

Rittal – The System.

Faster – better – everywhere.

► Industry solutions



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One system for any industry. Rittal – The System.

For over 50 years, Rittal has been setting trends with perfectly coordinated enclosure solutions. This brochure explains exactly how this leads to tailored industry solutions for specific requirements. Discover the many different possible applications for individual Rittal system components and complex data centres the world over. Be amazed by award-winning developments, enclosure solutions and “shipshape” data centres.

MECHANICAL ENGINEERING



ELECTRICAL ENGINEERING & AUTOMATION



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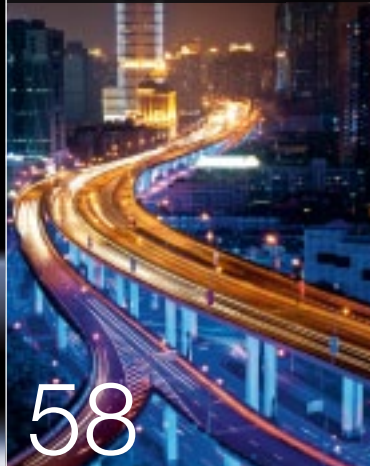
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What makes a solution an industry solution?

Rittal – The System.

Each industry has its own specific requirements – and knowing exactly what these are is the only way to offer an adaptable system. One that combines universal and individual aspects and is cost-efficient yet customised. Not any old solution, but your very own industry solution.

Our aim is to strengthen your competitive position.

- Improved cooperation thanks to clear responsibilities, clear structures and short communication paths
- Innovative strength and short development times thanks to the close interlinking of sales, product management, research and development
- Globally optimised customer support thanks to the systematic international involvement of Rittal experts

Rittal – The System. Faster – better – everywhere.

Faster – with our “Rittal – The System.” range of modular solutions, which guarantees fast planning, assembly, conversion and commissioning with its system compatibility.

Better – by being quick to translate market trends into products. In this way, our innovative strength helps you to secure competitive advantages.

Everywhere – thanks to global networking, with 11 production facilities on 3 continents. Rittal has 64 subsidiaries, more than 150 service partners and over 1,000 service engineers worldwide. For more than 50 years, we have been on hand to offer advice, assistance and product solutions.

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What turns our system into yours?

Excellent understanding of your requirements.

You know best exactly what you need – until you contact our Rittal industry management experts, that is. They are committed to understanding your requirements as well as you do. And they use this knowledge to analyse, plan and prepare your particular system solution. This is based on our universal system and benefits from a logical structure, flexible functions, maximum modularity, simple mechanisms, direct availability and a global presence. Everything is perfectly coordinated as if it were actually your system rather than ours.

Rittal – The System. Faster – better – everywhere.



iconsys



SAB



SIEMENS

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Faster

- System solutions from a single partner
- The perfect interplay between development, engineering, product system and service
- One point of contact thanks to market-focused industry management

Better

- Technological expertise and innovative strength secure competitive advantages for you
- Cost savings through proven energy efficiency
- Certified quality in management, production and environmental protection

Everywhere

- Over 60 subsidiaries, more than 150 service partners and over 1,000 service engineers world-wide
- Country-specific expertise from Rittal industry experts
- International approvals provide peace of mind



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TRUMATIC 6000 L

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Mechanical engineering

“Rittal – The System.” is synonymous with complete system solutions in the mechanical engineering industry. Mechanical engineering is an indicator of technical progress worldwide.

This key industry’s products are used in all sectors of the economy and it remains one of the strongest growth industries.

As a system partner, Rittal supports this dynamic development with sophisticated enclosure and housing technology. Our series products are turned into efficient solutions based on global standards. Combined with over 50 years of experience, this creates a solid foundation for working together to achieve a successful result.

Areas of application for “Rittal – The System.”:

- Handling systems
- Tool-making and mechanical engineering
- Printing and paper technology
- Food products and packaging/filling systems
- Wood processing machinery
- Plastic processing machinery
- Process engineering machinery and equipment

System advantages:

- Enclosure solutions for extreme conditions such as air containing dust and oil
- Efficient energy supply for machinery
- Cooling output tailored to any location
- Energy efficiency for the entire solutions portfolio
- Your production operations benefit from end-to-end engineering thanks to Eplan

IT INFRASTRUCTURE

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Mechanical engineering



“PowerForce 8 is the largest, most energy-efficient travelling-column milling machine that SHW WM has ever built. We have fully exploited all energy efficiency potential.”

Alfons Egetemeir, Head of Construction Electronics.

Award-winning energy efficiency

Based in the German town of Aalen-Wasseralfingen, SHW Werkzeugmaschinen GmbH is setting new standards for efficient heavy-duty machining technology with the PowerForce 8, a 200-tonne travelling-column milling machine. It’s quite a success story. This innovation, which has been developed, designed and equipped to systematically optimise energy efficiency, won the NORTEC Award for Sustainability in Industrial Production in 2012. A new generation of enclosure cooling units contributed to energy savings of up to 27 percent.



The new Blue e cooling unit generation from Rittal contributed to energy savings of up to 27 percent.

SHW Werkzeugmaschinen GmbH is a world-leading manufacturer of travelling-column machines and an internationally recognised specialist in machining. The company’s machinery is used, for example, in the production of large components for mechanical and plant engineering, large diesel engines, turbines and environmental technology. Adopting a responsible approach to energy is a top priority.

Efficiency potential exploited to the full

“The PowerForce 8 is the largest energy-efficient travelling-column milling machine that SHW WM has ever built. We have fully exploited all energy efficiency potential,” says Head of Construction Electronics Alfons Egetemeir. The company incorporated all technically feasible solutions to achieve energy savings of up to 27 percent compared with similar milling machines. This included reducing power losses, minimising the number of moving parts, using virtually no hydraulic components and installing spindle drives without a gear mechanism.

SHW WM is also using the new generation Blue e cooling unit from Rittal so as to harness all possible efficiency potential in the area of enclosure climate control. “The new cooling units consume around 45 percent less energy than the previous generation, which saves 3,047 kWh per year when operating the PowerForce 8,” says Egetemeir with evident satisfaction. The new Eco-mode control system is also extremely economical. If the internal fan does not need to be in permanent operation, it is switched off automatically.



SHW Werkzeugmaschinen GmbH is setting new standards for energy-efficient heavy-duty machining technology with the PowerForce 8, a 200-tonne travelling-column milling machine.

Blue e cooling units are tested by the TÜV Nord inspection agency, which gives SHW WM peace of mind that Rittal's specified cooling output and energy efficiency are indeed achieved.

A few years ago, cooling units from a different manufacturer failed under extreme conditions due to the effects of carbon dust. This triggered the switch to Rittal cooling unit technology. "We started using ex-proof cooling units from Rittal and we haven't experienced any problems since," reveals Egetemeir.

Award-winning development

In 2012, SHW WM was presented with the NORTEC Award in recognition of its optimum resource use and energy savings in developing the PowerForce 8. SHW won this award for systematically focusing on sustainability in industrial production in all aspects of developing, designing and equipping a large machine tool.

High efficiency potential:

- Energy savings of up to 45 per cent

Mechanical engineering



“The Rittal solution we decided on is an extremely stable and reliable product.”

Andre Klavehn, responsible for the electrical equipment in Laempe & Mössner's machinery.

Powerhouses for core shooters

In addition to excellent stability and an attractive design, mechanical engineers at the man-machine interface increasingly expect flexible support arm solutions with fewer variants that can be used on many different types of machines. More and more mechanical engineering companies, such as Laempe & Mössner, are taking advantage of standardised, end-to-end solutions from Rittal's modular CP support arm system.

If hollows need to be created when making cast parts using the sand moulding process, cores are located at the relevant positions. These cores are essentially made up of sand and are produced at cutting-edge foundries using core shooters. Laempe & Mössner, an SMB based in the German town of Barleben, is a world market leader in this field.

Its various core shooter model series share a very similar control system architecture. A logical structure comprising three units with pressure and vacuum displays (top), panel PC (middle), and switches, lights and other operating and display equipment (bottom) has enabled the command panel to be standardised to a certain extent. Alongside benefits at the design and electrical planning stages, this standardisation also paves the way for larger batch sizes and thus lower procurement costs. “When

planning the control and operating concept for the latest machine generation, we wanted to cover all machine types with the minimum number of command panel variants,” recalls Andre Klavehn, who is responsible for the electrical equipment in Laempe & Mössner's machinery.

Stable and easy to fit

Laempe & Mössner uses the CP 120 support arm system from Rittal to attach the command panel to the machine. This solution comes from the new modular support arm system, which offers a universal design for loads of 60, 120 and 180 kilogrammes – in each case based on a support arm one metre long. Rittal had a competitive edge in terms of both stability and reliability. “We had previously experienced some problems with products of other suppliers,” says Klavehn.

The support arm system benefits from a well thought-out design and is easy to fit. System adaptors make it simple to combine the three different sizes. Further benefits become evident when installing and commissioning a machine on site. Once fitted, the support arm is very easy to adjust. The system profiles offer sufficient space for the necessary wiring. If additional wiring is required during commissioning or when extending the machine, this is simple to incorporate.



Rittal's CP enclosure and the associated support arm system ensure that Laempe & Mössner's machinery benefits from the best possible man-machine interface.

Even once it has been fitted, the support arm remains easily accessible at several locations.

Ideal for man and machine

Laempe & Mössner now equips virtually all its machines with command panels and support arms from Rittal's modular system. The company's experiences with this system have been entirely positive to date. "The Rittal solution we decided on is an extremely stable and reliable product," sums up Klavehn.



Even once it has been fitted, the support arm is simple to adjust using two easily accessible screws.

Comprehensive control concept:

- Easy fitting saves time
- Stability and reliability
- Support arm can be adjusted once fitted

Mechanical engineering

Cool efficiency from Italy

A large U.S. automotive manufacturer needed new machines to make engine blocks at a plant in eastern Europe. The order went to Italian company Comau, a world-leading supplier of industrial automation. Maximising energy efficiency was a key requirement. This led the mechanical engineering company to take a close look at its machinery's energy consumption, which revealed particular potential for savings in the area of cooling. As a result, Comau integrated an air/water heat exchanger from Rittal into its Smart-Drive machine and also optimised the entire machine architecture so as to achieve the best possible heat dissipation. UL certification, which ensures globally standardised quality, makes for easy maintenance of the machine and cooling unit.



High-precision collaboration with Trumpf

Machine tool manufacturer and laser technology specialist Trumpf has gained itself a global reputation for top-quality precision machinery. The German company has been working with Rittal for many years. Trumpf regularly relies on Rittal products and, for its part, Rittal uses Trumpf's sheet

metal working machines in enclosure production. Trumpf recently decided on TS 8 enclosure systems and TopTherm cooling units from Rittal for its new TruMatic 6000 punch laser machine.





Chulhwan Shin (Rittal) and Bongsoo Han (Doosan) in front of Doosan Infracore's BM 2740 ready for shipment.

Top quality for Korean machine tool manufacturer Doosan Infracore

Doosan Infracore is South Korea's largest machine tool manufacturer and number six in the world in the machining industry. The company was looking for a reliable support arm system with a high load-bearing capacity for the machine control system of its cutting tool. The BM 2740 is a large multipurpose machining centre. Benefiting from a particularly high load-bearing capacity, it was designed for use at high speeds over a long period and the machining precision can be continuously adjusted during use. The BM series produces sheet materials and large components for numerous

industries and offers exceptional productivity. Consequently, the support arm needed to match the machine's high quality and also enable straightforward fitting. Rittal Korea demonstrated to Doosan Infracore just how easy its CP 120 support arm system was to fit. The Rittal solution's robust design and impressive appearance make it perfect for Doosan's high-quality cutting tool. Bongsoo Han, Chief Research Engineer of Product Development Team 2 in Machine Tools BG, keeps his assessment of the Rittal product short and sweet, describing it as "Absolutely amazing."



"As an international company, we need partners who think global. Rittal's system components benefit from approvals and certifications that are valid worldwide, so we are not faced with any restrictions when integrating them into our machines and systems," says Harald Kraft, who is in charge of electrical engineering design at Herkules in Siegen.

