and Rehabilitation department), Stoyan Dimitrov (General Manager of CJD Saxony/Thuringia, Managing Director of the CJD vocational training centre in Gera) and Charlie Simon and Linus Zimmermann (apprentices at the CJD vocational training centre in Gera).

FRIEDHELM LOH GROUP SUPPORTS BIKE TOUR FUNDRAISER

The motive? Hope!



Major anniversary for the “Menschen für Kinder” (People for Children) association’s bike tour fundraising event It was the 25th tour. The association uses the proceeds to help children and young people with cancer and leukaemia. As the main

sponsor, the Rittal Foundation – the charitable foundation of the Friedhelm Loh Group – made a donation of 50,000 euros. The start and finishing point of the fundraising bike tour was the Rittal headquarters in Herborn, so it was from here that the 500 participants

set off on their tour. What motivates them? The chance to give the gift of hope. Their “reward” is the four million euros that the association has raised with this event in the last ten years alone. This money is specifically used to support individuals and children’s hospitals all over Germany. It means vital equipment can be purchased, research projects can be funded and urgently needed treatments can be carried out. Every single euro counts – and makes a noticeable difference to the lives of affected children and their families. This is all made possible thanks to the efforts of many volunteers. Prof. Friedhelm Loh, owner and CEO of the Friedhelm Loh Group, particularly highlighted the commitment of these volunteers when handing over the donation. “Voluntary work plays an extremely important role in Germany and yet is rarely given the recognition it deserves. I would therefore like to pay tribute to your commitment.”

€ 50,000

DONATED BY THE RITTAL FOUNDATION TO “MENSCHEN FÜR KINDER”



How do you get people fired up about technology? You do what the "Nationaleles Automuseum The Loh Collection" does, and captivate them with impressive exhibits.



With its numerous individual pieces, the museum is home to one of the world's most exciting car collections. For example, the special exhibition "100 years of 24h Le Mans" offers a spectacular showcase, the likes of which has never been seen in Germany (exhibits are shown in both pictures on this page).



The first Mercedes 300 S roadster ever made.



PASSION ON WHEELS

The opening of the Nationaleles Automuseum has made waves. A hundred thousand horsepower met with a rapturous response in the press. There was talk of a "Louvre for the car", "the most spectacular museum for automobiles" and a "new site of pilgrimage in Germany's museum landscape". However, it isn't just car lovers who are cutting a path to Dietzhöltal in Central Hesse. **Now students are coming, too.**

Text: Sarah Benschmidt

In the spotlight – 150 stars took centre stage at the official gala opening of the Nationaleles Automuseum – The Loh Collection. This was back in early July. Since then, these 150 rare and exceptional talents have been stunning museum-goers of all ages. However, they are not flesh-and-blood celebrities, but rather marvels made of steel and rubber. Summing up the museum's first summer, Florian Urbitsch, who is Managing Director of the Nationaleles Automuseum alongside Tobias Reichle, has nothing but good news to report:

"We've had a full house practically throughout. You can see by their faces as they walk out of the museum just how impressed people are." Almost 30,000 visitors have come to the museum since it was opened. "We couldn't be happier." November sees the launch of the next major drive to get people through the doors, although this time it is students who are lining up. Let's

go back to the beginning though. After all, the collection that greets visitors as they explore 7,500 square metres of motoring history – and which up-and-coming talents have been able to research since November – started out as a dream.

In 1956, a visitor pulled up outside the Loh family home in a silver Mercedes 190 SL roadster. "That image was seared into my mind," recalled Professor Friedhelm Loh at the opening ceremony of the Nationaleles Automuseum. "I just couldn't stop thinking about that car." In the 35 years since then,

the entrepreneur and owner of the Friedhelm Loh Group has been quietly collecting icons of automotive history. The decision to put them on public display was a deliberate one. "I want to share my passion for technology and do my bit to encourage young people to develop the same sense of fascination." After all, as he says, his initial dream has evolved. It started with the car of his childhood memories – then came the passion for collecting. "My dream now is to turn this museum into a centre for learning."

A VISION THAT HAS STUCK

That dream has been a long time in the making. After the untimely death of his father and the company's founder, Rudolf Loh, he took over his parents' company. Aged 27 at the time, he set about building the foundations that Rittal stands on today as a global player and leading innovator. The silver Mercedes roadster of his childhood dreams slipped from his mind. For a while. "The company and its employees always came first and that remains the case," says Prof. Loh. Later on, in the early 1980s, he finally realised his old dream of owning a 190 SL – only to be left disappointed. "It was a disaster. At first sight, it looked great, but

"I had the opportunity to become a successful entrepreneur with the help of the people here, so I want to give something back and add to the region's appeal."

