

**Rittal – The System.**

Faster – better – everywhere.

# Driving into the Future

Rittal Solutions for the Automotive Industry



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES



FRIEDHELM LOH GROUP



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## One for all. Especially for you. “Rittal – The System.”

With tailor-made products, modern IT infrastructures and comprehensive service, Rittal offers specific solutions for every industry – for improved efficiency, greater added value and more security.

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Rittal offers complete system solutions for the automotive industry. Robust and functional, they satisfy all sector-specific requirements.

**Which products can be used in a press line with vibrations?**

**Which products comply with car manufacturers' operating equipment specifications?**

This brochure showcases our complete product portfolio for the automotive industry.

## **Rittal – The System.**

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# Rittal – The System.

## At home in every industry

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Rittal is one of the world's leading system providers of enclosures, power distribution, climate control, IT infrastructure and software & services. Rittal has a global presence, employing around 10,000 people across 64 subsidiaries.

For more than 50 years, Rittal has been setting trends with perfectly coordinated enclosure system solutions. Its broad portfolio also includes infrastructure solutions for modular, energy-efficient data centres using tried-and-trusted concepts for the physical protection of data and systems. Leading software providers Eplan and Cideon enhance the value chain with customised engineering solutions, and the range is rounded out by automation solutions for switchgear manufacturing from Rittal Automation Systems.

System solutions from Rittal are used throughout almost every industry, especially those with exacting requirements in terms of materials, energy efficiency and powerful IT needs.

Rittal develops tailor-made solutions to meet the specific demands of the automotive industry. The other companies in the Friedhelm Loh Group complete our offering with automotive industry-specific solutions.

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Every industry has its own specific needs. Knowing just what these are is the only way to offer a system that fits. A solution that combines both universal and specific aspects and which is both cost-efficient and customised. It not only does justice to one industry, but also meets a very special requirement – **Yours.**

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# Custom-made solutions



## Aviation industry

Safe solutions for the aviation industry



## Automotive industry

Standardised system solutions that ensure operational reliability and efficiency



## Process industry

Integrating innovative technologies into demanding processes



## Energy sector

Making modern energy supply efficient and flexible



## Infrastructure/ Telecommunications

Optimising bandwidth and availability



## Railway technology

Setting the points for the future with Rittal



## Electrical engineering and automation

Automating panel building and switchgear manufacturing, increasing productivity



## Mechanical engineering

Controlling machines safely and efficiently



## Maritime industry

Flexible on land and on the high seas

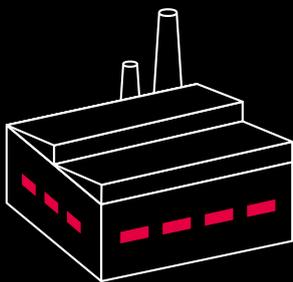


## Food and beverage industry

Producing food hygienically and safely

# Rittal solutions in the car factory: From facility management to the paint shop

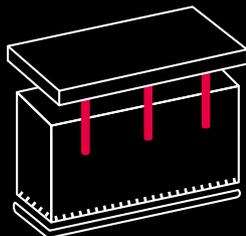
Automotive manufacturers divide their production into component manufacturing and vehicle manufacturing. While gearboxes, axles and cast parts etc. are manufactured in component factories, the vehicle production plant is dedicated to the body shop, paint shop and assembly. Reliable technology for power supply, process control, communication and monitoring is essential for guaranteeing quality, efficiency and productivity. As partners to the automotive industry, Rittal supports the entire vehicle production process with flexible and adaptable system solutions that provide an excellent cost-benefit ratio, with the added advantage of minimal planning and assembly work. Manufacturing complex parts in large quantities calls for smart control and cost-optimised operation across every area of the car factory.



1

## 1 Facility management

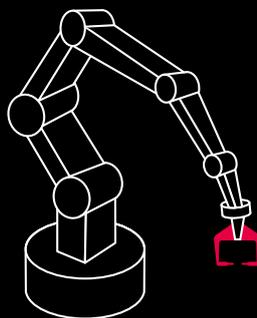
Rittal can offer the perfect enclosure solution, for example, for lighting, gate control systems, access control, climate control, ventilation equipment and IT infrastructure.



2

## 2 Press shop

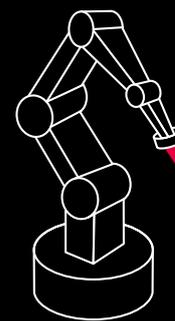
Modular enclosures, climate control and power distribution solutions from Rittal are designed to withstand the high dynamic loads in the control of large-format presses.



3

## 3 Car body shop

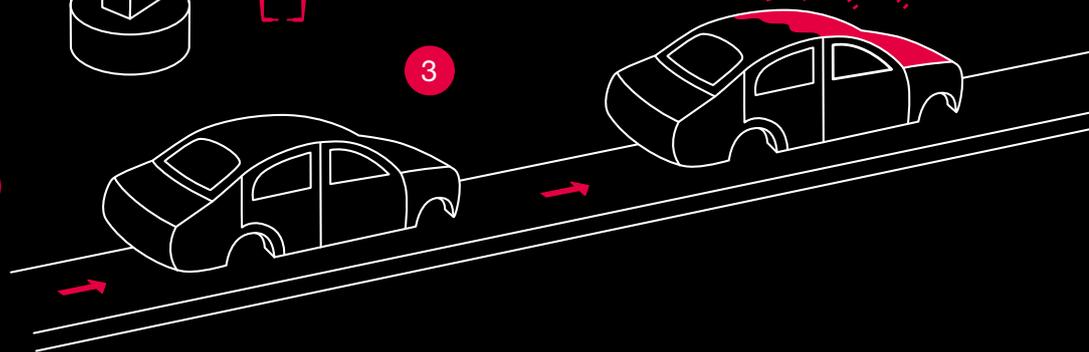
Rittal has a range of small and compact enclosures for field bus modules and Ethernet networks to securely house the robot controllers, as well as large enclosures to accommodate the PLCs.



4

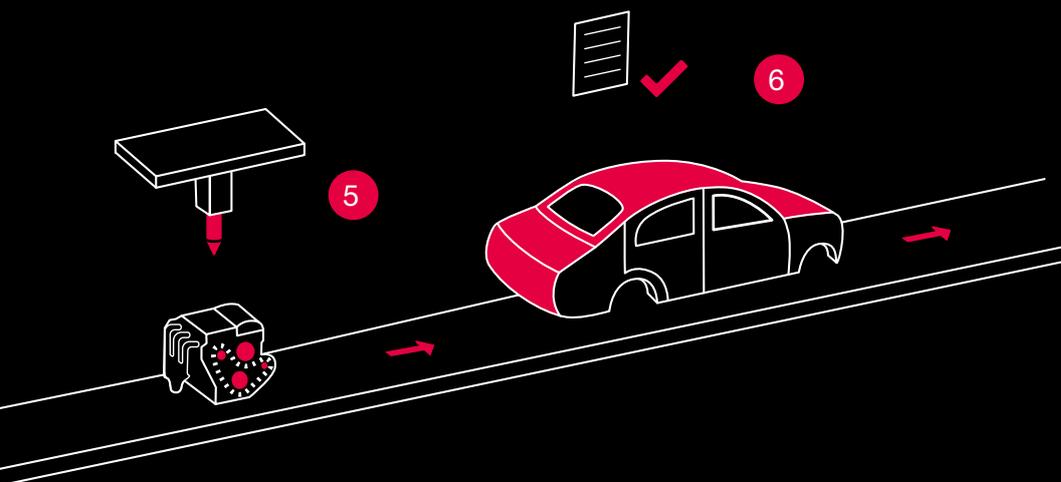
## 4 Paint shop/assembly/conveyor systems

Low-voltage switchgear and power distribution components from Rittal guarantee an effective power supply. Innovative enclosure and cooling solutions underpin process automation.





The global availability and high quality of Rittal's products ensure trouble-free production. In addition, extreme working environments such as polluted, contaminated, dusty or oily air and high ambient temperatures often can exist, particularly in component areas, which can affect and impact sensitive control systems. A high level of operational reliability is guaranteed with Rittal enclosure and climate control solutions.



# 90 million

passenger cars and commercial vehicles

were produced worldwide in 2019.<sup>1</sup>

**5 Engine production/foundry**

For areas exposed to heat and oily environments, Rittal offers reliable power distribution and enclosure climate control solutions with high protection categories.

**6 Quality testing**

Rittal enclosures and power distribution components effectively optimise power supply and test bench control.

<sup>1</sup> Source: Statista, development of global car production, 2000 to 2019

# New trends, new opportunities – The automotive industry is entering a new era

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The automotive industry is undergoing the biggest-ever upheaval in its history. Prompted by the transformation of mobility trends and the demands of electromobility, the sector faces a plethora of new requirements. The 'what' and 'how' of car manufacturing is changing. The key drivers of this transformation are:

- Reduced carbon emissions and climate-neutral production
- Industry 4.0
- Digital and modular production
- Enhanced security and efficiency through standardisation
- Global capacity management and networking through increased IT infrastructure and computing capacity
- Electromobility, including the development of a nationwide charging infrastructure
- Establishment of new business areas, such as battery cell production

This transformation influences both manufacturers and suppliers, especially in the mechanical and electrical engineering sector. To remain competitive, the industry must adopt new approaches, upgrade its manufacturing processes, and seize the opportunities afforded by innovative technologies. As an experienced partner, Rittal supports and furthers the automotive sector with customisable, future-proof products and reliable services.



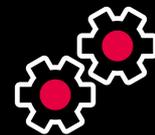
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Electromobility demands fresh ideas and approaches. As a solution partner to the automotive industry, Rittal's innovative, standardised and reliable industrial equipment and IT systems support the automotive industry at every stage in the value chain.

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#### **Standardised processes boost productivity**

In the face of fierce competition, car manufacturers must impress customers with quality, while at the same time manufacturing cost-efficiently. Rittal's secure and reliable solutions can help.



#### **Enhanced efficiency with DC technology**

Energy-saving production and the related efficiency gains are key competitive factors, especially in automotive production. As a technology partner, Rittal works closely with clients to shape new energy concepts.