Ideal service for machine tools

The international companies in the Herkules Group are well-known manufacturers of roll dressing machines, heavy-duty lathes, portal-type milling machines and boring mills. In addition to its headquarters in Siegen, the Group operates production facilities elsewhere in Germany and also in the United States, China and India. A market leader, it has a long-standing and trusting business relationship with Rittal. When developing new machines, for example, the specialist supplier of high-performance, high-precision heavy-duty machine tools involves Rittal directly as an expert partner and system solution provider. As a result, it uses large application-specific enclosures such as the TS 8 enclosure system (including climate control concept and power distribution components) in its machines, some of which stand as high as a house. The companies in the Herkules Group also appreciate Rittal's expert man-machine interface and IT infrastructure solutions.



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Electrical engineering & automation

For the electrical engineering and automation industries, “Rittal – The System.” stands for complete system solutions with strong roots. As a member and partner of the electrical industry, Rittal has always been an integral part of this growth sector. A growing number of mechanical components are being replaced by electronic ones and the use of electronic control systems is also on the increase.

Rittal offers a comprehensive portfolio with a large number of series products. Industry applications with the TS 8 bayed enclosure system for drive technology and functional solutions for the man-machine interface are just a small part of this.

Areas of application for “Rittal – The System.”:

- Electrical installation
- Electronics
- Automation/measurement/control and drive technology (switchgear production and panel building)
- Semi-conductor industry
- Medical technology
- Nanotechnology

System advantages:

- Reliable equipment for power supplies, process control, communication and monitoring
- TS 8 bayed enclosure as a modular system for drive applications
- Climate control components for virtually all areas of application
- Power with power distribution components up to 4,000 amps
- End-to-end engineering in conjunction with Eplan
- Complete infrastructure solutions for data centres and IT networks
- Comprehensive global delivery and service network, including on-site support
- Standardised power distribution solutions to IEC 61439

IT INFRASTRUCTURE

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Perfect production of customised enclosures

Most of the countless enclosures that leave the Siemens combination engineering (WKC) plant in Chemnitz each year are manufactured in small quantities. This means that super-efficient, meticulously organised planning and production processes are more important than ever. It is the only way to guarantee delivery accuracy and a high standard of quality, something which Siemens has been successfully achieving for the past 18 years with integrated system solutions from Rittal – from the modular enclosure system TS 8 to cooling and power distribution components and innovative 3D development tools.

As a supplier of customised designs, Siemens WKC develops and produces high-quality switchgear, primarily for manufacturers of production machinery, machine tools and transport systems. Despite manufacturing to order, the company's short delivery times and uncompromising quality standards set it apart from its competitors. To achieve this, however, throughput times must be minimised and all operations must dovetail seamlessly with one another. For this reason, Siemens WKC uses integrated system solutions from Rittal in every phase of development and production.

Even at the 3D modelling stage, Siemens WKC uses the Rittal RiCAD-3D components library, while enclosure configuration is carried out using Eplan Cabinet. The Rittal climate calculation tool Therm for determining cooling requirements is likewise integrated into the process. With the aid of computer-assisted engineering, the finished enclosure configuration can be simulated and tested in advance. This allows Siemens to save on development costs, shorten delivery times and ensure that all components are installed in line with the relevant standards.

Next up is the machining. The TS 8 enclosures are delivered just-in-time by the Rittal distribution and logistics centre in Gera and can be pre-machined where necessary. Additionally, cable sets are pre-assembled with the routing module from Eplan, which translates into considerable time savings during assembly.

Saving on development costs and shortening delivery times:

- The Rittal RiCAD-3D components library during 3D modelling
- Rittal's climate calculation tool Therm for determining the amount of cooling required

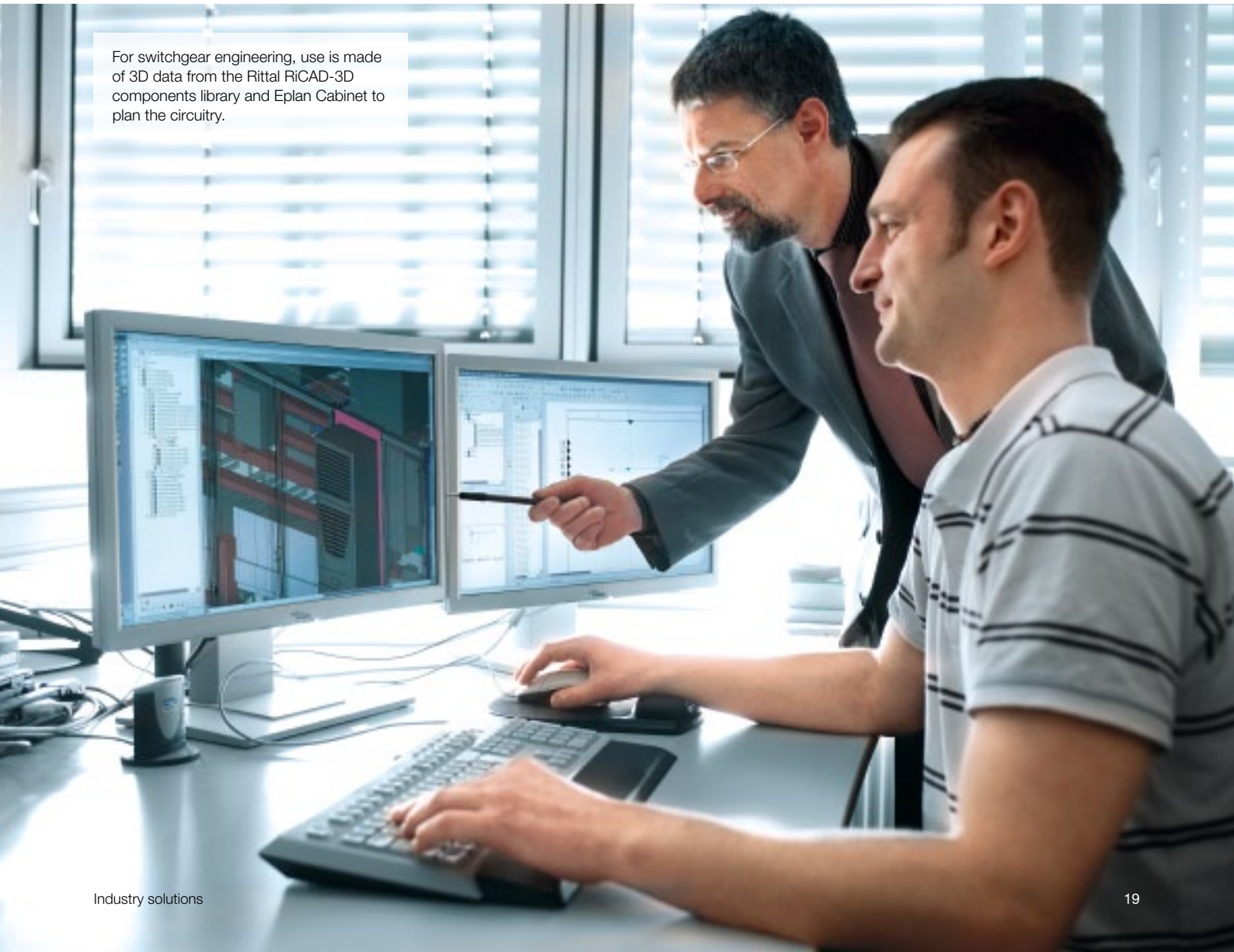


SIEMENS

“One of the main reasons why we use Rittal is the availability of 3D data and the system consistency – from the TS 8 enclosures and the opportunities for heat dissipation with cooling unit technology through to software tools such as Rittal Therm.”

Hans-Peter Kasparick, Head of Process Engineering and Systems Engineering, and Olaf Günther, Head of System Solutions and Industrial Equipment, at Siemens WKC.

For switchgear engineering, use is made of 3D data from the Rittal RICAD-3D components library and Eplan Cabinet to plan the circuitry.



Electrical engineering & automation



“We harness the benefits of Rittal’s standardised, universal TS 8 system platform and comprehensive modular system of accessories.”

Managing Director Timo Amels (left) and Head of Production Stephan Rabsch (right) from ATR.

Just-in-time enclosure assembly

If like ATR Industrie Elektronik GmbH you produce over six kilometres of switchgear enclosure combinations each year and install more than two kilometres of TS 8 enclosures for machine and plant control systems, you need excellent employee know-how in more than just electrical engineering. The logistics concept needs to be a little bit special, too, since ATR has Rittal supply its enclosures in separate parts. In addition to saving on dismantling time and packaging material, this also makes production more flexible.

Today’s enclosures bring together all the key aspects of industrial production, whether it’s powering and protecting electrical circuits, controlling drives of all kinds, communicating with sensors via field buses or connecting machines to the Internet.

“Enclosure equipment specialists play a key role in meeting these complex challenges,” says Stephan Rabsch. In his role as Head of Production at Krefeld-based ATR Industrie Elektronik GmbH, part of the Siempelkamp Group, Rabsch believes this involves more than just assembling all the individual components.

Instead, design and production need to be integrated to ensure complete control over the process chain – from the initial enquiry to the finished and tested enclosure as in series production. “If you assemble around two kilometres

of large TS 8 enclosures each year, you also naturally ask yourself how you can optimise logistics,” says Rabsch.

In the latest logistics concept, developed jointly by ATR and Rittal, the latter supplies the ATR production line with TS 8 enclosure frames pre-assembled with plinths in special transport racks. The mounting plate, all doors, side parts and rear panels are housed securely as individual components in the transport racks and stored separately at ATR. Meeting the just-in-time needs of the production process, the enclosure parts are taken from the store, processed and assembled. “This has created a key benefit for us as it has resulted in considerable time and cost savings – and not just because an entire dismantling stage has been eliminated,” continues Rabsch. A further advantage is that significant savings can be made on the amount of packaging material that is used and needs to be disposed of.

Considerable time and cost savings:

- Delivery in special transport frames
- Pre-assembled enclosure frames
- Less packaging material



Equipment specialist ATR is involved in all plant projects of its parent company Siempelkamp.



ATR has Rittal supply its enclosures in separate parts. In addition to saving on dismantling time and packaging material, this also makes production more flexible.

Electrical engineering & automation



SE 8 system enclosure – a true all-rounder

Rittal has added its new SE 8 system enclosure to its existing TS 8 platform. This opens up the same extension options as with traditional bayed systems. “The new SE 8 system is of great benefit to us, because we can use the same range of accessories for stand-alone applications as with the TS 8 bayed enclosures,” explains Andreas Ripplöh from panel builder and switchgear manufacturer Ripplöh Elektrotechnik GmbH based in the German town of Ostbevern. “This means our staff don’t need to keep rethinking things, which eliminates a major source of errors with a chain reaction that starts with the order and can continue as far as assembly and delayed delivery,” he adds. A further benefit is that the plant manufacturer’s expertise in planning and assembling the TS 8 can be transferred directly to the SE 8 enclosures. The fact that the interior installations of the SE 8 and TS 8 are absolutely identical means that it is possible to start planning and leave the decision as to whether a free-standing or bayed enclosure is needed until later.

Faster switching with Blumenbecker

From consulting, project planning, design and software development to switchgear production, electrical installation and commissioning, Blumenbecker offers the full range of automation services from a single source.

From individual enclosures to highly complex systems, this company based in the German town of Beckum produces and installs all kinds of switchgear systems for its customers across the globe. Blumenbecker regularly uses TS 8 bayed enclosure systems from Rittal.





Tried-and-tested quality for ABB

ABB and Rittal enjoy a long-standing partnership. The Swiss technology group has been using Rittal products for many years. Control systems for ABB's electrical engineering and process automation plants are regularly housed securely in Rittal enclosures.

ABB and Rittal are currently collaborating on a particularly large project in Saudi Arabia, which involves building one of the world's largest chemical plants. The Sadara Chemical Company – a joint venture of Saudi Aramco and Dow Chemical Company – is building this huge facility in Jubail Industrial City II in the eastern part of Saudi Arabia. It comprises a total of 26 separate chemical production plants that will manufacture 1.5 million tonnes of ethylene and 400,000 tonnes of propylene each year, together with numerous other chemical base materials to supply the region's industries with raw materials. On its completion in 2015, the facility will be the largest production plant for plastics and chemicals ever to have been built in a single stage.

ABB is the main contractor for automation for the entire facility and is demonstrating its expertise in implementing large-scale projects. The range of tasks extends from process automation and security systems to project management and training the maintenance staff. ABB and Rittal have worked together at several locations across the globe. ABB's American company in Houston, where the electrical engineering group has pooled its oil and gas industry expertise, took charge of engineering activities for the plants. Rittal's global presence was vitally important for this undertaking. ABB and Rittal designed, developed and implemented this huge project involving over 800 TS 8 enclosures across three continents – America, Asia and Africa. Thanks to the two companies' global presence and international expertise, they supplied the customer with an integrated, cost-efficient solution. Rittal components can be found above all in the ABB process plant and coolant compressor.