Prof. Friedhelm Loh

Entrepreneur and the museum's founder

OPENING TIMES

The permanent exhibition is on a winter break until April 2024 but is available for events and guided tours.

The special exhibition "100 years of 24h Le Mans"; the history workshop, restaurant and shop are open all year round.

You can find the opening hours of the museum & shop and restaurant & diner and all the latest news online at www.nationalesautomuseum.de

when you got under the bonnet you could see that rust had eaten through it." Nonetheless, his passion for cars was not diminished. "I don't give up on my visions that easily," he says, with a smile. The Nationaleles Automuseum proves that. He sold the 190 SL and initially specialised in Mercedes models. However, he quickly took an interest in "all the achievements of engineers and designers that had been outstanding in their time." Back then, the pieces he collected were housed in one of the former factory workshops in his home town, which are now being used to showcase the spectacular exhibits as part of the museum. As Florian Urbitsch leads the way through the lavishly restored exhibition rooms, reeling off the HP of almost every exhibit and recounting its illustrious past, you almost feel like you might glimpse Henry Ford himself waving at you from behind the wheel.

CARS THAT HAVE MADE HISTORY

Visitors find themselves walking among cars that have made history. There is Michael Schumacher's first World Championship Ferrari, US President John F. Kennedy's Lincoln Continental, a Benz Victoria with sun canopy (unrestored) that has had prominent owners including the Benz family itself, and the record-breaking Maybach Exelero, only one of which was ever made. The largest of the museum's rooms contains 30 sports and racing cars that are arranged next to each other and one on top of the other in a display unit that fills an entire wall. Dozens of dream cars from the post-war economic boom era are lined up end to end on a steep curve while, in another exhibit room, the stars of the 24 Hours of Le Mans race are parked up for inspection. ▶

MORE HP FOR STUDIES

How the Nationales Automuseum is being turned into a university campus and centre for learning.

The concept behind the Automuseum rests on three pillars. It has been created as a centre for learning that reaches out to children, school pupils, students, adults and senior citizens equally. It aims to be a place of learning and inspiration for everyone.

EXPERIENCE CAMPUS

- e.g. learning stations
- Media library
- Interactive applications



UNIVERSITY CAMPUS

- e.g. qualifications
- Teaching
- Science
- Research



LEARNING CAMPUS

- e.g. seminars
- Events
- Workshops
- Camps

THE MUSEUM AS A SIGN OF COMMITMENT TO THE REGION AND A CENTRE FOR LEARNING

The press are in agreement that the exhibit “would not even be out of place in Munich or Berlin.” However, Prof. Loh is clear that the museum has been set up in his home town of Ewersbach both as a commitment to the region and as part of a concept to turn the museum into a centre for learning. “I was born here and had the opportunity to become a successful entrepreneur with the help of the people here. I am very grateful for that, so I want to give something back and add to the region’s appeal.” Prof. Loh is also keen to show that, as a location for business, the region has truly fascinating technological credentials. Visitors can see this for themselves in the history workshop, for example, which is an installation that encapsulates the region’s industrial history, focusing in particular on “2,500 years of iron smelting in Dietzhölze and Dill”. The history of Rittal, the largest company in the Friedhelm Loh Group, tells the same story.

The Nationales Automuseum is a testament to engineering, technology, the region and the future – and it links together all



“Helping to explain technology, inspiring through education – this is the perfect place for precisely that.”

Prof. Jochen Buck
Academic Director of the University Campus at the Nationales Automuseum

these major themes. It is not just about admiring automobiles, it is about researching them, being inspired by captivating technology, sharing knowledge, and thus helping to open up new educational avenues. As Prof. Loh sees it, the museum – and by extension the history of the automobile – also embodies people’s lives as well as progress, inventive spirit and innovation. “My goal is to use the captivating appeal of automotive technology to inspire young people to engage with technology as a subject and with exciting educational opportunities,” says Prof. Loh.

“WORKSHOP” FOR EDUCATION

This is why the museum is also being run as a centre for learning. The first major steps in realising new educational routes have already been taken, with the opening of a university campus under the academic direction of Prof. Jochen Buck from Nuertingen-Geislingen University of Applied Sciences. For example, students can study how to appraise vehicles based on scientific standards, there are plans for a professorship in motor vehicle history, and work to prepare modules for a Master’s course is

well underway. What’s more, the campus has secured Prof. Wolfgang Henseler, one of Germany’s highest-profile design experts, to run a certified course in automobile design. Further collaborations with schools and universities are in the pipeline. “The professional curation of the collection makes the museum really interesting for research and teaching purposes,” says Buck, who is also a leading accident research expert in Germany. Student engineers can now scrutinise “Benz Viktoria” and the other vehicles during block seminars, carry out research live on exhibits, and relate the theory they have learned from lectures on the automotive and mobility economy to the collection of exhibits at their new university campus. The students are in the museum – and local students have already signed up, too. What started out as a dream has become a reality. ■

DID YOU KNOW?