#### **Sustainable, legally compliant production**

Boost sustainability by reducing carbon emissions, as required by the F-Gases Ordinance: Rittal Services can help to minimise carbon emissions and ensure the operational reliability of your climate control solutions.



#### **Broader business segments**

With specific enclosures and climate control solutions, Rittal facilitates the development and expansion of battery production.



#### **Expanding the charging infrastructure**

Rittal's modular system technology offers the perfect solution for setting up charging parks and therefore supports the expansion of the much-needed charging infrastructure.



#### **Reliable, secure digitalisation**

Enhanced productivity and new mobility concepts call for a reliable IT infrastructure and powerful data networks. Edge data centres from Rittal offer optimum performance and scalability for the future.



# Standardisation: Global use, fast availability



Progressively increasing globalisation and fierce competitive pressures pose immense challenges for the automotive sector. How can we produce high-quality, fault-free vehicles locally and flexibly in all corners of the world? Standardised production plants and operations provide the answer. The relevant standards are, for example, set out in equipment regulations, approved material lists and specifications.

## The benefits for you:



A selection of our products and automotive-specific solutions can be found on the Rittal website at [www.rittal.com/automotive](http://www.rittal.com/automotive)

- Listed in the equipment specifications of the top car producers
- Global use of the correct products is ensured
- Use of identical systems e.g. by maintenance specialists
- Reduced diversity of spare parts
- Available off the shelf, within 24 hours<sup>2</sup>

As partners to the automotive industry, Rittal's products and services are available worldwide, spanning factories and national borders. With scalable, flexible system solutions such as large VX25 enclosures, small AX/KX enclosures, Blue e+ cooling units plus secure power supplies, reliable IT architectures and other specified products, Rittal supports the industry worldwide and across all application areas.

<sup>2</sup> Within Europe

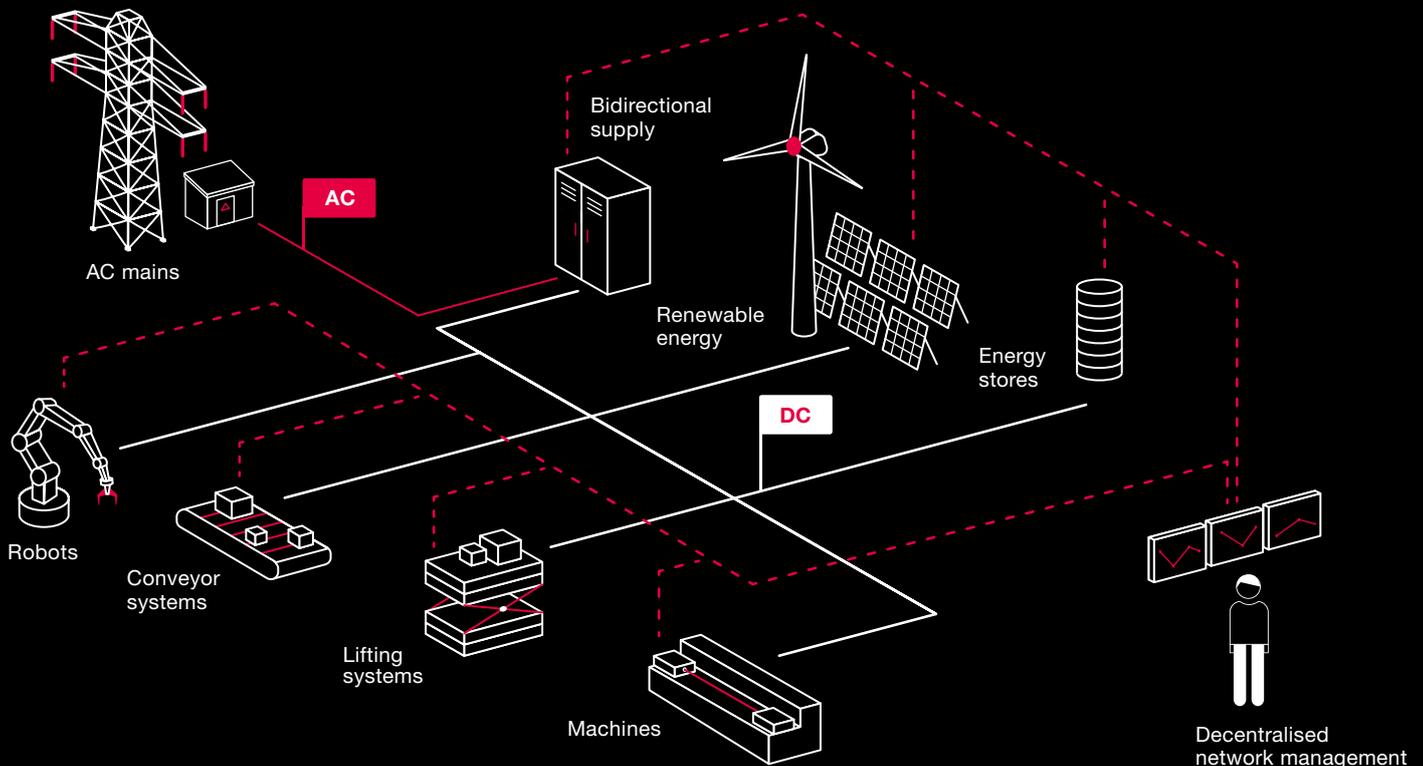
# DC technology: Energy-saving, efficient manufacturing

The electrical equipment in your plant needs DC current, and that includes the robots. In a DC network, electricity generated from renewable energies can be fed directly into the production system, boosting energy efficiency by 10–20%.

The Areus project<sup>3</sup> sets out to research and test energy-saving production processes in an intelligence-controlled DC network (Smart DC Grid) under real-life conditions. Rittal is a technology partner to this project and contributes vital expertise with its cooling and IT solutions.

- In the pilot plant, Rittal Blue e+ cooling units were operated for the first time with a DC voltage of up to 650 volts. They provide the necessary cooling capacity to ensure smooth production operations.
- To boost efficiency by up to 20%, the plant control and monitoring is to be automated in future. The ambient temperature, humidity and energy data is systematically measured and analysed by the Rittal IoT interface – a key requirement for optimum operation of the systems.

**50.4**   
**billion kWh**  
was generated  
from photovoltaic  
plants in 2020.



<sup>3</sup> Areus: Automation and Robotics for European Sustainable Manufacturing

# Blue e+ technology: Clean manufacturing and reduced CO<sub>2</sub>

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The automotive  
industry in Europe  
could achieve around

**500 MW**

of **energy savings**  
with **energy-efficient**  
**cooling units.**



To minimise the consequences of climate change, we must reduce our carbon footprint. Sustainable process and production management is, therefore, a must for the automotive industry for several reasons: statutory legislation – for example, the new F-Gas Regulation must be complied with. This European-wide regulation calls for a gradual reduction in climate-damaging emissions. Climate-friendly Rittal Blue e+ cooling units can help to achieve this, with average energy savings of 75%. Alongside the required reduction in carbon emissions, energy efficiency also helps to cut costs and is therefore doubly valuable to the automotive sector.

Rittal offers efficiency and service checks together with an analysis of installed Blue e+ units, including guidance on the performance and efficiency of equipment, a presentation of energy costs and specific energy-saving proposals.



# Rittal Service: Optimum maintenance ensures systems are always operational

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The reliability of machinery and equipment is crucial in the automotive industry. Rittal Smart Service maximises machine availability by minimising machine downtime. Our after-sales service provides optimised maintenance of cooling and climate control systems and rapid assistance in the event of a malfunction. More than 1,000 qualified technicians are deployed at 150 locations worldwide to help us meet our promise. The same applies to Blue e+ cooling units and Blue e+ chillers which are interconnected with your monitoring, energy management and superordinate systems. Benefit from the Rittal Smart Service.

#### What we offer:

- 150 locations worldwide
- More than 1,000 qualified service engineers
- 24-hour availability

#### How you benefit:

- Optimum system availability
- Global dependability
- Maximise your potential savings



**Rittal Service**  
is **on call**  
for its customers

# 24/7.

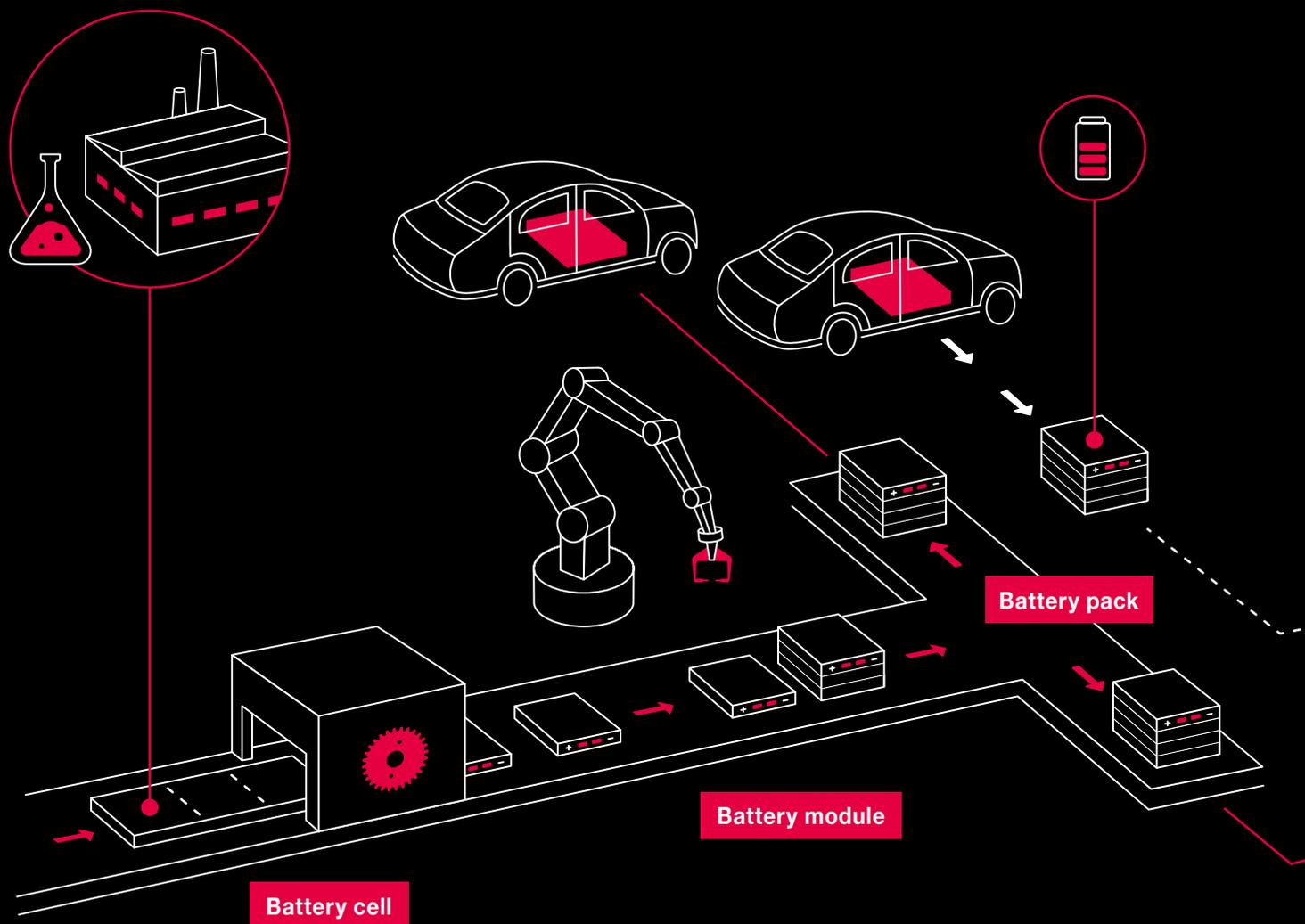
# Battery production: Reliable manufacturing, powerful performance