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Transport technology

“Rittal – The System.” provides complete system solutions for transport technology that are highly effective and deliver maximum operational reliability from a single source – for both indoor and outdoor use in integrated and project-specific applications.

Rittal offers modular enclosure and case technology, efficient climate control, power distribution and back-up, planning tools and global service support for the transport technology sector. This delivers impressive technical, organisational and economic benefits for all automotive production tasks at airports, on the railways and in the maritime sector.

Areas of application for “Rittal – The System.”:

- Automotive industry
- Railway technology
- Airports
- Maritime industry

System advantages:

- Comprehensive expertise, including in specific industry applications
- Design services, development support and prototype assembly
- Customised solutions with a high level of planning reliability
- Complete infrastructure solutions for data centres and IT networks
- Comprehensive global delivery and service network, including on-site support

IT INFRASTRUCTURE

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Transport technology



Around 50 Blue e generation cooling units are now in operation on two blanking press plants at Daimler AG in Sindelfingen.



DAIMLER

“The test results convincingly showed that Rittal’s Blue e generation cooling units would enable us to achieve substantial energy savings.”

Harald Böhle, Head of Industrial and Building Systems at Daimler AG in Sindelfingen.

Energy savings of up to 70 per cent

The potential for innovations in enclosure cooling units is far from exhausted. There is still significant scope for boosting efficiency, as verified by a pilot application at Daimler AG in Sindelfingen. The automotive manufacturer, one of the world’s leading suppliers of premium cars, put the new energy-saving cooling units from Rittal’s Blue e generation through an exhaustive battery of live tests. The outcome revealed that converting more than 250 cooling units to the new energy-saving technology would enable savings of 490 tonnes of CO₂ each year – which translates into six-figure savings in operating costs.

For Daimler AG, environmental protection is an integral part of the corporate strategy. The automotive manufacturer’s claim to “Green Technology Leadership” begins with the vehicle technology – hybrid, fuel cell and electric vehicles – and extends into its production plant.

For example, at the Sindelfingen press plant, with an annual energy consumption of 40,000 megawatt hours, there is significant potential for improving energy efficiency. At this plant, pressed parts are manufactured for virtually the entire vehicle portfolio of Smart, Mercedes-Benz and Maybach. Significant savings can be made here through efficient cooling of enclosures and switchgear systems. With a few exceptions, Daimler has, until now, relied predominantly on standard cooling units from Rittal. However, a direct comparison with the new Rittal Blue e cooling units revealed potential energy savings of up to 70 per cent.

On the basis of these unequivocal test results, Daimler AG decided to replace the old cooling units with new ones as soon as possible and to refit all switchgear at the press

plant by 2012. The automotive manufacturer placed an order for more than 250 new units, even before they were officially available. “Here, once again, Daimler AG is living up to its pioneering role, especially with its premium brand Mercedes-Benz,” stresses Harald Böhle, Head of Industrial and Building Systems at Daimler AG in Sindelfingen.

Once all the cooling units have been replaced, the savings at the Sindelfingen press plant will total some 754,000 kilowatt hours of electricity a year, corresponding to around 490 tonnes of CO₂ – not to mention operating costs of around 116,000 euros per annum. The good news for Rittal is that its new Blue e generation of cooling units will, in future, be specified as standard for all new plant at Daimler.

Huge annual savings potential:

- 754,000 kilowatt hours less electricity
- 116,000 euro saving



Transport technology



Global standard at Volkswagen

Rittal as far as the eye can see – that does not go unnoticed by people in the trade who visit Volkswagen plants. Rittal is the defined standard for enclosure systems large and small, climate control and control solutions along the automotive manufacturer's entire process chain. And that applies worldwide. The new sites in Changsha (China) and Taubaté (Brazil) are also benefiting from Rittal's expertise.

Off-road in India

Balkrishna Tyres (BKT) in India, one of the world's leading companies for off-road tyres, is intending to further expand its capacities with a new production plant. Rittal was involved in the project as a technical consultant from an early stage thanks in no small measure to its ability to offer a complete solution – from enclosures and power distribution to climate control.



Wolfgang Ehmer (Rittal consultant), Mathias Krakrügge (a member of the energy technology team in Breckerfeld) and Uwe Braselmann (owner of deller plastics) with the ISV distribution enclosure system from Rittal, which is extremely easy to install.

Reliable energy distribution at deller plastics

Reliable energy supplies are a basic prerequisite for smooth production – especially when customers have just-in-time delivery requirements. While expanding its production and storage capacities, automotive supplier and manufacturer of injection-moulded plastic parts deller plastics also needed to extend the existing electrical installations. Redundancy and excellent reliability were particularly important. Rittal's new ISV distribution enclosure system based on the tried-and-tested TS 8 enclosure impressed the company. "Rittal technology won us over. I'm convinced we've made the right investment decision for the future," says Uwe Braselmann, owner of deller plastics.

Making AUDI future-proof

With 600 racks, 25,000 height units, 6,000 servers and network components, AUDI AG's data centre offers the computing capacity for further company growth. All the automotive manufacturer's international sites are connected to this data centre, which was opened in 2012. Options for expanding the centre as required and thus making it future-proof were incorporated at the design stage. Excellent energy efficiency was a further focal point. Standardised IT infrastructure solutions from Rittal meet AUDI AG's requirements for straightforward migration, subsequent expansion options and high energy efficiency.



On completion of all four modules, the data centre will have 600 racks. With a good 25,000 U, it can accommodate around 6,000 servers and network components.



Efficient cooling at BMW

As demonstrated by BMW, a leading manufacturer of premium vehicles, implementing energy-efficient measures in production does not always need to be associated with large investments. The Munich-based company joined forces with Rittal to develop new control technology for enclosure cooling units. This has proved highly successful. Refitting equipment that has been in use for a number of years has resulted in substantial energy savings.



Twice as good with Haldex AB

Rittal has scored a double success with automotive equipment supplier Haldex AB. Not only is the Swedish company equipping the data centres at its ten international branches with IT infrastructure from, but also the relevant worldwide service from Rittal. As a result, Rittal is now also responsible for Haldex' standardised data centres in an after-sales capacity.

Transport technology



“Rittal offers sophisticated systems without any teething problems.”

A strong partnership at Munich Airport (from left to right): Werner Wohlfahrt (Rittal), Siegfried Seelos (Munich Airport) and Sven Schönstedt (Siemens).

No teething problems with baggage handling

It's a hive of activity. The baggage handling system at Munich Airport's Terminal 2 transports, X-rays and sorts thousands of items every hour. The figure will be 19,000 by 2015. That's 35 percent higher than in 2011, because Munich's Franz Josef Strauss Airport has expanded its capacity.

The airport is Germany's second largest after Frankfurt and ranks 26th in the world. No fewer than 398,000 flights took off or landed in 2012 – up to 90 an hour. According to forecasts, the airport will handle 58 million passengers in 2025. And they have luggage – lots of it – so logistics capacities need to be increased to transport bags and suitcases from aircraft to carousel or directly to another aircraft as quickly as possible. In summer 2011, the company operating Terminal 2 entrusted Siemens Mobility with the task of upgrading the baggage handling system and early bag store. The work needed to be carried out while the airport was in operation. The third and final stage of the project started in August 2013. On its completion, 50 rather than the previous 40 kilometres of conveyor belts will wind their way through Terminal 2.

The 30 percent capacity expansion is being achieved through additional technology, a new storage system and logistics improvements. Siemens control systems for the new baggage handling system are installed decentrally in around 250 CM and AE compact enclosures from Rittal. The low-voltage main distribution system and the cooling technology are housed in a further 40 TS 8 enclosures. “Protection against splashes and dust were important requirements,” says Rittal Key Account Manager Werner Wohlfahrt. “The enclosures also need to be robust, because they are located on a steel platform and are jolted about a great deal,” he adds.

The airport operators guarantee a connection time of 30 minutes. That's the minimum time that passengers with connections need to allow between one aircraft landing and the next one taking off for their luggage to be transferred. This time of just 30 minutes really makes Munich stand out from comparable airports and gives it a clear competitive edge. “If any part of the system fails, it needs to be replaced quickly.



Aircraft being loaded and unloaded at Munich Airport.

We require fast and reliable partners without a whole load of red tape,” stresses Sven Schönstedt from the Siemens Logistics and Airport Solutions team.

Excellent availability of the enclosure solutions and a good service also play an extremely important role. “It goes without saying that component reliability, straightforward maintenance and collaboration in finding solutions to problems are key criteria for us,” says Siegfried Seelos, Team Leader

for Airport-Specific Systems at Flughafen München GmbH’s Terminal 2 Gesellschaft. Standardised solutions are essential for the baggage handling system, because it is continuously being extended and modified. “It must be possible to modify the enclosure groups so as to be able to implement solutions quickly and easily at any time for additional requirements, for example in the area of climate control technology,” explains Schönstedt. Seelos sums up what ultimately sets Rittal apart as follows: “Thanks to Rittal’s sophisticated systems, there are no teething problems.”



Decentralised CM compact system enclosures from Rittal offer reliable protection for Siemens control technology right in the middle of the baggage handling system.

Standardised solutions:

- Excellent availability of products
- Good service
- Reliability and straightforward maintenance
- Sophisticated systems

Transport technology



“Strong partners like Rittal are very important to us.”

Dr. Ulrich Kipper, Head of the Central Infrastructure Management Service Section at Fraport AG.

Reliable infrastructures at Frankfurt Airport

With 1,400 take-offs and landings on peak days, Frankfurt Airport pulls off a logistics miracle. State-of-the-art technology and infrastructure are vital to ensure luggage arrives in exactly the right place having negotiated miles of conveyor belts, and also to provide reliable information on departures and arrivals. Operating company Fraport AG has been using system solutions from Rittal for years.

“As the company operating Frankfurt Airport, we need a great deal of logistics and technological expertise to deal with the large numbers of passengers,” explains Dr. Ulrich Kipper, Head of the Central Infrastructure Management Service Section at Fraport AG. IT and automation systems with high availability are a key prerequisite for trouble-free operation of the technical infrastructure – from baggage handling to air traffic control. To protect these systems, Fraport AG has for many years been using system solutions from Rittal in



Securely housed in enclosure technology from Rittal – control technology belonging to the baggage handling system at Frankfurt Airport.

all areas of the airport for IT infrastructures, automation and switchgear – and that now includes the new north-west runway. Rittal’s range of solutions for “fire station 4”, all the lighting systems and the ultra-modern video surveillance system for the runway extends from enclosures, including outdoor systems, and components for power distribution and climate control technology to network and server racks.

Numerous compact and standard enclosures and cooling units from Rittal have also been installed for the baggage handling system, the central air-conditioning units and the IT infrastructures of the new A-Plus pier, which is equipped with terminal positions for wide-bodied aircraft – in particular four A380 superjumbos. A fuel cell system is also being used at a German airport for the first time. State-of-the-art RiCell Flex technology from Rittal currently supplies the power for an automatic pay station.





Data centre at Riga Airport

It would be inconceivable for today's airports to operate without high computing power, so Riga International Airport in Latvia relies on a data centre solution from Rittal. The airport has a security room equipped with IT racks, liquid cooling packages up to 60 kilowatts for climate control, chillers and UPS. CMC III and RiZone control the monitoring of all security-related IT components.



Hub for India

With a capacity of 34 million passengers, Delhi Airport is one of the largest airports in Asia. Thousands of Rittal enclosures are in use behind the scenes – in the baggage handling and fire safety systems, in building management, in the lighting and signalling systems, and in the airport's tunnels. Even the Metro Train is equipped with Rittal products.

Absolute safety required above the clouds

DFS Deutsche Flugsicherung GmbH coordinates up to 10,000 flight operations per day. It is active at 16 international airports and operates control centres in Langen, Munich, Bremen and Karlsruhe. To ensure optimum flight safety in the future, too, DFS is planning a comprehensive revamp of its IT infrastructure and will be using over 930 TS IT server racks from Rittal at locations such as the new technical centre in Langen, which operates test systems for the future operative air traffic control systems. 100 workstations for air traffic controllers are being set up in Munich in a big new 1,800 square metre building. Just under 400 Rittal server racks will house the server and network technology. Server racks from Rittal will also accommodate the technology for a new voice communication system in Munich and Langen.