The museum is a charitable foundation, meaning the founder has transferred the assets to “Stiftung Nationales Automuseum The Loh Collection” and these assets must be retained for the long term to provide a core collection. Funds and donations from the foundation’s day-to-day operations will also be used exclusively for charitable purposes. What’s more, a friends’ association called LCCM – The Loh Car Collection Members’ Club – is to be set up in the future.

Four questions for...

Prof. Jochen Buck from Nuertingen-Geislingen University of Applied Sciences (HfWU)

01 Prof. Buck, the number of students signing up for technical courses is dropping slightly. Is this collaboration with the museum also an attempt to get people more inspired about technology?

Prof. Jochen Buck: Absolutely. That’s one of the main aims of our educational offerings. We could do with getting more students on technical courses, and that’s what we’re working on together here. Helping to explain technology, inspiring through education – the Nationales Automuseum is the perfect place for precisely that.

nities and synergies when it comes to research are enormous.

03 What tangible form do these teaching concepts take, for instance in relation to automobile design?

Prof. Buck: In order to understand how the design process for a vehicle comes together, or where technological innovation will take that process in the future, you need to have theoretical know-how that is backed up by practical work. That’s why students are given the unique opportunity to conduct research directly on selected vehicles in the Loh collection.

02 In very specific terms, what is it that makes this collaboration with the Nationales Automuseum stand out?

Prof. Buck: We can offer globally unique courses here, such as the “Certified Expert for Car Design” course. This course gives students an insight into the automotive design of the past, present and future – something they’d normally only get if they were on the management board of a major automaker. Most other car collections aren’t suitable for what we want to do because they’re based on a single brand, for example. We have a hugely diverse range of exhibits here. The opportu-

04 Looking to the future, what other plans are there?

Prof. Buck: Besides the courses that are already starting this semester, we also have a new Master’s course and a professorship in the pipeline. We are working on collaborations with local schools, too, and are planning to run general further education seminars on topics related to the technology, history and design of automobiles. The Nationales Automuseum is to be a place of learning and inspiration for everyone. That’s our vision.

Many thanks for talking to us!





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Performance for large-scale projects

A company with more than 40 years of experience in switchgear manufacturing can still be surprised from time to time. The System Engineering division of Beckhoff Automation, which implements customer projects worldwide for a large variety of equipment and machinery, was certainly

surprised when, around five years ago, it received an enquiry for the series production of complete machine control systems for consumer electronics testing equipment. The concept envisaged the possibility of controlling 20 different machine types with one “generic” solution. The major challenge

was that several thousand control systems were needed within just a few months. When setting up the requisite series production, the company turned to the suppliers who would be able to deliver the specified numbers of the necessary components with utter reliability. When it comes to the enclosure technology, Beckhoff is putting its trust in specialist Rittal, which can not only guarantee the necessary delivery reliability, but can also accommodate project-specific modifications to the enclosures.

Find out more in the next issue of be top!

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“I knew from an early stage that my passion for energy would define my career.”

Felix Müller
Energy Manager of
the Friedhelm Loh Group

One manager for “future energies”

People of the Friedhelm Loh Group: Felix Müller is in the right place at the right time. As the Energy Manager of the Friedhelm Loh Group, he is in charge of increasing the use of renewable energies at the company’s sites worldwide and reducing their carbon footprints. This is a responsible and future-oriented role – and he has invested a great deal of his own energy in working towards it. In 2017, he started out as a mechanical engineering dual work/study programme student at LKH, where he worked in production technology. Even then, he knew his passion for energy would define his career and he completed a master’s degree in energy technology. And now, after just a few years in the Group, this energy manager is in the precise area where important changes are being made.

In 2019, the Friedhelm Loh Group nailed its colours to the mast and announced its intention to reduce its carbon footprint by 60 percent by the year 2030. A great deal has already happened since then, and the Group is well on its way to achieving its target. However, as far as Müller is concerned, it’s not just about figures and targets written down on paper – he attaches far more importance to his employer’s clear commitment and pragmatic approach to ensuring its actions speak louder than words. For example, the Group is pressing ahead with the expansion of photovoltaic systems at its sites worldwide and consistently implementing measures designed to increase energy efficiency and reduce the carbon footprint. “We are aware of our responsibility to the environment and society

in which we live. We want to play a part in shaping and improving it.” This is one of the principles of the Friedhelm Loh Group. There is therefore a lot of momentum helping Müller in his day-to-day work. However, for this manager of future energies, this principle is above all precisely the mindset that industrial companies need as they negotiate their way through a historical transformation process.



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