The **traction battery** in an electric car accounts for approximately

**35%** of its **value-added.**

The traction battery plays a pivotal role in the electromobility breakthrough. Traction batteries are powered by heavy-current, deep-cycle accumulators which emit and absorb electrical energy depending on the driving conditions, are capable of withstanding numerous charge/discharge cycles, and ensure maximum space and weight savings.

Highly automated production technology is crucial to the market launch and optimisation of battery cells. For this production process where speed, cost and quality are paramount, Rittal offers ideal system technology consisting of enclosure solutions, climate control and power distribution.



# Energy stores: Reliable storage, available on demand

With renewable energy accounting for a growing proportion of the power supply and trends such as electromobility, energy storage is becoming ever more important. Within the next ten years, energy storage systems are poised to evolve from a marginal product to a mass phenomenon. Energy storage systems are also being installed in manufacturing companies to ensure an uninterruptible power supply (UPS) for sensitive processes and reduce the overall energy costs by avoiding peak loads.

## Second-life use for batteries

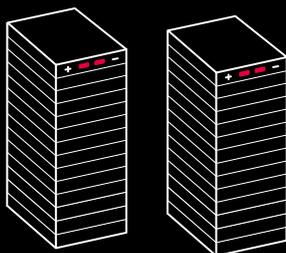
If a car battery's performance starts to diminish, it can be reused as an energy storage system as a second lifecycle. Rittal's flexible, scalable modular system makes it easier to assemble energy storage systems with added flexibility.

### The benefits for you:

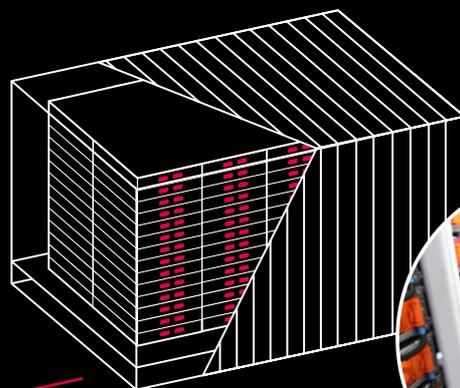
- Various indoor and outdoor solutions right through to fully pre-assembled, bayable battery storage containers to accommodate the entire energy storage infrastructure
- Standardised modular system for 482.6 mm (19") battery types plus rails and heavy-duty shelves for other battery options.
- A tailored climate control and power distribution with product range to suit your application



2nd life use

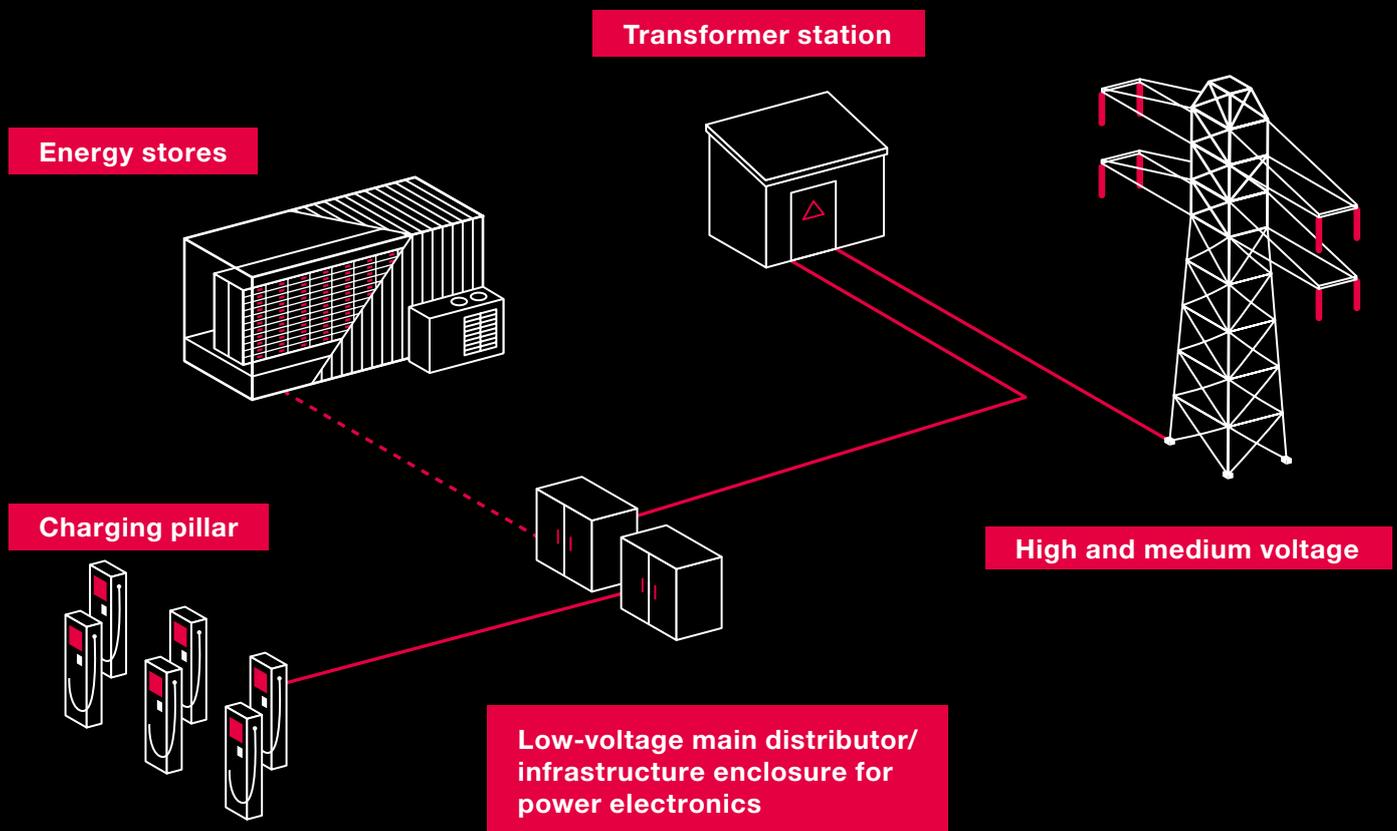


Energy storage rack



Energy storage container

# Charging infrastructure: Excellent protection, perfection from day one



## Solutions for the charging infrastructure

Charging stations for electric vehicles are usually comprised of a transformer station, depending on the design an outdoor battery store, a low-voltage main distributor, plus infrastructure enclosures for the power electronics and the charging pillars themselves.

Rittal offers the perfect solution for all these components.

- Efficient system expansion potential resulting from Rittal's enclosure frame profile and modular technology – from mechanical components through power distribution to climate control
- Double-walled outdoor enclosures for optimised weather protection
- Sophisticated climate control solutions providing the optimum temperature and constant, weather-independent heat distribution for powerful charging stations

With their extensive range of accessories, all Rittal enclosures offer the benefits of a modular system. Installation of all mechanical and electrical components, power distribution and climate control equipment is possible.



According to  
the International  
Energy Agency,  
there were some

# 1 million

public charging points  
available worldwide

by the end of 2019.<sup>4</sup>

### Charging station types

A charging station may be comprised of charging pillars in the form of “all-in-one” (decentralised) enclosures, with the charging management system accommodated directly in the charging pillar. Alternatively, the charging points may be designed simply as front-end enclosures. In such cases, at least one back-end (central) enclosure is needed for power supply.

### The stand-alone solution includes:

- Standard enclosure system
- Optional accommodation of power electronics
- Climate control
- Power distribution
- Premanufactured standard holes, bolts or cut-outs
- With optional viewing window
- With optional added security due to a special protection rating (from RC2)
- With optional pre-installed accessories

This typical charging station layout is also used for buses. Charging at bus stops is somewhat different, as this generally uses a pantograph system. At the bus depot, on the other hand, electric buses are charged overnight at charging pillars.



<sup>4</sup> <https://europe.autonews.com/automakers/ev-charging-stations-pass-1-million-mark-globally>

# Rittal ePOCKET: Smart Wiring Plan Management

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Paper documentation is a thing of the past, thanks to the Rittal ePOCKET digital wiring plan pocket. With Rittal ePOCKET, every enclosure in the VX25, VX SE, AX and KX series has its own place in the secure cloud, where all documents can be accessed digitally using the QR code on the enclosure. Access rights can be granted to any project contributor at the owner's discretion.