Every day, DFS staff coordinate up to 10,000 flight operations in German airspace – that's around three million each year – as here at Frankfurt Airport.

Rittal on track with Bombardier

The signal switches from red to green and the train magically moves to a different track. Sophisticated electronic signal box technology that is now controlled by a computer is needed to ensure this process does not end in chaos. Bombardier is one of the leading suppliers of such technology and uses solutions from Rittal, including at Weinheim's Bergstraße station, where the company installed a signal box for Deutsche Bahn. In future, it will be controlled remotely from the control centre in Karlsruhe. Both indoor and outdoor components are in use.

Rittal's CS outdoor systems can be found on the section of track between Darmstadt and Heidelberg and are used to transmit commands from the control centre, from where trains are shunted, points set and signals switched. TS 8 enclosure systems are therefore combined with 19-inch and fan technology in the control room. The enclosures house the control and server technology that ensures the trains run smoothly.



Excellent protection for Chinese underground

A warm, humid and poorly ventilated environment and electromagnetism are the typical challenges facing electronics systems in the tunnels of underground rail systems. The huge Chinese city of Dalian is no exception. China's Third Railway Survey and Design Institute TSDIG is now using solutions from Rittal here. More than 1,000 small enclosures benefit from water, dust and EMC protection as well as corrosion resistance. They also protect the electronic components in the monitoring and signalling system.



Bangalore metro

Fast, efficient, sustainable, cost-effective and environmentally friendly – these are all goals that the Indian rail network strives to achieve while serving the country's massive population. To meet these requirements, the new metro system in the country's third-largest city, Bangalore, is being equipped with Ri4Power power distribution systems from Rittal. Over 100 Ri4Power low-voltage switchgear systems from Rittal will control the climate in the tunnels of Bangalore's metro stations.

Through magnificent Alpine scenery

The Rhätische Bahn railway transports ten million passengers and 700,000 tonnes of freight every year. It is Switzerland's largest Alpine railway and its 384-kilometre network high in the Alps offers first-class rail experiences in a unique setting.

The Landquart data centre ensures the safety of rail traffic. Together with well-known local partners, Rittal has set up an IT infrastructure that first and foremost meets availability and redundancy requirements. The main challenge is the Alpine climate. The actual data centre is housed in a very small, low room, so a special cooling solution needed to be installed and the uninterruptible power supply had to be relocated elsewhere.



Transport technology



“The data centre solution is absolutely ingenious. We were able to accomplish this thanks to Rittal’s great flexibility.”

Horst Adelmund, Electrical Engineering Group, Communication, Entertainment and Lighting, Meyer Werft GmbH.

Shipshape data centres

The Celebrity Silhouette cruise ship, built by the Meyer Werft shipyard in Papenburg, Germany, offers around 2,850 passengers every luxury – from exquisite culinary delights and spa treatments to the first ever on-board Apple Store and a 2,000 square metre lawn area on the upper deck. Few of the holiday-makers realise just how much technical equipment is necessary for

everything to run smoothly, both on deck and in the cabins. Two data centres with IT solutions from Rittal run all the on-board communications equipment.

“Without a functioning data centre, nothing at all on the ship would work,” explains Horst Adelmund from Meyer Werft. That includes the telephones, mobile phone networks, the



casino and entertainment network, the video surveillance system and internet TV. Even the automatic dimming of the lights throughout the ship could not function without a data centre. Passengers could not make cashless payments in the shops and restaurants and much, much more besides. To ensure this scenario does not come about, two data centres on decks 3 and 9 of the Celebrity Silhouette ensure all the equipment runs with 99 percent availability. All the luxury liner's IT is equipped with solutions from Rittal. This includes TS 8 server racks with a special liquid cooling system and distribution enclosures with air/water heat exchangers in the sub-distribution locations.

Cooling the server racks was a particular challenge. To stop it getting too warm in the narrow confines of the computer rooms, the operator decided to air-condition the server racks directly using a liquid cooling system. Previous solutions with a fan-operated climate control system had shown that the room was cooled but not the servers in the racks. Meyer Werft is therefore using liquid cooling packages (LCPs) from Rittal to ensure effective cooling. Climate control enclosures with air/water heat exchangers located between the individual racks ensure an even supply of cold air to the servers. Due to the constant changes occurring both during operation of the data centre and over a planning period of more than three years, a high level of flexibility, expandability and exchangeability of the cooling

solution during ongoing operation were key arguments in Rittal's favour.



To stop it getting too warm in the narrow confines of the computer rooms on the luxury liner, the operator decided to air-condition the server racks directly using liquid cooling packages from Rittal.

Excellent flexibility:

- Expandability and exchangeability of the cooling solution during ongoing operation



Transport technology



“When it comes to low-voltage switchgear, we’ve worked with Rittal from the very beginning because of the comprehensive engineering support and the fact that this manufacturer offers the most stable and flexible system.”

Thomas Schellhorn, Managing Director of Promontan GmbH.

Energy distribution in the Caspian Sea

Offshore oil production places high demands on the equipment used. Typical requirements include the highest possible level of safety during plant operation and GL (Germanischer Lloyd) certification. Oil production platforms that are operated unmanned pose a particular challenge. The international oil and gas producer Dragon Oil plc in Dubai primarily extracts crude oil and natural gas in the Caspian Sea, off the coast of Turkmenistan. The company needed a switchgear manufacturer for the main power distribution system for a new oil production platform.

Dragon Oil found what it was looking for in Promontan GmbH from Werder, near Potsdam in Germany. The energy supply, provided by diesel generators on the oil platform, is designed redundantly with two 600 amp feeds. A total of twelve outgoing feeder panels supply the system’s consumers with electrical power. In addition, starter motors have been installed for equipment such as seawater, fresh water and diesel pump drives. Further consumers include heating systems and compressors for cooling plants.

The switchgear for the oil platform, which supplies the power to operate equipment such as pumps and compressors, has a particularly compact design.



“The requirement to construct the switchgear in Form 4b was new for us,” explains Thomas Schellhorn, Managing Director of Promontan GmbH. In Form 4b switchgear, the compartments of the various outlets are separated from each other. This design has the advantage of providing a far higher level of operational and personal safety, in particular in the event of breakdowns.

“It quickly became clear to us that we could achieve this using the system from Rittal,” says Mr Schellhorn.

An additional challenge was the very confined space available on the oil platform. The switchgear needed to take up around 50 percent less space than comparable equipment. The project was implemented using the Ri4Power system from Rittal, which is based on the TS 8 enclosure system. The support provided by Rittal’s Power Engineering software during all phases – from planning to installation – enabled standards-compliant switchgear documentation.



Power supply for giant Korean ship

Allseas' Pieter Schelte will be the world's largest special-purpose ship. The giant vessel, 382 metres long and 124 metres wide, will enter into operation in 2014. It will be able to lay pipelines and install offshore platforms. The ship is being built at a shipyard in South Korea. Around 300 Ri4Power enclosures from Rittal will be used for the on-board power supply.



Ri4Power breaks the polar ice

When the Almirante Irizar, an ice-breaker belonging to the Argentine navy, makes its way through the polar seas, it has Rittal technology on board. The supply vessel's power supply is provided by Rittal power distribution systems, 45 Ri4Power fields with Maxi-PLS 3200. The positive experiences of a system partner in the wind energy sector "broke the ice" for this order.

A base for marine researchers

Peters Schiffbau turned the Seefalke, which was built in 1981 as a fisheries protection vessel, into one of the world's most state-of-the-art research ships in the space of just two years. In cooperation with switchgear manufacturer Littau and marine equipment supplier Noris Marine Systems, the German shipbuilder based in Wewelsfleth installed a somewhat unusual power distribution solution. The centrepiece is

the new main switchboard, which was equipped with enclosure and case technology from Rittal. "We have been using solutions from Rittal for quite some time due to the high quality of its products. The difference is most apparent on the upper deck, where Rittal enclosures and adjacent competitors' products are exposed to harsh weather conditions," says Littau's Sales Manager Kai Töllner.





ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

Food industry

“Rittal – The System.” stands for cleverly thought-out system solutions for hygienic production in the food industry. Cleaning and disinfecting production facilities professionally is an absolute must in this industry. Plant and components need to systematically follow principles geared toward optimised hygiene and, from the outset, avoid design weaknesses that allow bacteria to thrive.

Rittal offers hygienic solutions for this sector – from enclosures large and small to command panels and housings for label printers and switches. We meet the strictest hygiene requirements, including the Machinery Directive 2006/42/EC, Regulation (EC) No. 852/2004, European standards such as the EHEDG and auditing/certification for IFS and BRC.

Areas of application for “Rittal – The System.”:

- Food industry
- Machine and plant manufacturers in the food industry
- Catering
- The hotel trade

System advantages:

- Roofs inclined forwards 30° and terminal boxes 3° all the way round
- Internal rather than external hinges
- Silicone, cavityless seals, durable and readily replaceable
- Wall spacer brackets for perfect cleaning even behind the enclosures
- Cable glands and levelling feet with no external thread

IT INFRASTRUCTURE

SOFTWARE & SERVICES



Food industry



Large and small Hygienic Design enclosures are used next to each other, offering all-round protection during thorough overnight cleaning.

Completely sealed

The two Landgeflügel companies – Emsland Frischgeflügel in Haren and Celler Land Frischgeflügel in Wietze, are equipped with ultramodern technology. In addition to producing chicken portions for food retailers and industrial processing, they also make convenience products. The two German companies supply big-name customers throughout Europe with any weight and packaging unit they require. Landgeflügel's production operations benefit from state-of-the-art process and automation technology and intelligent production control software. This ensures flawless quality assurance and full traceability.

Once the birds have been slaughtered, scalded, plucked and gutted in a wet area that is cleaned every two hours, the oven-ready chickens are cooled to below 2°C within three hours. They are then portioned and packaged fully automatically in cooled rooms at around 2°C. The entire production facility is cleaned from top to bottom every night using water at a temperature of 70°C and medium pressure, and is then disinfected. The cooling chain and flawless hygiene are vital to optimise microbiological conditions and thus maximise the perishable products' shelf life.

In the thick of it

HD enclosures from Rittal have been enhancing product and process safety in the high-tech manufacturing operation for a good two years now. Every last detail of the stainless steel enclosures' design is geared towards meeting the food sector's hygiene requirements. In addition to their sloping roofs, they feature blue external silicone seals with gap-free sealing. This reliably protects the electronics installed in the enclosures against water ingress from the daily cleaning processes.

The HD enclosures in Wietze are mainly used for the miles of conveyor belts that transport the various chicken products at exactly the right speed and discharge them at exactly the right time. They are also an established part of the packaging area, which comprises a total of eight lines. Second by second, trays containing the final products are automatically weighed, shrink-wrapped and printed with labels prior to dispatch.

Efficient weighing is half the battle

Bizerba has developed a check-weigher that checks the weight of the goods to be packaged at high speed in automated production lines in the food industry. “Our CWP Neptune is designed to be less prone to contamination than conventional scales during operation and to enable thorough cleaning,” says Hermann Berger, who is in charge of design activities for the further development and production of dynamic check-weighers for the food industry at Bizerba.

The global technology company for weighing, information and food service technology based its design closely on Rittal's modular Hygienic Design (HD) system. The aim was to design the continuous weigher in such a way that all hygienically sensitive areas remained unobstructed and freely accessible. Tried-and-tested components from Rittal's modular Hygienic Design system were incorporated into the



Hermann Berger, who is responsible for the further development and manufacture of dynamic check-weighers at Bizerba's Hildesheim site, knows he can rely on Rittal technology.



Special Hygienic Design technology from Rittal makes Bizerba's new dynamic check-weigher ideal for use in the food industry. It checks the weight of the goods to be packaged at high speed.

system concept of the Neptune series during this process. Bizerba housed all the control technology for the conveyor belt and the weighing cell that continuously measures the weight of the goods in a compact enclosure from Rittal's HD series. The unique Hygienic Design locking technology, special silicone seals and cable entries optimise hygiene by preventing product deposits and detergent ingress. Curves and bevels ensure that detergents and water drain off automatically. The front panel and the conveyor belt can be removed in just a few easy steps for problem-free cleaning.

The first customer and a partner in the prototype development of the Neptune series was fresh meat specialist WestfalenLand, which belongs to the Westfleisch group of companies, one of Europe's leading meat marketing operations. “We are so impressed by the new check-weigher that we now have a further five Neptune series units in our production section, where we process and package fresh, easily perishable food quickly and safely under the equivalent of cleanroom conditions,” says Michael Huster, Technical Manager at WestfalenLand.

Food industry



Everything fits in major project in Russia

Austrian electrical plant manufacturer Klampfer has built one of its largest ever plants in the Russian city of Bryansk, where a 60,000 square metre production facility is being created for meat industry company Miratorg. The biggest challenge is to ensure absolute compliance with European standards for all electrical engineering and control technology. Project planning and building work for the plant took place in Austria. The statistics are impressive, with 27,300 amps fed into the system via six transformers. For power distribution alone, this requires a 30-metre enclosure suite with twelve tonnes of copper. Klampfer also needs to be able to depend on its suppliers to ensure the successful completion of such a large project. Quality and delivery times are key in this respect. The company is therefore obtaining all enclosures and copper bars from Rittal.

Optimised hygiene at Karl Schnell

Consumers expect and demand products that combine perfect hygiene with reliable manufacture. Hygiene is an absolute must in the meat processing industry in particular. Although meat processing is the strongest sub-sector in mechanical engineering for the food industry, the hygiene aspect is also becoming increasingly important in other areas of food processing. In addition to damaging a company's image, poor hygiene can also pose a serious risk to consumers' health. Karl Schnell is well aware of this and insists on a plant concept that meets the strictest hygiene standards. The company's plants are built around control systems housed securely in Rittal enclosures.





Close to the action at Friesland-Campina

Sophisticated automation technology and complex fluid control systems are the norm at today's dairy companies. Friesland-Campina in the German city of Gütersloh is no exception. Every day, the company uses around 300,000 litres of fresh milk to make products including yoghurt and other desserts. Automatically controlled pneumatic valves ensure high-precision operation of intricate systems comprising pipework, stirrers, heaters and stainless steel tanks. Compact valve terminals form the control centre for the pneumatic actuators. They are housed with sufficient protection to ensure even vigorous cleaning does not affect them. This enables problem-free installation in the production environment, right in the middle of the process field. Being so "close to the action" saves on cables and hoses and is possible thanks to the combination of innovative AirLINE Quick valve terminals from Bürkert and Hygienic Design enclosures from Rittal.

Faster pasta

Family company Bürger is the undisputed king of the Swabian specialty: Maultaschen. Every day, it produces 1.5 million of the delicious little filled pockets of pasta. Most of them are made at the main production facility in Crailsheim and they are sold both fresh and frozen. Bürger insists on state-of-the-art manufacturing and process technology and the highest hygiene standards. To reliably protect the control electronics installed right in the middle of the process field against leaks and failures caused by water ingress during daily wet cleaning of the entire plant, the company systematically uses the Hygienic Design enclosure system from Rittal – for everything from small terminal boxes to large compact enclosures.





ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

Process industry

“Rittal – The System.” has the entire process industry covered with its complete system solutions. As a technologically challenging sector that is dependent on innovations, the process industry needs system partners with outstanding expertise and specialist knowledge.

With its wide range of series products and decades of experience, Rittal offers optimum solutions for enclosure and case technology, efficient climate control, power distribution and back-up. Rittal products are approved worldwide and offer cost-effective standard solutions for virtually all requirements.

Areas of application for “Rittal – The System.”:

- Chemical industry
- Plastics industry
- Refineries, crude oil, natural gas and mineral oil processing
- Pharmaceuticals, biotechnology and genetic engineering
- Ores, stones & clay, cement and glass
- Steel and metal production
- Coal mining
- Paper industry

System advantages:

- Modular enclosure and case technology for a wide range of requirements and extreme conditions (such as air containing dust or oil)
- Enclosure solutions for sensitive areas
- Efficient energy supply, climate control technology, power distribution and back-up
- System accessories for fast assembly
- Your production operations benefit from end-to-end engineering thanks to Eplan
- Comprehensive global delivery and service network, including on-site support

IT INFRASTRUCTURE

SOFTWARE & SERVICES



Process industry



International technology company GEA uses stainless steel enclosures from Rittal so as to ensure top-quality freeze-drying for its customers and meet specific requirements.

Top quality at GEA

High quality, global availability and a long-standing partnership – three things that are vital for GEA Lyophil when selecting products. That is precisely why the company decided on stainless steel enclosures from Rittal based on the TS 8. Rittal and the international technology group focusing on process technology and components for production processes in the areas of pharmaceuticals and vaccines have been working together for a long time. The GEA Group AG regularly uses Rittal products. Stainless steel enclosures of various designs are particularly popular in the pharmaceutical industry. In cleanroom applications, it is also necessary to comply with even tougher requirements such as the regulations of the Food and Drug Administration (FDA) or the 93/42/EEC directive concerning medical devices.

Dirt does not stand a chance

Process monitoring plays a key role at all stages of pharmaceutical production. It's the only way for companies to ensure uniform product quality. That's why pharmaceutical company Hennig Arzneimittel, which produces over 700 million tablets a year, decided to introduce an ERP system for its production operations. The associated technology – such as computers, monitors and bar code scanners for documenting and controlling everything from raw and auxiliary materials to the final product – needs to be housed in appropriate enclosures that meet cleanroom standards. Hennig Arzneimittel decided on Rittal's Hygienic Design compact enclosures for direct installation in the production area. These stainless steel enclosures with their sloping roofs and external, gap-free sealing ensure optimum hygiene.





**“As we see it,
standardisation has
nothing but benefits.”**

Dr Sven Kelly and Gabriele Wulf,
who are responsible for setting up
bioreactors and buffer stores.

Clean solutions for Festo and Merck Serono

The Merck Serono Biotech Center, one of the world’s most remarkable biotech plants, is situated high above Lake Geneva with views over the majestic French Alps. It is here that the cancer drug Erbitux is produced – using reliable automation technology housed in Festo enclosures based on Rittal’s Hygienic Design range that are supplied ready to install.

Merck Serono, the pharmaceutical division of Merck KGaA, has invested 350 million euros in the facility. Four production plants with a bioreactor capacity of 140,000 litres use biotechnology to produce drugs from complex molecules that cannot be synthesised chemically.

“Without reliable automation technology, it would be inconceivable to operate the bioreactors with capacities as high as 15,000 litres,” explains Gabriele Wulf, who is responsible for setting up the buffer stores at the new biotech facility. It is essential to carefully monitor and control the environmental conditions in the bioreactor on an ongoing basis. This is the only way to ensure optimum cell multiplication.

“There is virtually no European plant manufacturer that wasn’t involved in setting up our new facility. This naturally resulted in a great deal of coordination work,” reveals Sven Kelly, who is in charge of the bioreactor plants. He points out that the standardisation of enclosures was extremely helpful in this respect. “Festo clearly had no problem advising the plant suppliers from all over Europe of our requirements and equipping them with the right enclosures for the plants,” Dr Kelly continues. Festo relied on the tried-

and-tested quality of Rittal’s Hygienic Design enclosures to reliably protect the automation technology against external influences.

It supplied the system solutions directly to the facility ready for installation – equipped with all design data and circuit diagrams – in fully pre-configured and tested stainless steel enclosures from Rittal. As Ms Wulf and Dr Kelly see it, installation-ready solutions are ideal in plant engineering, where deadlines are often tight.



200 completely connection-ready stainless steel enclosures from Festo for the biotech factory’s 80 batch containers and bioreactors with some 5,000 valve functions approximately.

Process industry



Rittal Data Centre Container for safe mining down under

Mining is another area that would now be unthinkable without IT systems. A government authority operating in this sector in the western Australian city of Perth uses the largest Rittal Data Centre Container (RDCC) that the company has ever supplied. In the many years that the authority has been working with leading mining companies, data volumes have kept on growing, which has put increasing pressure on the IT systems. In addition to IT systems with a higher capacity, it therefore also wanted a redundant solution that would improve availability.

The RDCC was the ideal solution. Combining a twelve-metre container module with a six-metre one created sufficient space for 15 IT racks. Further infrastructure modules can be added for subsequent expansion. The RDCC's climate control system benefits from highly energy-efficient, direct free cooling. Thanks to the weather conditions in Perth, the climate control compressors are only needed on an average of 26 days each year, which is good for the energy efficiency of the emergency data centre.



Enclosures for Petronas

One of Malaysia's largest ever infrastructure projects – the Sarawak Integrated Oil and Gas Project – is currently under way in Kimanis on the island of Borneo. A consortium headed by Petronas is building pipelines and a terminal to develop the oil and gas supplies off the coast of the Sarawak and Sabah provinces. The project also includes a 300 megawatt gas-fired power station to supply the region with power. Rittal is providing enclosures for the power station's fire alarm system and switchgear through one of the consortium partners.



Protection under harsh desert conditions

With hot, dry conditions during the day, a cold, damp climate at night and dust into the bargain, applications in the desert pose a real technical challenge. Rittal rose to this challenge for automation group Honeywell, supplying TS stainless steel enclosures with a protection category of IP 66 that are ideal for the extreme environmental conditions under which control systems operate at gas and oil sources in Oman.

Saving time with Power Engineering

The iron and steel industry is an important part of Kazakhstan's up-and-coming economy. German company gefeba from Gladbeck, a system supplier for automation technology and electrical equipment, was asked to make a low-voltage switchgear system for the dust extraction plant of a large steelworks. The switchgear manufacturer produced a total of three plants with an identical design, each with 27 fields and a rated current of 4,000 amps.

Ri4Power from Rittal was used as the power distribution solution. "A big advantage of the Ri4Power system is Rittal's Power Engineering software, which simplifies switchgear planning," explains gefeba's Production Manager Michael Gendrzejko. Using Power Engineering saved the experts at gefeba a huge amount of time.



Honeywell puts its foot on the gas

The Abu Dhabi National Oil Company (ADNOC) has entrusted Honeywell with the task of developing the Shah gas field in the United Arab Emirates. To expand gas production, Honeywell needed a large number of enclosures for automation, security and IT solutions.

Only Rittal was able to offer all these solutions from a single source. The company also impressed with its wide range of accessories, high technical standard and local support.





Renewable energies

“Rittal – The System.” plays a key role in the supply of safe, efficient and cost-optimised green energy. Renewable energies have not simply become a global growth industry. They already make a major contribution to the energy industry.

For many years, Rittal has been supplying the world’s leading system integrators and manufacturers in the renewable energy sector with everything from pitch control enclosures for wind turbine rotors and intelligent converter climate control systems to enclosure solutions suitable for outdoor use for central inverters in photovoltaic applications.

Areas of application for “Rittal – The System.”:

- Wind power
- Photovoltaics
- Biogas
- Hydroelectric power
- Solar power
- Geothermal power

System advantages:

- Flexible enclosure solutions for wind power and photovoltaics
- Weather-resistant outdoor enclosures for extreme environmental conditions
- Energy-saving climate control solutions to improve efficiency
- End-to-end engineering in conjunction with Eplan
- Global availability of products and services
- Comprehensive global delivery and service network, including on-site support

ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

Renewable energies



Enclosures for Nordex

The highest wind turbine at the Siegbach wind farm in Schelder Forest measures 190 metres from base to rotor tip. It is one of three newly installed 2.5 megawatt wind turbines from Nordex. This company has been reliably supplying Germany's grid with green power since 2012, generating 16 million kilowatt hours of electricity each year. That is sufficient for approximately 6,400 households. Like the turbines themselves, the technology inside also comes from the region of Hesse. From the base of the tower to the nacelle way up in the air, Rittal enclosures provide the comprehensive protection required to keep the integrated components operating smoothly. The demands are high, because the enclosures are subjected to strong vibrations and high temperature fluctuations.

"As a wind turbine manufacturer, we are particularly interested in ensuring that the integrated components not only work reliably but are also quick and easy to install and maintain," explains Thomas Brix, Head of the Electrical Engineering System Department at Nordex.

Wind turbines convert mechanical energy into electrical energy. In addition to the rotor, drive shaft and gear mechanism, this requires a whole host of electrical and electronic components – from converters, controllers and safety devices to communication and monitoring modules. At the Siegbach wind farm, all these components are integrated in

TS 8 enclosures from Rittal that were made just a few miles away at the Rittal site in Rittershausen.

A wide range of accessories, expansion possibilities over two mounting levels and bayability in all directions make the TS 8 Top enclosure system a platform that offers users a great deal of flexibility. "Rittal – The System." also makes it easy for the various climate control solutions with equipment such as cooling units and heat exchangers to be integrated and adapt flexibly to the requirements.