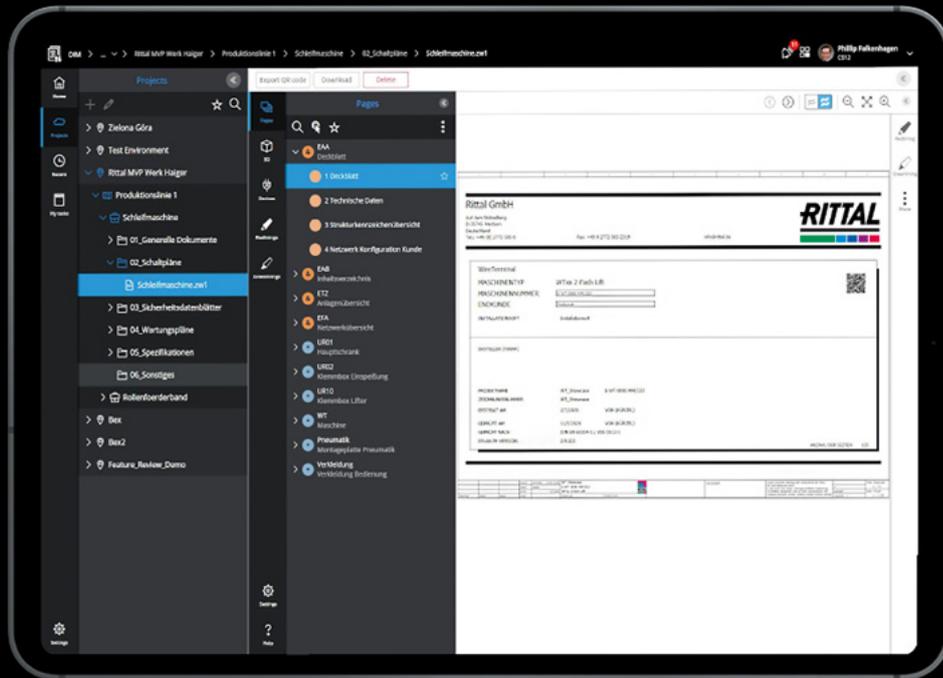
This saves paper, carbon emissions and time with your machine and plant documentation, thanks to a fully digital process at every stage, from generation of the wiring plan through to simple documentation in the Rittal ePOCKET. It also offers future collaboration potential with switchgear manufacturing and operation.

## Digital wiring plan management with Rittal ePOCKET

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The QR code links physical Rittal enclosures to the digital wiring plan pocket in the EPLAN cloud environment, where all project-specific wiring plan documentation is quickly and conveniently stored.



### The digital wiring plan pocket for everyone

The digital twin in the digital wiring plan pocket is a living replica of the actual enclosure. Any changes are easily documented and error-free. Future tracking options will soon allow operators, planners, switchgear manufacturers and maintenance personnel to remain permanently in contact with one another and in business via this new channel.

Simply scan the linked Rittal QR code for faster, easier access to all wiring plan documents. As well as facilitating communication between internal employees and external companies, this fully digital process also helps to conserve resources by making paper documentation obsolete. As an added bonus, integral EPLAN eView workflows allow the rapid identification and elimination of errors.



By **2028**,  
digital twins will  
become **the norm**  
when **developing**  
**IoT applications.**

### The benefits for you:



- Clearer overview thanks to central storage
- Fully digital process for a faster workflow
- Error-free working as documentation is always up to date
- Continuous tracking of changes, including notifications
- Easy access to comprehensive machine/plant documentation

# IT infrastructure: Data generation and smart processing

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The IT infrastructure in a car factory provides the basis for a comprehensive digital transformation. Technologies such as 5G, IoT and AI (artificial intelligence), Big Data and predictive maintenance play a central role in car manufacturing. These technologies demand high-performance data networks and a stable IT infrastructure which can collate, transfer and evaluate the data in real time (big data analytics). This enables manufacturers to gather new information for fact based, data driven decision-making.

### **The car as data source**

Electromobility and autonomous driving play a key role in the context of connected cars. The vehicle acts as a smart sensor hub and generates data which must be exchanged with its environment via wide-bandwidth, minimal latency, exceptionally reliable connections.

Take V2X (vehicle to X) as an example: In this ecosystem, vehicles communicate with one another, with infrastructure components such as traffic lights or crash barriers, with smartphone users on foot or bicycle and with networks. However, today's IT architectures are not usually designed to support millions of cars exchanging messages at an extremely high frequency with minimal latency.

Powerful, reliable IT infrastructures from Rittal offer pioneering solutions in this regard.



Around **90%**

of companies (with more than €1 billion in revenues)  
have already launched

**smart factory initiatives.**

# RiMatrix Next Generation: Powerful and future-proof

Rittal's RiMatrix NG system platform offers flexible, powerful, future-proof data centre solutions. As an open system platform, its modularity provides the basis for an IT infrastructure which can be configured to the car manufacturer's specific requirements. It enables customised solutions for all IT scenarios: from individual rack installation, to edge, enterprise and colocation data centres, through to hyperscale data centres.



## Your benefits at a glance.

### Maximum flexibility

- RiMatrix NG offers maximum scalability for exceptional efficiency
- Variable financing models
- Continuous updates ensure adaptability to future technology trends
- Energy-efficient components for sustainable, cost-cutting modularity

### Reliable solutions

- Tried-and-tested Rittal quality that meets international standards
- Compatible with existing systems, with guaranteed scalability

- International approvals ensure suitability for global use
- Support for customers with full documentation, training and a comprehensive service package

### Rapid deployment

- System solutions and OCP integration reduce planning and procurement work
- Perfectly coordinated with components, management systems and applications
- Fast, simple configuration and commissioning
- Optimised delivery to suit your specific requirements



# Data security: Perfect protection, expandable as your requirements grow



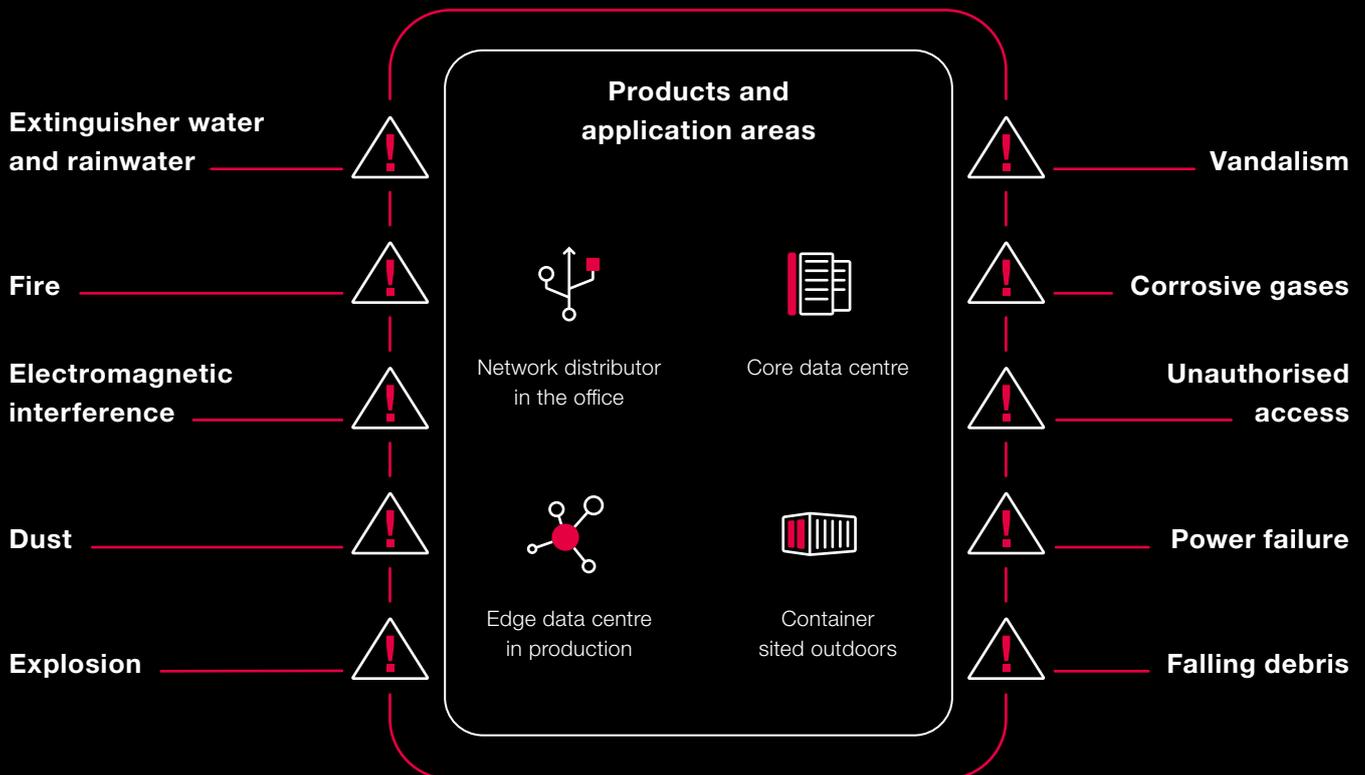
## Protect your data and infrastructures with comprehensive security solutions

A failure in an IT system is always a costly business. With this in mind, Rittal offers end-to-end security solutions for your IT infrastructure and components, from basic protection right through to high availability. The options range from electronic handles and automatic door opening, to access control with two-factor authentication.

Modular security solutions from Rittal provide multifunctional protection against physical threats which can be expanded according to your requirements, from IT safes for individual racks through to room-within-a-room concepts.

This supports seamless communication from the sensors to the company's (cloud-based) edge and central data centre, as well as links to superordinate monitoring and energy management systems.

## Comprehensive protection from countless threats



# ONCITE: Installed on site, data sovereignty guaranteed

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Adaptability, cost-effectiveness, resilience and sustainability are pivotal requirements for the motor vehicle industry. Cantena-X Automotive Network provides a shared platform where automotive manufacturers, subcontractors, industry organisations and equipment suppliers can address the related challenges. GEC is collaborating with industry giants and SMEs to devise uniform standards for reliable data and information flows throughout the automotive value chain.

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## **Data sovereignty at every stage of production with ONCITE**

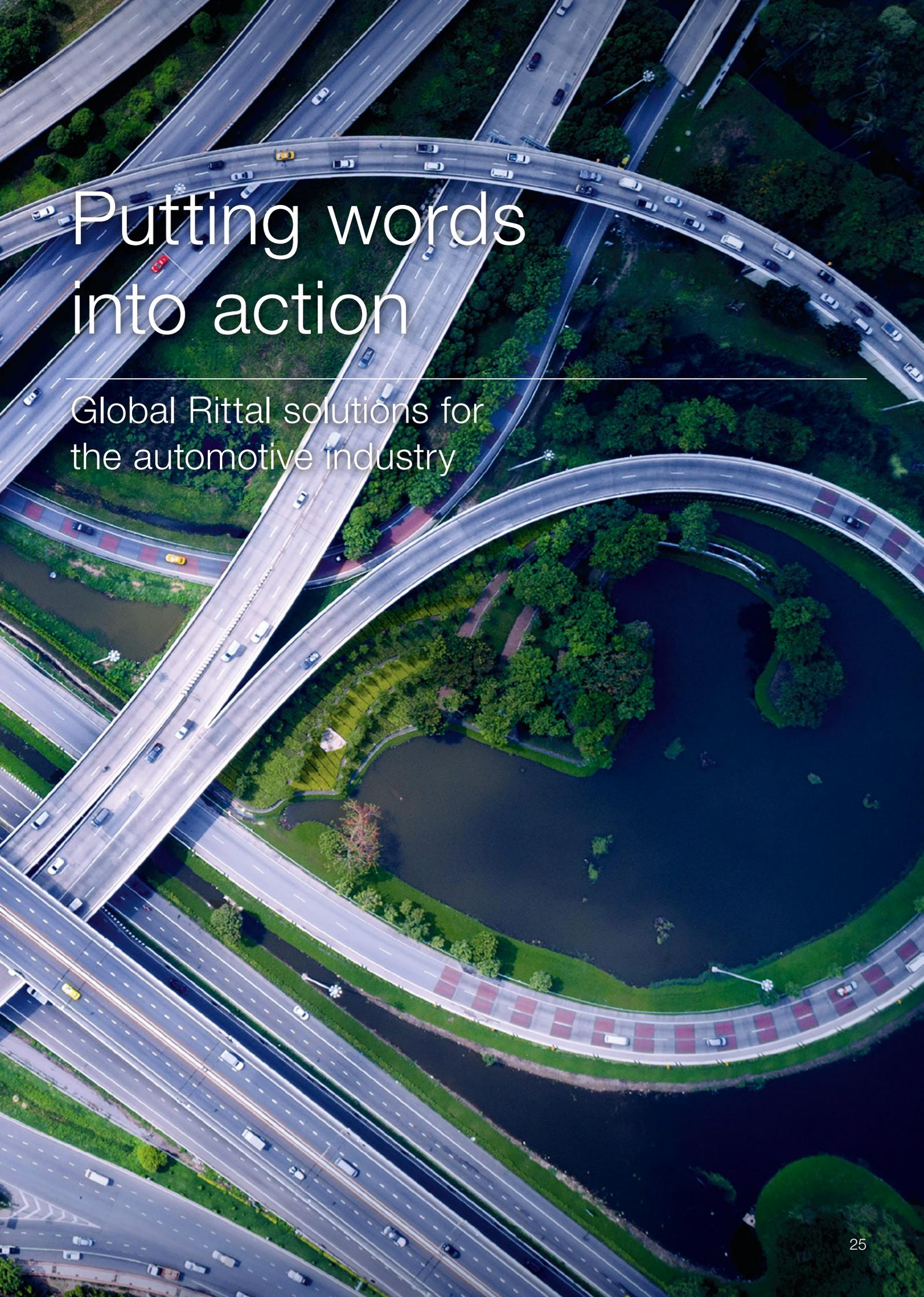
When exchanging vital data with clients and partners, how do companies maintain the sovereignty of their sensitive data? The answer is ONCITE. The all-in-one solution by German Edge Cloud (GEC) based on the open system platform RiMatrix Next Generation (NG).

As an in-factory edge data centre, ONCITE can rapidly transform you into a smart factory. Data is quickly logged, stored and intelligently evaluated at the point of use, enabling the continuous optimisation of manufacturing processes in a closed control loop (data driven automation). Users retain full control over their data and decide the format in which data is forwarded to customers or supply chain partners.

ONCITE provides an end-to-end digitalisation solution for the manufacturing industry – integrated and scalable, it is quick and easy to use thanks to its plug & produce concept.







# Putting words into action

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Global Rittal solutions for  
the automotive industry

# Tapping into huge potential savings: Ford Motor Company

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Rittal's check identified significant savings potentials for our plant.

Helmar Bencker,  
Plant Engineering and Environment  
Manager at Ford in Cologne

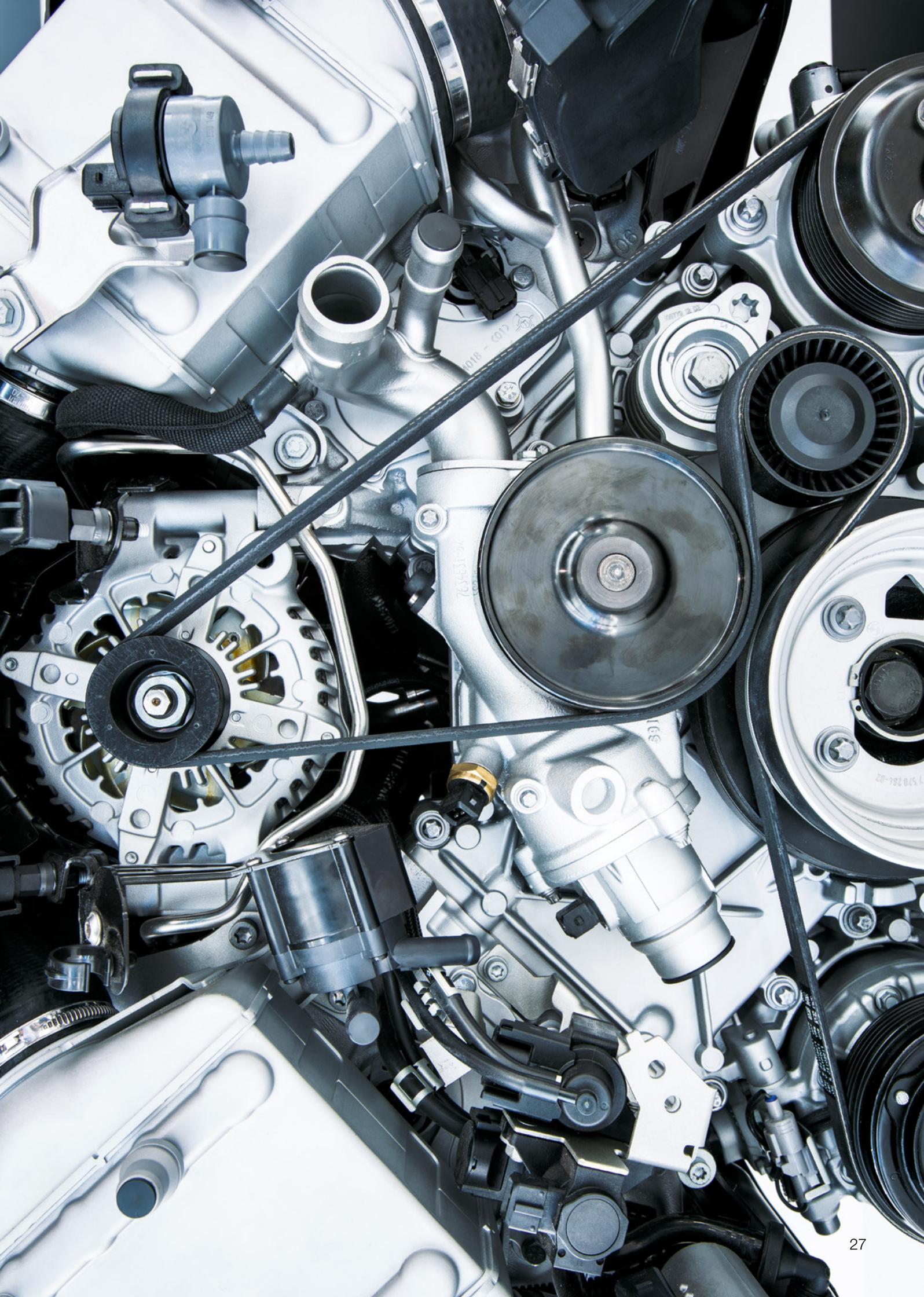
An amortisation  
period of **2.42**  
**years**  
for installed  
cooling units

Ford's Cologne engine plant had to shut down several times in one year due to defective cooling units. Rittal's offer to carry out a manufacturer-independent audit of all the cooling units and identify potential energy savings was very timely. The analysis by Rittal's service specialists revealed that eleven percent of the installed cooling units were in urgent need of repair or replacement. As an additional service, Rittal prepared a comprehensive energy efficiency calculation, leading to savings of more than half a million euros within 10 years, with an investment amortisation period of just 2.42 years for the new cooling units.

## Over 220 cooling units put to the test

The Rittal technicians checked the status of more than 220 cooling units at Ford's Cologne factory, including Rittal climate control units as well as third-party equipment. They checked all components for dirt accumulation, damage and bearing noise. Within the context of predictive maintenance, they then prepared a maintenance checklist and suggested a number of improvements. Analysis revealed that of the 220 enclosure cooling units installed, 25 were defective and would need to be repaired or replaced. Alongside the service check, the Rittal team set up a practical test facility at the engine plant to optimise energy savings. The 2.6 kW Rittal Blue e+ cooling unit was compared with a competitor's 2.5 kW cooling unit. They found that the Blue e+ unit offered 88.9% energy savings compared to the third-party system.

Based on the data collected, Rittal then compiled a comprehensive efficiency calculation. Replacing 150 cooling units with Rittal "Blue e" and "Blue e+" systems could generate savings of more than €552,000 in Cologne and also eliminate 276.3t of carbon. This would mean a payback period of just 2.42 years on the investment, well below the required 3.5 years – a major testimony to the Rittal service team's consulting services.





# Building a nationwide rapid-charging infrastructure: Tritium

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Tritium, an Australian manufacturer of charging pillars for e-vehicles, builds rapid charging stations across Europe as part of the IONITY joint venture with car manufacturers BMW, Daimler, Ford, VW, Audi and Porsche. Tritium won the contract to build 100 charging stations in a number of countries including Germany, France, the UK and Sweden. The global availability and quality of Rittal's products was a decisive factor in their choice of supplier. Among other things, the Rittal solution is used to protect the sensitive electrical components in the charging pillars from environmental effects.