Converters in the nacelle are securely accommodated in TS 8 enclosures from Rittal. These enclosures are also spring-mounted on rubber bearings and steel beams at the top and the bottom due to the constant movements and vibrations.

Wind power from the conveyor belt

Rittal has been a reliable partner to the wind power sector for many years, with solutions for wind turbine towers, nacelles and rotors, external applications and special logistics services for production. Rittal has developed a special logistics concept tailored to the specific requirements of wind farm manufacturer Enercon. TS 8 enclosures used by the wind turbine manufacturer for the installation of frequency converters, control cabinets and uninterruptible power supplies (UPS) for its wind farms are no longer stored in the warehouse, but instead delivered on a just-in-time basis. More than 15,000 units, 95 percent of which are transported by rail, join the production cycle each year. From the loading ramp, they are placed directly on a conveyor belt to transport them into the workshop. There, the enclosures are configured and installed at a rate of one every seven minutes. Ulrich Neundlinger, Managing Director of Enercon Electric Schaltanlagenfertigung GmbH, is enthusiastic about the logistics concept: “The success speaks for itself. It couldn’t be any better!”

Rittal is a global system partner to manufacturers of wind turbines and components such as panel builders. As well as Enercon, it also counts other well-known names such as Convertteam, Goldwind and Suzlon among its customers. Solutions from Rittal are used in wind turbine nacelles and rotors and also in external applications. They include TS 8 enclosures and climate control solutions for the control technology, power distribution systems and emergency power supplies via UPS. Rittal enclosure systems made from stainless steel or aluminium that withstand extremely corrosive environmental conditions are used in offshore applications in particular. Rittal’s reputation as a global player and uniform global quality standards are powerful arguments among our wind power customers.



Enercon has installed over 100,000 TS 8 enclosures from Rittal in its wind turbines across the globe. Karl-Heinz Froitzheim of Rittal (right) thanks Ulrich Neundlinger of Enercon (left) for this strong partnership.

Enercon uses TS 8 enclosures from Rittal to house the frequency converters for its wind turbines.





Global presence with Bonfiglioli

The direct current from a solar installation needs to be converted into alternating current before being fed into the grid for subsequent use by end consumers. That makes the inverter an integral part of such installations. Bonfiglioli specialises in inverters and high-tech electronic components. It uses enclosures from Rittal for its inverters. An important aspect of this collaboration is that Rittal, like Bonfiglioli, benefits from a global presence. As an international company with eleven production sites in Europe, Asia and North America, Rittal can offer its customer Bonfiglioli flexible supplies and a standardised service the world over. What's more, Bonfiglioli needs a production partner who is represented on all markets to ensure fast and cost-effective supplies.

The collaboration with Bonfiglioli extends far beyond supplying enclosure systems, though. It starts at the development stage. Engineers from the two companies work together on new applications for the solar market. After all, state-of-the-art inverters are not sufficient in themselves. In addition, enclosures must also be adapted to the different requirements of customers from the solar industry. Climate control also plays a key role here, because most large solar farms – such as Bonfiglioli's 170 MW reference project Centinela Solar Energy in Calexico, California – are in locations with 300 or more days of sunshine per year. Robust technology and local support are a must in such regions and an important factor in other parts of the world, too, so collaborating with Rittal results in another key benefit for Bonfiglioli. "When we move into new markets, Rittal is already there," says Dr. Robert Lenke, Product Manager Photovoltaic Solutions at Bonfiglioli.



Solar-powered wells for Indian farmers

Indian company Jain builds pump systems that operate autonomously using solar power and irrigate crops, fruits and vegetables via drainage channels. The water is drawn from wells or reservoirs. In the past, the control systems were often damaged by environmental influences or simply stolen. Since Jain started using electrical boxes suitable for outdoor use from Rittal, these vital wells have been benefiting from optimum protection against all adversities.

VARTA stores the Sun's energy

Efficient intermediate storage of energy is one of the key conditions for the successful transformation of Germany's energy system. VARTA Storage, a leading company in this field, now uses system technology from Rittal for its new Engion Family energy buffer device. Highly efficient lithium ion batteries from VARTA store solar electricity in a modified TS 8 enclosure from Rittal.



Russia's largest power station

The hydro-electric power station at the Sayano-Shushenskaya Dam on the Yenisei River is Russia's largest power station and the sixth-largest hydro-electric power station in the world based on average power generation. In August 2009, an accident caused the machine halls to flood, which led to two 711 MVA generators exploding underwater due to a short-circuit. All the other equipment was also damaged. Only four generators could be repaired and six had to be replaced. Rebuilding work is still in progress – with enclosure, power distribution and monitoring systems from Rittal.

Automatic control system for biogas from Italy

Austrian company Protec supplies equipment for biogas plants, above all in Italy. The automated control system optimises conditions in the fermenter. This is where a microbiological process generates the biogas. Rittal is a partner of Protec. "We have been using almost nothing but Rittal products from the outset. Quite simply, everything fits and is effectively coordinated," says Protec Sales Engineer Thomas Bauer.





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“Rittal – The System.” provides complete system solutions supplying the technology required by urban areas. The challenges are as numerous as they are complex, ranging from faster communication networks to e-government and healthcare. On top of this comes supplying power to towns and cities, which already account for two-thirds of the total energy volume. And with one billion people suffering from a shortage of water, drinking water and waste-water management is another major challenge.

Rittal offers an efficient product portfolio for the specific requirements of the future networks of urban centres and the surrounding areas – in a perfectly coordinated system with a wide range of accessories.

Areas of application for “Rittal – The System.”:

- Power supply
- Water supply
- Communication networks
- E-government
- E-healthcare

System advantages:

- Weather-proof, scalable indoor/outdoor enclosures and system solutions for difficult environmental conditions
- Console systems and enclosure solutions of all sizes for indoor and outdoor use
- Efficient climate control solutions for all performance requirements from fan-and-filter units to cooling units and complete recooling systems
- System solutions for power distribution in low-voltage switchgear systems with currents of up to 5,500 amps
- Complete infrastructure solutions for data centres and IT networks

IT INFRASTRUCTURE

SOFTWARE & SERVICES



Infrastructure





Dr. Ulrich K uchler (left), Head of Primary Technology in the Electricity Special Services division at RWE Westfalen-Weser-Ems Netzservice GmbH, and Rainer Slykers (right), Product Manager for Primary Technology Systems and Operating Equipment at Amprion GmbH, Dortmund.

On the grid with a double-walled design

For decades, open-air supply enclosures have been performing a vital service in the 380, 220 and 110 kV substations of the RWE transport and distribution network. Disadvantages include the cost of corrosion protection and problems with the interior climate of the single-walled sheet steel enclosures. Rittal, in collaboration with the Essen-based panel builder SSS Elektrotechnische Systeme, has come up with a solution to this problem. Toptec outdoor enclosures from Rittal, combined with the RWE intelligent modular design that has been established and refined over the course of several decades, have led to the development of a new concept. RWE made this a compulsory requirement in early 2010.

RWE reviewed its existing enclosure concept as part of an ongoing improvement process for the general agreement, which was offered for tender in 2009. The network operator's requirements included an improvement in the climatic conditions inside the enclosure, corrosion resistance for a minimum of 40 years, compatibility with existing modules, plus the convenience of configuration from standard modules. "The concept presented by Rittal and SSS met these requirements and emerged as the optimum solution based on an analysis of commercial and technical benefits," says Dr. Ulrich K uchler, Head of Primary Technology in the Electricity Special Services division at RWE Westfalen-Weser-Ems Netzservice GmbH in Dortmund.

"A review of our current procedures for purchasing enclosures produced a positive outcome from both a technical and a financial viewpoint," adds Rainer Slykers, Product Manager

for Primary Technology Systems and Operating Equipment at Amprion GmbH in Dortmund. The collaboration between RWE, SSS and Rittal based on the standard product Toptec culminated in a series product with fast availability that had been tailored to RWE in terms of its technical specifications and offered exceptional flexibility to accommodate the varying local conditions. The stainless steel base frame of the enclosure is based on the TS 8 system platform, while the doors, side components and roof are made from aluminium, which results in a weight saving of up to 40 percent. The double-walled design ensures better climatic conditions inside and helps to prevent condensation.



Production of all the control technology, including the necessary modules and delivery of the complete control system, is handled by SSS Elektrotechnische Systeme in Essen as a one-stop supplier.

Infrastructure



Thermal heat in the Czech Republic

A project to replace an old power plant block at the coal-fired power station in Kladno in the Czech Republic will be completed by 2014. With an installed power of 135 megawatts, the new unit will be more efficient and far more environment friendly. It will provide the city of Kladno with thermal heat on a sustainable, long-term basis. Rittal customer and technology partner Elpro from Berlin is supplying the switchgear bays based on Ri4Power.

High-speed plant engineering

E.ON operates one of Germany's largest pore storage facilities for natural gas. The gas is forced into deep rock strata under high pressure and removed again as required. E.ON entrusted Schäftlmaier Elektroanlagen with the task of planning and building a new low-voltage main distribution board for the new compressor at the plant in Upper Bavaria. Schäftlmaier used Rittal's Ri4Power system platform for this purpose. "We were only able to keep to the very tight timescale thanks to Rittal's amazing support in planning the distribution board," underlines Project Manager Christian Schäftlmaier. Rittal's Power Engineering software was used for the project. Among other things, the software determines which items from the Rittal range are needed and compiles a parts list. "The straightforward planning and integrated design verification of the Ri4Power system were the key success factors for us in this project," says Schäftlmaier, summing up his positive experiences.

Reliable flow of power in Spain

Naturgas Energia is Spain's second-largest gas supplier and has a network of gas pipelines extending over a distance of just under 5,600 miles. Rittal's reliable and efficient IT infrastructure keeps the power flowing for the EDP subsidiary with a data centre combining a security room and RiMatrix components. The climate in the eleven server racks is controlled by LCPs and IT chillers and monitored by monitoring tools.



Red alert

If the Ewersbach volunteer fire brigade in the German region of Hesse receives an emergency call, the firefighters need to arrive on the scene as quickly as possible. Intelligent building services technology is required to open the emergency door, switch on the lights in the hall where the fire engines are kept and open the gates. All components – from the radio system to the central building automation – are housed in a Ri4Power ISV distribution enclosure from Rittal.



Reliable power for Singapore

“Way To Go, Singapore!” is one of the south-east Asian city state’s slogans. It also applies to the power grid, which has been modernised in recent years. Reliable power supplies are vital for the densely populated metropolis with over five million inhabitants. That’s why Singapore Power and ABB have gone for reliability at their new substation and chosen TS 8 enclosures from Rittal to ensure the switchgear is housed securely.



Water treatment with Flex-Block

Austrian company Frühauf GmbH equips environmental technology installations, power stations for sustainable energy generation and tunnel systems the world over with automation and power distribution solutions. It saves a great deal of time by locating Rittal’s tried-and-tested TS 8 enclosures on the new Flex-Block base/plinth system – especially in remote countries such as Turkey, Iraq, Egypt, Algeria and Cape Verde, where Frühauf provides equipment for drinking water and waste water treatment plants.

Clean water for Nablus

The new water treatment plant in Nablus needed to be completed very quickly, so the contractor decided to use power distribution solutions from Rittal. Thanks to Rittal’s excellent delivery reliability and rapid support, the system for supplying and disposing of water in the arid Palestinian city with its over one hundred thousand inhabitants was soon in place.



Infrastructure

Traffic keeps flowing in Moscow City

With millions of cars passing through Moscow every day, the city council has initiated a programme specifically to cope with this high volume of traffic. It aims to reduce traffic jams and delays on the city's roads, increase the average speed of traffic and improve the frequency and speed of public transport. The council is making use of Rittal's skills and expertise for the traffic management systems and telematics solutions. Over 1,050 TS 8 and more than 3,000 KL outdoor enclosures have already been equipped with traffic monitoring technology. They help record data relating to traffic speed, volume and density and control the traffic signals. These Rittal solutions are used in Moscow City, the up-and-coming financial centre located in the middle of the Russian capital.