From its initial start-up, Tritium evolved into one of Australia's fastest-growing companies. Given the low number of electric vehicles in Australia at that time, the company decided to expand to Europe, where e-mobility was developing at a faster pace. Under the guiding principle of "energy freedom", Tritium's aim is to get power easily and cost-effectively into cars, even at home if required, without consumers needing to change their everyday behaviour. This is one of the factors needed to make electromobility accessible and generally more attractive to the broader mass market. Confidence in electromobility grows as the number and capacity of charging stations rises, since this is the only way of ensuring the necessary appeal.

The planned rapid charging stations are an important milestone en route to "unrestricted charging freedom" in public spaces. The Rittal enclosures were developed specifically for this application to withstand the challenging conditions of outdoor use while ensuring maximum flexibility. Complemented by a wide range of accessories, they will make an important contribution to the project's success. Rittal's integration into the Tritium/IONITY project has reinforced its expertise in the e-mobility sector. It is now involved in promoting the sale of electric vehicles by expanding the charging infrastructure, perfectly in tune with the sense of "energy freedom".

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Fast availability was a key consideration in the IONITY project, together with Rittal's service and accessibility. This was what won us over.

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David Finn,  
Tritium founder

# The digital factory with Rittal and EPLAN: Volkswagen AG

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The expansion of the VASS specification standard to include the latest engineering and software versions from Eplan and the latest system technology from Rittal supports our suppliers in implementing digital and automated production processes. At the same time, this represents another important step en route to the digital factory.

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Daniel Gräser  
of VW's Production Automation  
and Digital Production division

## **VASS standard extended to include 3D functionality and the latest in enclosure technology**

The sixth generation Volkswagen VASS (Volkswagen Audi Seat Skoda) specification standard has been updated to include Eplan version 2.9 in its latest release. The standard, which is used for the production lines of models on the MEB platform, also now includes a 3D function in switchgear manufacturing and data for bidirectional exchange with SPC project planning tools. The VX25 enclosure system from Rittal has also been included in the specification.

Volkswagen's decision to make 3D data based on EPLAN Pro Panel available to its suppliers in the VASS standard libraries means that in future, it will be possible to replicate complete digital twins of enclosures and their installed components. Until now, only 2D drawings from EPLAN Electric P8 were stored in the standard. At the supplier end, this provides the foundations for incorporating automated production steps more widely into controlgear and switchgear manufacturing, from NC machining, to automated terminal block assembly, through to cable assembly and wiring support. Companies benefit from complete design templates supplied by Volkswagen as the basis for faster design, production and commissioning of high-quality systems.

## **Uniform plant documentation**

Andreas Bamberg, Strategic Account Manager at Eplan, explains: "The additional 3D functions from EPLAN Pro Panel allows us to extract production information directly for automated controlgear and switchgear manufacturing. Additionally, engineering offices will benefit from the integral collision control and thermal heat loss calculation for components, allowing optimum component positioning inside the enclosure and the energy-efficient design of Rittal cooling systems." An additional benefit: Extending the item and project data to include key control engineering information creates complete bidirectional data exchange between Eplan (hardware design and the Siemens TIA portal (software project planning) using the AML interface. "This significantly reduces the amount of work involved in system planning and engineering because SPC hardware assemblies, predefined inputs and outputs, bus topologies and even port-specific wiring can be imported directly from Eplan", explains Bamberg. During plant operation and subsequent refits and expansions, the information can be fed back into the Eplan project from the TIA portal. This ensures uniform, error-free plant documentation in its "as-built" status and faster integration into the digital production management system.

### **With the latest enclosure technology built-in**

Like Eplan, Rittal's large enclosures and small housings have been part of the Group specification standard for many years. Markus Hülsmann, Global Key Account Manager – Automotive at Rittal, explains: "In its current release, the VASS V6 library includes fully prepared reference enclosures in 3D based on the new Rittal VX25 enclosure system." All accessories belonging to the enclosure plus twenty options of the AirSTREAM mounting frame from Friedrich Lütze GmbH are pre-integrated. They can be selected directly from a list of accessories and positioned as complete macros. "This significantly reduces the amount of engineering work required, because with just a few clicks the user starts positioning the components straight away", adds Hülsmann. Additional assembly templates for Rittal's AX and KX enclosures are also included. Other 3D enclosure macros are already available in the EPLAN Data Portal and can be used for project-planning with Pro Panel.

### **The aim: Digital manufacturing**

The challenges associated with vehicle production have grown exponentially: Ever shorter lead times, customised design work, new control technologies and high standards of servicing and maintenance, to name a few. Volkswagen is working intensively on improving automation standards which it then passes on to its suppliers. Daniel Gräser of Volkswagen's Production Automation and Digital Production division is convinced: "With the extended VASS standard incorporating the latest engineering and software aspects from Eplan and the latest system technology from Rittal, we are completely engaged with our suppliers in the implementation of digital and automated production processes. At the same time, this represents a major step forwards on our path to the digital factory." The digital enclosure twin provides an essential basis for fully digital operation and maintenance processes in future production.

### **International service support**

Eplan offers a three-day VASS-V6 training course for suppliers in German and English, both in-person and in an online format, as the ideal introduction to successful international project planning based on this standard. As well as regular dates in Europe, the first training courses have already taken place in the USA and China.





# Mercedes-Benz Energy Storage

The “Zero Carbon” Factory 56 at Mercedes-Benz demonstrates just how efficient carbon-neutral car manufacturing can be. It has reduced energy consumption by one-quarter compared with other assembly halls. Two energy storage systems by Mercedes-Benz Energy and Rittal play a pivotal role in this solution.

The fixed energy store with an overall capacity of 1,400 kWh is supplied with green electricity from the in-house photovoltaic plant via a DC network. Second-life batteries provide temporary storage for surplus solar power for a further 10 years or so. The combination of a photovoltaic plant, DC network and battery storage system delivers up to 30% of the production line’s electricity demand with self-generated solar energy. The PV plant has 12,000 modules and generates around 5,000 MWh of electricity per annum which is either used directly, placed into temporary storage or fed back to the public grid. As the system supplier, Rittal delivered the key elements of this energy storage solution.

# Energy in a box: Mercedes-Benz Energy

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## Perfect teamwork

Energy storage creates the technical basis for offsetting energy consumption over time, cushioning peak loads and safeguarding the emergency power supply. Rittal's R&D, planning and project management services ensure that all components of the energy storage solution work together intelligently and efficiently. The energy storage equipment supplied by Rittal includes a weather-proof steel enclosure, rack systems with heavy-duty shelves to accommodate the battery, a raised floor for cable routing and sturdy and reliable power distribution, plus a smart DC-based climate control. All the power electronics are housed in the adjacent container. In future, performance data for the battery store will be stored in the cloud and processed in the digital ecosystem "MO360", a family of software applications interlinked by interfaces and a uniform user interface.

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It is our ongoing  
goal to maximise  
battery potential.

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Jens Liebold,  
Business Development Manager  
Mercedes-Benz Energy



# Efficiency through global standardisation: Hyundai Motor Company

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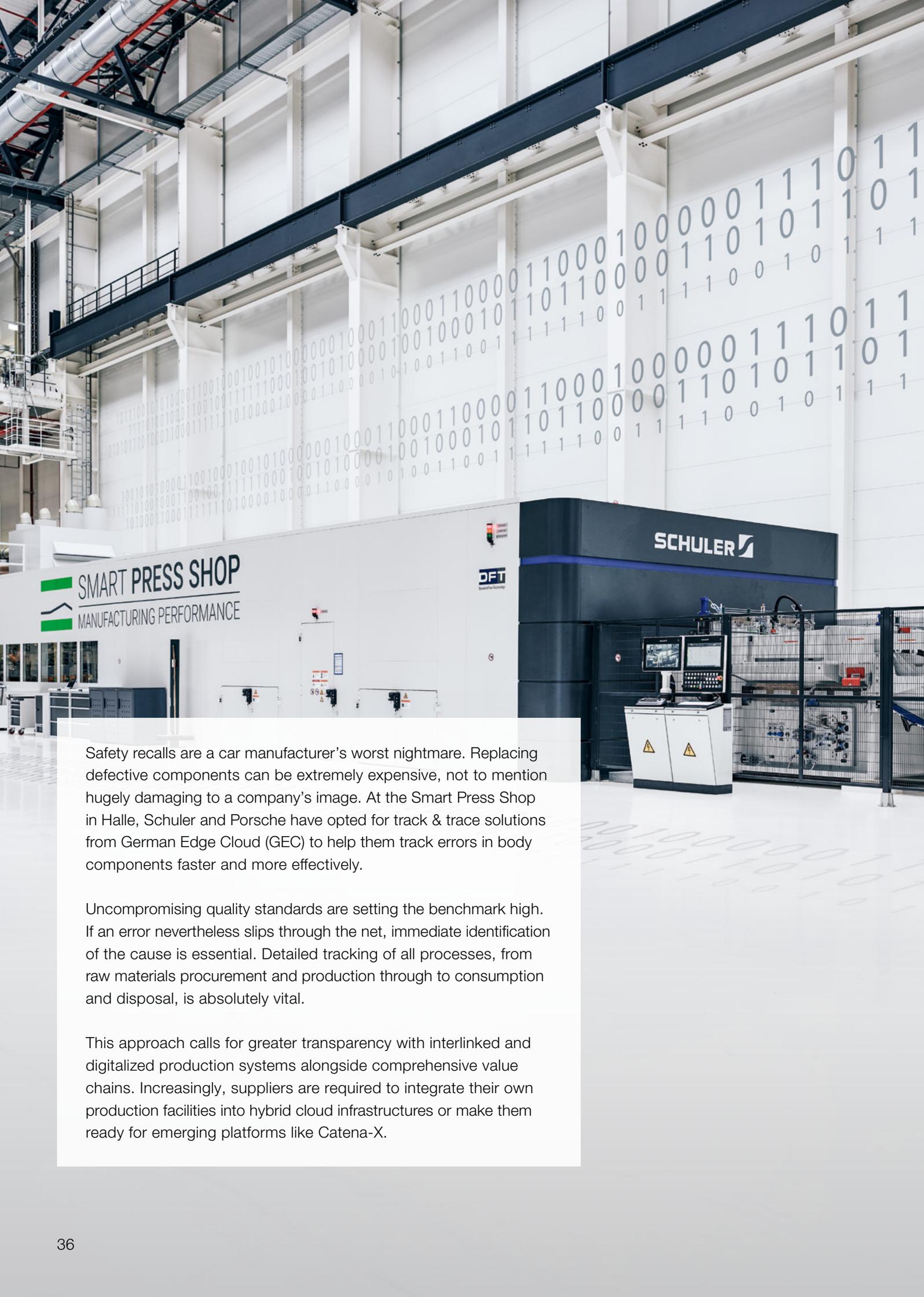
Hyundai translates as “Modern Era”. The automotive group headquartered in Seoul/South Korea was set up as a construction company initially and later evolved into the Hyundai Motor Company in 1967. Initially it produced Ford models under licence, and in the early 1970s went on to develop its own cars. In 1998, the company took over the South Korean car manufacturer Kia Motors. Today, the automotive group has production sites in India, the Czech Republic, Turkey, Russia, Brazil, Vietnam and the USA. The Hyundai Motor Company operates the world’s largest car factory in Ulsan, South Korea, with an annual production capacity of 1.6 million units.