No chance for dust in South Africa

When developing outdoor enclosures for one of the world's leading telecommunications groups, Rittal faced the challenge of temperatures ranging from minus 30 to plus 50 degrees Celsius. The customer was looking for a solution to expand its mobile phone networks in India and South Africa. Robust enclosures were needed to protect the sensitive radio transmission technology against the severe environmental influences. The key question was how to cool the system while also protecting it against dust. The experts at Rittal decided on a cost-efficient solution with fan-and-filter units. These units have the advantage of working with just one fan that draws in the cooler external air, filters it, routes it inside and releases it as warm air via vent slots. In collaboration with the filter experts from Gore, Rittal equipped the enclosures with a powerful filter that can cope with even high levels of dust. The 3,000 CS outdoor enclosures now in use in India and South Africa defy these countries' extreme conditions in terms of temperature and dust.





Rural surfing

High speeds are the order of the day on Germany's information highways – especially after a network expansion. In rural areas in particular, large sums are currently being invested in improving Internet access. In northern Hesse, the rural district of Kassel now has 74 areas in 23 municipalities connected to the DSL network. Rittal supplied over 150 customised outdoor enclosures for this purpose. The technology inside links the signals arriving by glass fibre cable or microwave radio relay to Deutsche Telekom's existing copper lines.



It took 13 months to expand the DSL network in the rural district of Kassel. The success of the project is good news for (from left to right): Georg Matzner (Hesse Ministry for Economics), Uwe Schmidt (Head of the District Authority), Markus Deusing (Rittal), MP Björn Sänger, Klaus Peter von Friedeburg (Managing Director of ACO) and Dr. Stephan Albers (Managing Director of BREKO, the Federal Association of Broadband Communication).

A 13-month construction period, 33,000 households and an investment of 4.5 million euros – these are just three impressive statistics relating to the expansion of Internet access in the rural district of Kassel. The infrastructure project was implemented by ACO Computerservice GmbH from Kassel. “When we came to select the enclosure technology at the project planning stage, we quickly decided on Rittal,” recalls ACO Managing Director Klaus Peter von Friedeburg. He was won over by his company's many years of good experiences with 19-inch indoor enclosures and the clear modular design of outdoor enclosures.

Still intact after road traffic accidents

Especially if located close to roads, enclosures may be damaged in the event of traffic accidents. Consequently, Rittal designed the total of 150 enclosures installed in Kassel so as to enable the entire external enclosure to be repaired or even replaced without having to switch off the communications technology inside. Availability is now more important than ever, especially when it comes to data connection. “When an excavator bent a door completely out of shape while it was being installed, we were able to see for ourselves how quickly and easily repairs could be performed. A replacement was available immediately and Rittal's service team arrived at the scene promptly,” says ACO Key Account Manager Stefan Finger. Thanks to their IP 55 protection category, effective climate control concept and resistance class of 2, the double-walled enclosures offer outstanding protection against adverse environmental influences and vandalism.



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“Rittal – The System.” stands for efficient system solutions for the IT industry thanks to modular and scalable infrastructures. The ever increasing demands on permanently available IT systems call for customised data centre solutions from a single source. As a long-standing, experienced system partner to the IT industry, Rittal has the expertise for this field’s very specific issues and requirements.

Rittal’s innovative solutions for the IT environment ensure reliability, availability and optimum cost-efficiency for server/network technology and data centre construction.

“Rittal – The System.” demonstrates its strengths in:

- Consulting and analysis
- Planning and testing
- IT and infrastructure
- Networking and data centres
- Maintenance and service

System advantages:

- Robust, flexible racks and efficient, modular climate control solutions
- IT-specific power distribution and uninterruptible power supply
- Measurement and control of all components in the IT infrastructure
- Secure IT/technology rooms, modular safes and active security systems
- Predictable costs, optimum contactability and a global service

IT INFRASTRUCTURE

SOFTWARE & SERVICES



Information technology



Microsoft®

“The improved energy efficiency is a blessing for my budget.”

Michael Dillon of Microsoft EEC.

Meeting extreme demands in Redmond

The world’s leading software developer Microsoft has set up a special data centre at its corporate headquarters in Redmond to allow customers to test new software before it is used for real. In the Enterprise Engineering Center, over 700 servers are used to simulate the IT environments of enterprise software customers, removing the risk of surprises when it comes to actual implementation of next generation products. Following expansion of the test laboratory in 2009, Microsoft can now depict the impact of migration on energy consumption even more accurately. Microsoft opted for IT infrastructure from system supplier Rittal for this project.

The EEC Validation Center comprises over 700 servers, storage capacity in excess of three petabytes and a central switching fabric of over twenty terabytes. Microsoft customers use this facility to simulate their own production environments and test the early versions of new software in practice. The test facilities were enhanced in 2009 when the Microsoft lab was expanded. At the heart of the installation are a total of 38 TS 8 server racks and 15 rack-based LCP Plus (LCP = liquid cooling package) high-density cooling systems from Rittal.

Rittal TS 8 server enclosures and liquid cooling packages are ideal for modern, high-density data centres in which ever greater loads and heat are generated in the

server racks by blade servers. The modular TS 8 system is designed for a weight of up to 1,600 kg. Unlike CRAC systems, which supply entire data centre rooms with cold air, the LCPs are installed directly alongside the racks for targeted delivery of cold air in front of the servers. In this way, the Rittal system is able to dissipate very high heat loads and reduce energy consumption for climate control by up to 40 percent.

“Rittal’s LCP Plus cooling system meets two key criteria for the EEC. Firstly, the cooling is integrated into an enclosed environment. That gives us the ability to monitor it in a much more targeted way and to develop even more energy-efficient solutions for the future. Secondly, this solution is more portable and flexible than the traditional centrally cooled data centre. At the same time, the improved energy efficiency is a blessing for my budget,” explains Michael Dillon of Microsoft EEC.

Lowers energy consumption for climate control:

■ Energy saving



Enterprise Engineering Center



Microsoft tests new developments for enterprise customers with racks and cooling solutions from Rittal



Well cool – cutting-edge data centre cooling

The nursery rhyme “Ding dong bell pussy’s in the well” may date back centuries, but wells have now become one of the most cutting-edge ways of cooling data centres. This method offers unbeatable energy efficiency. Internet service provider IGN GmbH from Munich is one of the first companies in Germany to use groundwater for indirect cooling of a commercial data centre. Rittal was the general contractor for the project.

Among other things, IGN operates large websites with high availability demands on the server and network infrastructure. The IT systems were split across several commercial data centres in Munich, Nuremberg and Frankfurt. To reduce the service outlay and the risk of failures, the plan was to combine them in a single data centre in Munich. The company began its search for a suitable data centre in 2008. After

considering a number of different alternatives, IGN decided on a new building in the Giesing district of Munich.

In addition to providing space for future growth and ensuring maximum operational reliability, the data centre needed to have an appropriate cooling concept for optimum energy efficiency. The location offered ideal geological conditions for using groundwater for cooling purposes, which paved the way for significant potential savings. Groundwater at a constant temperature of 11.3 degrees Celsius and with a comparatively high flow rate is obtained from a suction well. In the primary cooling circuit, it is routed through the heat exchangers where it cools a closed secondary water circuit. Having become a maximum of five degrees Celsius warmer, the groundwater is then returned to the ground via an injection well. For redundancy purposes, two suc-



Far left: A total of two redundant suction wells convey the groundwater for cooling the data centre into a secondary water circuit. The heated cooling water is returned to the ground via two injection wells, also designed with redundancy.

Left: The cold air passes from the CRAC via the raised floor through gratings into the cold aisles leading to the Rittal racks – directly in front of the servers. Redundant busbars supply the racks’ electronics equipment.

Right: Measuring equipment permanently monitors the data centre’s main electrical distribution system.



“Due to the numerous activities involved in building construction, we were keen to obtain the entire data centre from a single source, so we decided to use a general contractor to set it up, including the cooling system. We chose Rittal because it is a data centre specialist.”

Gerald Nowitzky, Managing Director of IGN GmbH.



tion wells and two injection wells were built. All four wells are equipped with two pumps, each of which requires only 1.8 kW of power. The suction and injection wells are located 300 metres apart so as to rule out a short-circuit in the water circuit.

The water cooled in the heat exchangers supplies a total of eight redundant CRAC systems from Rittal. These electronically controlled systems combine with optimised cold air routing to deliver highly efficient and reliable data centre cooling. The cold air from the CRACs passes via the 90 centimetre high raised floor through gratings into the cold aisles leading to the Rittal racks. The heated air rises in the hot aisle and is returned to the CRACs via the ceiling and a wall opening.

To ensure a completely fail-safe system, IGN uses three uninterruptible power supplies (UPS) for each supply path. These are located in two separate fire compartments, which gives the UPS concept a redundancy of $2(n+1)$. IGN chose the data centre specialist Rittal to implement the project. In addition to performing all the installation work, Rittal was also able to provide service and maintenance assistance once the system was up and running. Maintaining the highest standards in the area of extinguishing technology, and fail-safe operation in the event of power failures and any interference in the water circuit enable IGN to guarantee its customers tier 3 reliability.



Efficiency and reliability

- Power Usage Effectiveness (PUE) of 1.2
- Up to 40 percent lower power consumption than conventional solutions
- $2(n+1)$ redundant power supply
- Argon inert gas extinguishing system
- $n+2$ redundant climate control technology

Information technology



The Vatican Apostolic Library is home to more than 80,000 manuscripts, some of which date back to the 15th century.

The Vatican's memory

The Vatican Apostolic Library is one of the most important libraries in the world. In addition to energy efficiency, maximum flexibility and scalability were key criteria in the search for a new data centre.

Subsequent expansions needed to be possible at any time in response to higher archiving requirements. A suitable location was quickly identified in the rooms directly adjacent to the office wing. The layout and structure were planned with great care to meet the requirements.

The data centre design comprised four sections, each accommodating eight Rittal TS 8 enclosures and four LCPs (liquid cooling packages). The first phase of the project focused on two of these sections.

The UPS, power distribution system and power supply extend to all four sections of the data centre. Four LCPs optimise energy efficiency with inline climate control for the server racks. The Rittal cooling solution is ideal for climate control applications with a high equipment density in a limited space. Security, video surveillance and controlled access systems ensure a high level of security for the archived data.



The library's contents are totally unique.



Thanks to Rittal's IT infrastructure, it is possible to digitise the library's manuscripts for future generations.



Neville Digby from Orion (left) found out about the Rittal Data Centre Container through the media and was soon able to collect the key to the mobile data centre from Brad Riach (right) of Rittal New Zealand thanks to Rittal's rapid assistance.

Rapid assistance in New Zealand

The mobile Rittal Data Centre Container offers rapid global availability. The data centre really comes into its own when time is of the essence, as demonstrated by its use at New Zealand power supply company Orion, whose office building was badly damaged by the powerful earthquake in February 2011. The company's existing data centre with all its IT infrastructure also partially subsided as a result of the tremors.

With the Rittal Data Centre Container, Orion has found a suitable replacement to safeguard its own business processes and the power supply for the city of Christchurch. The Rittal Data Centre Container was configured at Rittal's site in Hof to make it fully functional and transported by ship and truck from Germany to New Zealand. It is the first mobile data centre of its kind in New Zealand. The Data Centre Container is serving as an interim solution for Orion until the new building for employees is ready and the network is up and running. Neville Digby, Senior System Engineer at Orion,

is full of praise for the partnership with Rittal: "We needed a rapid solution following the earthquake in February and the damage to our data centre. From the media, we found out about the Data Centre Container which, as a fully equipped data centre, meets all our needs. We were soon operational again thanks to Rittal's rapid assistance."

The Rittal Data Centre Container weighs 15 tonnes and is 10 metres long, 3 metres wide and 3.25 metres high. It is fitted with a completely redundant power and emergency power supply and a fire alarm and extinguisher system. The solution also features integrated direct free cooling with a power rating of 40 kW that cuts energy consumption for climate control by up to 40 per cent compared with conventional climate control units for data centres and uses filtered external air for cooling.



The Rittal Data Centre Container proved to be the optimum solution following the earthquake in February 2011. The second series of earthquakes in December 2011 were no match for the mobile data centre.

Information technology



“Our new data centre is definitely one of the most modern in Ohio.”

Sallie Arnett (left), Vice President Information Systems at Licking Memorial Hospital.

A healthy basis for growth

When Licking Memorial Hospital in the U.S. city of Newark was founded with just nine beds over 100 years ago, it was easy to keep patients’ records using pen and paper. Today, however, the hospital has 227 beds and over 1,600 employees. That has resulted in entirely different accounting and record-keeping requirements. Papers, X-rays and microfilms used to be archived, but nowadays data is stored on servers. A number of years ago, it became clear that the existing data centre could no longer cope with the hospital’s growing demands. For one thing, there was not enough space and, for another, there was no efficient climate control system.