When bringing its global plant technology and systems into line with Industry 4.0 standards, the automotive manufacturer specified solutions from Eplan and Rittal as the international standard for design, engineering and equipment at its production plants. Large enclosures, small enclosures and cooling solutions from Rittal are all used. And when building a new plant in Korea, Eplan and Rittal experts were consulted early on and recommended standard products. This enabled us to meet the customer’s budget requirements and tight delivery deadline. Some 300,000 vehicles are produced in the plant each year. In total, more than 1,200 large enclosures, 800 compact and 500 small enclosures and 600 cooling units from Rittal were used.

## **Maxing out the benefits**

One benefit of Rittal standard products are their fast delivery times, because Rittal operates 8 production sites on three continents. A broad-based logistics schedule ensures customers do not need to hold products in stock and receive their solutions directly off the shelf from Rittal. A sophisticated service network guarantees minimal downtimes for customers. In this way, the Hyundai Motor Company benefits from a high degree of reliability and uptime for its plants both nationally and internationally.





Safety recalls are a car manufacturer's worst nightmare. Replacing defective components can be extremely expensive, not to mention hugely damaging to a company's image. At the Smart Press Shop in Halle, Schuler and Porsche have opted for track & trace solutions from German Edge Cloud (GEC) to help them track errors in body components faster and more effectively.

Uncompromising quality standards are setting the benchmark high. If an error nevertheless slips through the net, immediate identification of the cause is essential. Detailed tracking of all processes, from raw materials procurement and production through to consumption and disposal, is absolutely vital.

This approach calls for greater transparency with interlinked and digitalized production systems alongside comprehensive value chains. Increasingly, suppliers are required to integrate their own production facilities into hybrid cloud infrastructures or make them ready for emerging platforms like Catena-X.

# Gapless supply chain information: Track & trace for Schuler and Porsche

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## **Leveraging synergies – Software and plant manufacturing**

Schuler and German Edge Cloud have launched a flagship project which connects software with plant engineering. Within its digital suite, Schuler offers a track & trace solution for the pressing plant based on edge cloud technologies. Schuler's expertise in forming technology is complemented by GEC's extensive knowledge of edge and cloud technology. This adds value in terms of quality, scalability, cost efficiency and transparency in production. Looking to the future, the hope is that this solution will provide the basis for artificial intelligence (AI) devoted to the optimisation of production.



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If a recall campaign should become necessary, the entire supply chain can be traced and the source of the error rapidly identified.

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Domenico Iacovelli,  
CEO of the Schuler Group

## **Porsche and Schuler: Raising the benchmark**

The solution is already being used in a pilot project as part of a joint venture between Porsche and Schuler. The Smart Press Shop in Halle is a fully interconnected press shop for the flexible manufacturing of body components. It is raising the benchmark in developments such as predictive maintenance, smart production control and production efficiency. In future, the plant will supply pressed parts and components to the entire Volkswagen Group, and hopefully attract other OEMs.

Based on consistent data, GEC's track & trace software guarantees comprehensive tracking within production operations. It is compatible with the public clouds of leading OEMs as well as hybrid clouds like the Schuler Cloud. Key benefits of this solution include full data ownership and data sovereignty, to ensure that expertise and critical production data remain protected and secure.

# Powerful partners for sustainable panel building and switchgear manufacturing

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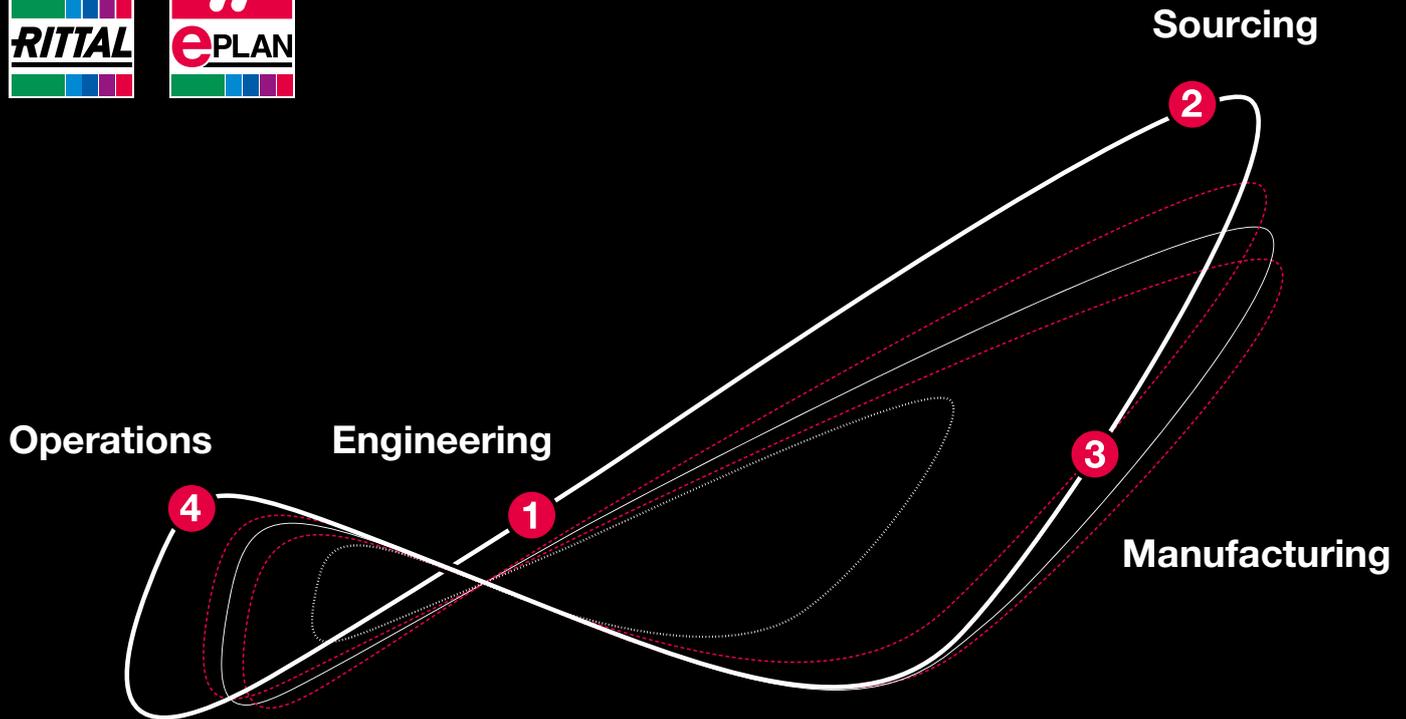
Save time with system expansions, updates or retrofits and at the same time increase your production.

## **Digitalisation and integration.**

### **Clear efficiency gains.**

The transformation of the automotive industry is advancing at a rapid pace, bringing with it huge time and cost pressures. A high-quality product is essential, and crucial competitive advantages can be gained from efficient processes and high levels of plant utilisation and uptime. The central element is the digital twin created during the design process, which links together all downstream process steps – from sourcing and manufacturing through to operation. It contains information about an enclosure's properties and behaviour during operation. Eplan supplies high-performance engineering design solutions linked by the EPLAN Platform for switchgear planning. The Rittal product portfolio supports all steps in the production process, allowing data generated by the digital twin at the design stage to be utilised. Data can also be accessed in the commercial processes and while operational – during monitoring, servicing or when developing the next switchgear generation.





### Engineering

- Seamless, standard-compliant engineering
- Simple, fast pre-planning for your suppliers
- Collaborate with your suppliers and use uniform planning tools to optimise interfaces

### Sourcing

- 24h delivery service
- Automatic generation of parts lists
- Preparation of data for import into the ERP system

### Manufacturing

- Accelerated switchgear assembly
- Rapid exchange of information and swift processing between the end client, machine manufacturer and switchgear manufacturer
- Shorter delivery times, thanks to an integrated value chain

### Operations

- Access to data and parts lists via cloud solutions
- High standard product availability from stock
- Plant maintenance and repairs
- Plant maintenance and repairs, complete end-to-end operational traceability

# 95%

of companies have been able to **boost productivity**, while also **improving their products and services** thanks to digitalisation.<sup>5</sup>

<sup>5</sup> According to the Digital Value 2018 survey of 200 decision-makers from a variety of sectors in Germany, Austria and Switzerland.

# EPLAN Solutions: Everything from a single source

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## Digital processes from engineering design through to production and maintenance

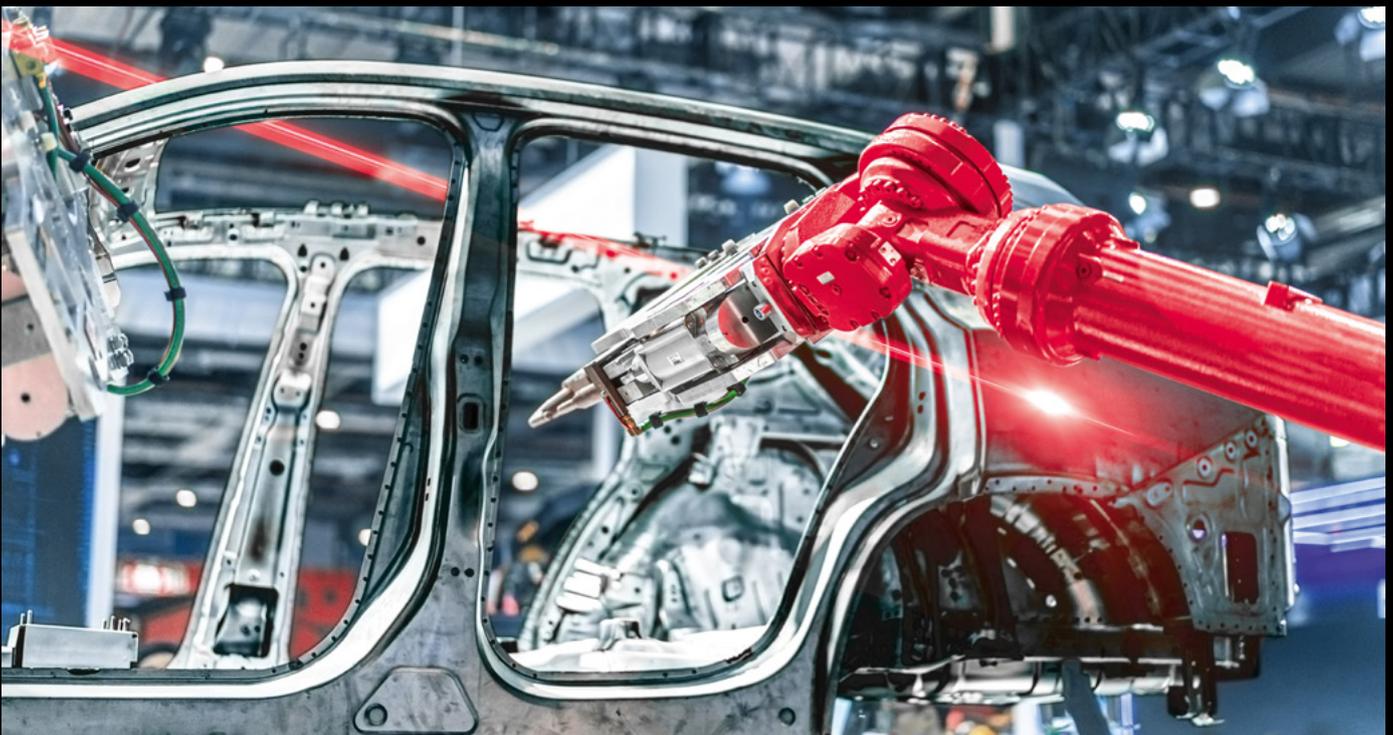
Ever shorter product lifecycles and faster technological developments in the automotive industry call for greater efficiency in production, maintenance and systems planning. This calls for – where necessary – the standardisation of components, processes and systems. Eplan offers data consistency, beginning with planning and extending through to engineering and servicing.

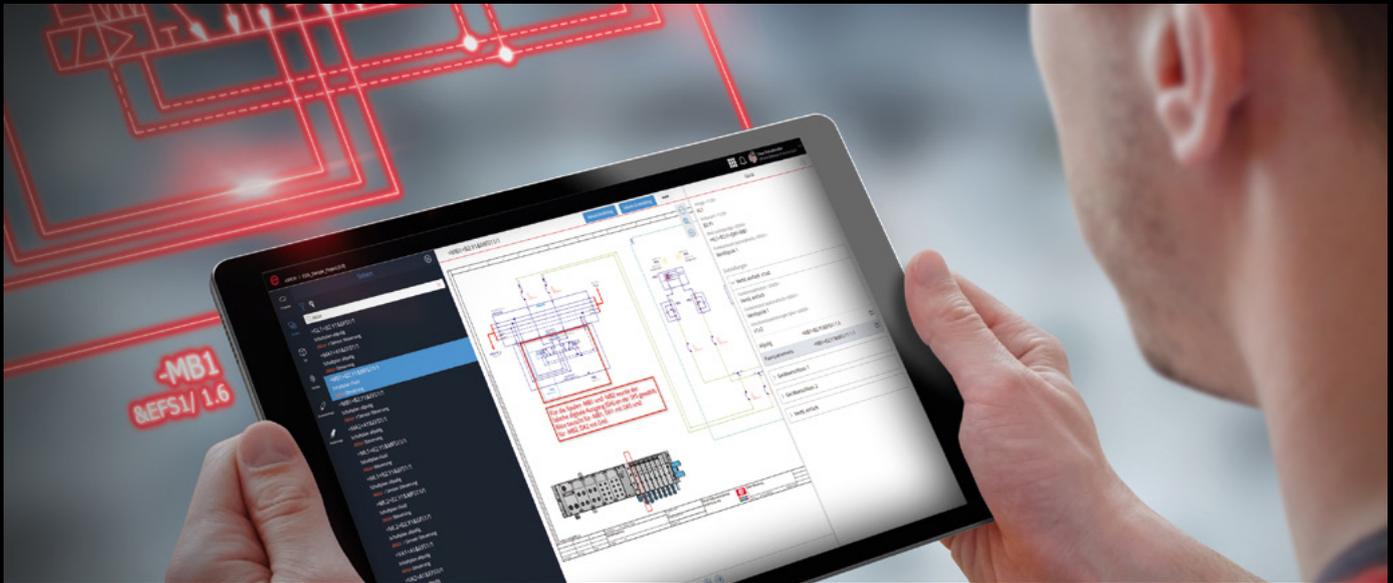
### Learn more

[www.eplan-software.com/  
automotive](http://www.eplan-software.com/automotive)

With Eplan, system operators can easily manage all these challenges successfully:

- Reduce downtime with an efficient, reliable production line
- Reduce components, streamline the management of (software) systems
- Flexibly transfer production capacity between production lines
- Achieve short communication paths and data processing between suppliers and internal departments
- Enable rapid access to user-friendly documentation
- Ensure fast, reliable support with plant inspections, maintenance and repairs
- Improve and accelerate the effort towards Industry 4.0, IoT and Smart Factory





### **Shorter planning phases and faster production launches**

The benefits for you:

- Planning: Standardised production systems help to minimise complexity and costs
- Implementation: Standardisation simplifies engineering and assembly as well component sourcing, for shorter throughput times
- Commissioning: Co-ordinated, modular designs help to reduce set-up times

Eplan solutions:

- Development of supplier guidelines with EPLAN Consulting
- Collaboration with suppliers using templates, baseline projects and EPLAN eVIEW
- Document checking with the EPR module
- Data consistency supports better connection and communication through integration and interfaces

### **Optimum productivity from manufacturing assets**

The benefits for you:

- Uniform documentation with easy reference for service staff to enable improved maintenance and troubleshooting
- Fast fault detection due to easy access to wiring plans
- Standardised layout simplifies modifications

Eplan solutions:

- Data consistency with the Eplan platform
- Simplified internal and external communication and team-working with EPLAN eVIEW
- With a data standard based on ECLASS Advanced, the EPLAN Data Portal has a systematised framework of component features
- Digital twin with EPLAN Pro Panel delivers all the required data
- Support when standardising different file formats in a single system

# Perfect solutions in plastic



LKH Kunststoffwerk Heiligenroth develops and manufactures plastic components and assemblies for, amongst others, the automotive industry. Its portfolio includes thermoplastic moulding with clamping forces ranging from 28 to 1,000 t, fully automated PUR foam application (“foam in place”) and hybrid moulding technology and assembly of ready-to-install modules. LKH manufactures more than 1,000 different components (with shot weights ranging from 1 g – 4,800 g). It specialises in processing technical thermoplastics. In automotive manufacturing, highly filled polymers are preferred for the weight savings they offer.

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The industry needs partners that can meet its needs.

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Volker Hindermann,  
Managing Director of LKH

## **LKH manufactures thermoplastic components for:**

- Air suspension systems for cars and HGVs
- Engine suspension
- Kinematic systems for doors and boots
- Heating systems for cars
- Housings for electronic components
- Powertrain components
- Closing systems for car doors
- Fasteners for fluid lines

As a preferred partner and expert, the process and materials specialist LKH can provide a complete value-added supply – from engineering production, finishing and assembly, right through to just-in-time delivery. Due to an on-going programme of cost improvements and optimisation, the added value for customers is significantly enhanced.

# Processing steel straight from the line



With an overall annual capacity of 800,000 tonnes, Stahlo is one of Germany's largest and most cutting-edge independent steel service centres. We offer a comprehensive portfolio covering all principal materials in the sheet metal market. We are technology leaders, setting new standards in the processing of high-strength and ultra-high-strength steel and extreme surface finishes.

We produce and process slitted coils, cut-to-size sheets, and contoured blanks in coated versions and outer skin quality.

## Flexible, independent supply chain network – Stahlo services:

### 1. Suppliers of flat rolled steel

- Slitted coils
- Metals/formats
- Contoured blanks

### 2. Processing capacity

- Slitting lines
- Cut-to-width/cut-to-length lines
- Contour presses

### 3. Steel services

- Steel pooling
- Complete supply chain management
- Guaranteed quality
- Transparent pricing

## Stahlo automotive expertise at a glance:

- Technical application advice even at the design stage
- Experienced in processing of high-strength to ultra-strength qualities with up to 1,900 MPa tensile strength
- Handling of automotive outer skin quality surface finishes
- Global, manufacturer-independent sourcing expertise



<sup>6</sup> <https://www.stahl-online.de/?s=Stahlproduktion+weltweit>

# 167.9 million

**tonnes of steel**  
were produced  
**worldwide** in June 2021.<sup>6</sup>

# Rittal – The System.

Faster – better – everywhere.

- Enclosures
- Power Distribution
- Climate Control
- IT Infrastructure
- Software & Services

Further information about our solutions for the automotive sector can be found at:  
[www.rittal.com/automotive](http://www.rittal.com/automotive)

You can find the contact details of all Rittal companies throughout the world here.



[www.rittal.com/contact](http://www.rittal.com/contact)

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CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES



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