The top priority when planning a new data centre was for it to be future-proof. It needed to have sufficient capacity and offer impressive expansion options and efficiency. This was achieved in an area of 235 square metres, in 36 TS 8 racks with 16 liquid cooling packages.

Licking Memorial Hospital considered it very important to have a liquid-based cooling system. LCPs are more effective and more efficient than conventional data centre cooling with CRAC units. This was one of the main reasons the hospital decided on the Rittal solution. LCPs can remove heat specifically from the configured racks without having to cool the entire room. A further advantage of LCPs over conventional cooling is that they save valuable space in the data centre.

Consultants from Rittal USA put a great deal of effort into convincing the Licking Memorial Hospital team in advance of the components’ high performance levels and showed them what the solutions were capable of at the production facility in Urbana. “Thanks to the new data centre from Rittal, we will be able to adapt our computing power to our precise needs in the years ahead, which gives us investment security for the next 20 years,” insists Sallie Arnett, Vice President Information Systems at the hospital.





Perfect protection for Vitos



All the systems in the new data centre ensure absolute reliability and fault-free operation – to the great satisfaction of Managing Director Ralf Schulz and Head of IT Jörg Riether.



Cold-aisle containment in the data centre of Vitos Haina gem. GmbH reliably prevents hot and cold air mixing.

Vitos gemeinnützige GmbH operates hospitals at twelve locations in Hesse, networking the treatment of patients with mental disorders throughout the state. The individual hospitals' data technology is also networked. Vitos centralises all its systems at the Kloster Haina hospital in a Rittal data centre.

In 2009, Vitos Haina decided to build a new data centre in a former school building. The requirements this centre and the general service provider Rittal needed to satisfy were maximum availability, performance and reliability. "Rittal was extremely successful in meeting our requirements. It quickly emerged as our partner of choice because of its outstanding reputation and impressive market presence," recalls Jörg Riether, who is in charge of the IT department at Vitos Haina.

Rittal had complete responsibility for building the new data centre. To ensure efficient and redundant climate control, the company installed two CRAC systems, a cold-water ceiling air-conditioning unit, two chillers with free cooling and a high-efficiency free-cooling kit. The data centre is monitored by a monitoring system, and a Novec fire extinguishing system including early fire detection was installed. Rittal's LER Basic security room ensures the basic physical protection of the data centre. It is tested for fire safety, anti-burglary protection and impermeability to extinguishing water and dust. The eight TS 8 server racks installed to date thus benefit from optimum protection.

Information technology



XXL protection for IBM

Security is big here in every sense of the word. Rittal installed the largest LSR 18.6 E security room in history for IBM's new data centre, providing XXL protection for IBM's servers over an area of 1,250 square metres. The first data centre forming part of IBM's eastern European expansion is located in Blonie, around 18 miles west of Warsaw.



Cool computing in Peru

Rittal has installed a compact data centre comprising TS IT racks, LCPs and chillers for the Ministry of Labour in Lima. The air-conditioning system was reaching its limits, so the new data centre was not allowed to generate any additional waste heat. This was good news for Rittal, because it is the only system manufacturer with an autonomous cooling system in its portfolio. This is now in use in Peru.



Mogon supercomputer

High power density is a key requirement in high-performance computing (HPC), but several tens of thousands of processor cores take up space and require adequate cooling. The Johannes Gutenberg University Mainz is entrusting its new supercomputer "Mogon" to TS 8 server enclosures and liquid cooling package (LCP) systems from Rittal.



Medical technology in Korea

GE Healthcare needs a reliable IT infrastructure when developing state-of-the-art medtech solutions and services. Rittal provided the South Korean branch of the General Electrics subsidiary with a high-availability data centre based on RiMatrix. The rack technologies used and double redundancy in the form of two modular, independent power supply systems combine with highly efficient climate control via a CRAC and cold water system to ensure optimum protection against failure.



Perfect data centre climate

American print service provider Quad/Graphics faced the challenge of removing high levels of heat in a small area. The company operates production sites in North America, Latin America and Europe and prints prestigious publications such as National Geographic, Architectural Digest, GQ, In Style, The Economist and Business Week.

When it took over another print service provider, Quad/Graphics ended up with two data centres and wanted to combine their capacity at a single location. The existing data centre would not have been able to accommodate the additional hardware, so the company's management team decided on a new building. The extra equipment from the second data centre, which was a good 1,000 square metres in size, meant the servers had to be packed very closely together, resulting in very high levels of heat in a small area. To ensure efficient removal of this heat, Quad/Graphics decided on Rittal's liquid cooling package (LCP+) climate control solution. Cold air flows horizontally through the closed Rittal TS 8 racks thanks to 19 air/water heat exchangers. This prevents hot spots in the upper part of the racks and enables rack modules also to be used there.

Focus on energy efficiency

The Rittal LCPs operate with warm water at approximately 12°C rather than the conventional 7°C, which reduces the energy consumption for climate control. Since the air temperature in the cold aisle is also relatively high at around 23°C and will increase gradually, free cooling can be used instead of the recooling systems to remove the heat over a longer period of the year. A wide humidity range of 25 to 75 percent also helps save energy, because less dehumidifying is needed. The energy requirements for Quad/Graphics' new data centre are far lower than the respective individual requirements of the original data centres. The electricity costs for climate control are estimated at around 14,500 euros per year, a saving of over 24,000 euros.

"Using water cooling instead of air cooling and higher temperatures than before has given us a system that not only reliably meets our technical requirements but can also be operated with excellent energy and cost efficiency," says Ron Vissers, who is in charge of data centre technology at Quad/Graphics.

Information technology



Facebook and Rittal – Like!

Facebook's first data centre outside the United States is located in the Swedish city of Luleå, around 37 miles from the Arctic circle. Until now, all the social media network's data has passed via its two centres in Prineville (Oregon) and Forest City (North Carolina). Rittal is now Facebook's European supplier, providing all IT racks and a specially developed 12 V/48 V power distribution system.



Norway: Secure satellite-based communication systems

Harris CapRock Communications is a premier global provider of fully managed, end-to-end communication solutions specifically for remote and harsh environments including the energy, government and maritime markets. Rittal supports the Norwegian-based location by delivering high-reliability IT infrastructure, consisting of aisle containment, TS-IT racks, liquid-cooled climate control and uninterruptible power supply.

Fail-safe energy for the north

Based in the German city of Schwerin, energy supplier WEMAG AG, which follows a dedicated green strategy, and its subsidiary WEMACOM GmbH are committed to ensuring optimum energy efficiency for their new data centres. Fail-safe operation and availability were also key priorities during planning, because the centre accommodates an Internet hub in addition to the company's servers. Rittal was the general contractor in charge of the project.



A valuable commodity in Sydney

Australia's securities market also appreciates quality "made in Germany". Rittal has equipped the Australian Stock Exchange (ASX) in Sydney with over 400 TS 8 racks plus busbars. The customer "down under" was impressed by the solution's reliability, load-bearing capacity, size and functionality as well as by the service provided by Rittal Australia. "The project is a complete success," sums up Craig Richardson, Data Centre Operations Manager at ASX.





Intelligent networking in Basel

Knowledge transfer at the University of Basel is no problem thanks to an IT infrastructure with an efficient climate control and power distribution concept from Rittal that networks all the administrative buildings and lecture theatres. Staff and students can access over 10,000 electronic magazines at more than 6,000 workstation computers and public Internet access points.

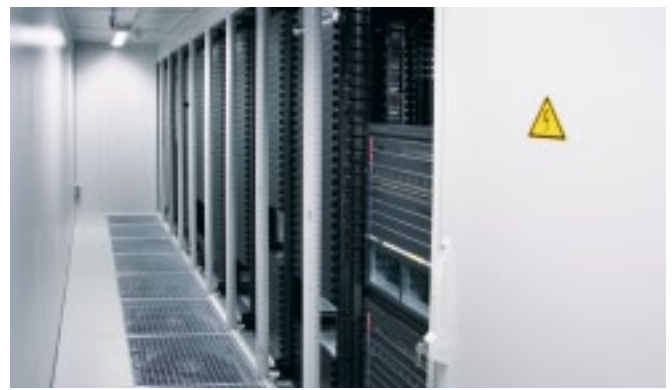
Saving the emergency services

When the emergency services experience an emergency themselves, speed and flexibility are vital. When a severe earthquake hit New Zealand in February 2011, the St. John Ambulance's damaged data centre needed to be replaced very quickly. The emergency service was quickly back online thanks to a Rittal Data Centre Container including server racks, UPS, power distribution and fire alarm/extinguishing system.



Ready-made data centre

The Wollschläger Group, one of Germany's leading companies for precision tools, decided to equip itself for future growth with a new IT infrastructure. RiMatrix S from Rittal provides the Group with a complete and fully operational data centre, including server and network racks, climate control, power distribution and back-up, monitoring and data centre infrastructure management (DCIM) software.



Vast expanses

New findings about the universe are only possible with the highest of computing powers. The supercomputer at the Inter-University Centre for Astronomy and Astrophysics in the Indian city of Pune already has a capacity of 100 teraflops, but this is to be tripled. Rittal impressed the researchers with a modular, scalable data centre solution that ensures efficient cooling of the high heat loads and can be extended while operational.

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Faster – better – everywhere.

Levels of the value chain.

Trendsetting industry solutions also benefit from the globally unique alliance between Eplan, Rittal and Kiesling. By facilitating process automation, this alliance opens up the next levels in the valued-added chain. The Eplan engineering platform is perfectly coordinated with Rittal's system solutions and reduces workflow complexity. Kiesling, the international specialist for machining solutions, automates complex panel building to bring you automatic success.

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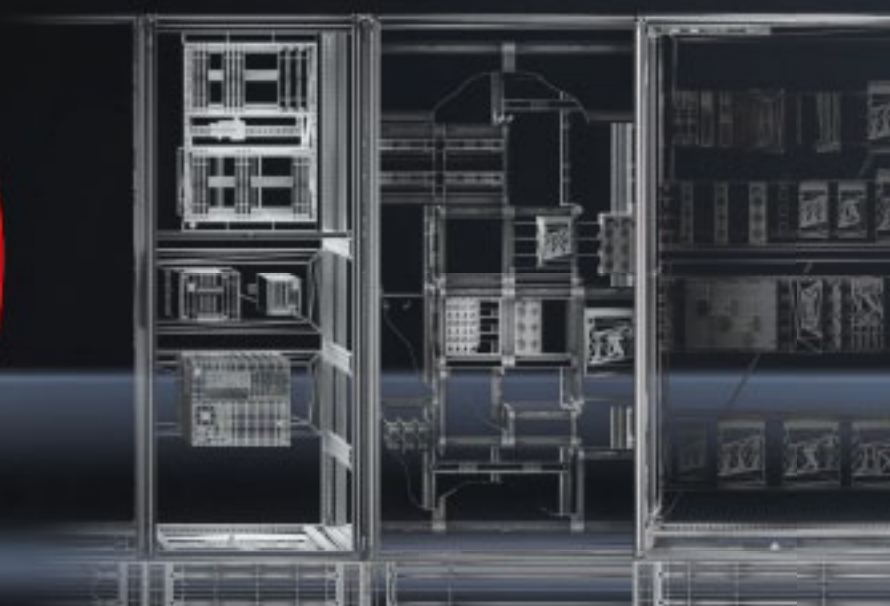
Step one in the value chain

Eplan are global providers of high-tech, software-based engineering solutions. Use Eplan to optimise your engineering and accelerate your product generation process.



Eplan – efficient engineering.

- EPLAN Engineering Center
- EPLAN PPE
- EPLAN Fluid
- EPLAN Electric P8
- EPLAN Pro Panel
- EPLAN Data Portal
- EPLAN Harness proD



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Step two in the value chain

With Eplan and Rittal, you benefit from end-to-end engineering solutions based on top-quality system components, component data, design expertise and many years of system know-how incorporated in "Rittal – The System."



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Rittal – The System.

- Enclosure systems
- Ri4Power power distribution to IEC 61439
- TopTherm cooling units, TÜV-tested



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Step three in the value chain

Three powerful companies have joined forces to form an integrated trio of excellence, covering all aspects of enclosures. With Kiesling as an international specialist for machine tools we automate your success in enclosure manufacturing.



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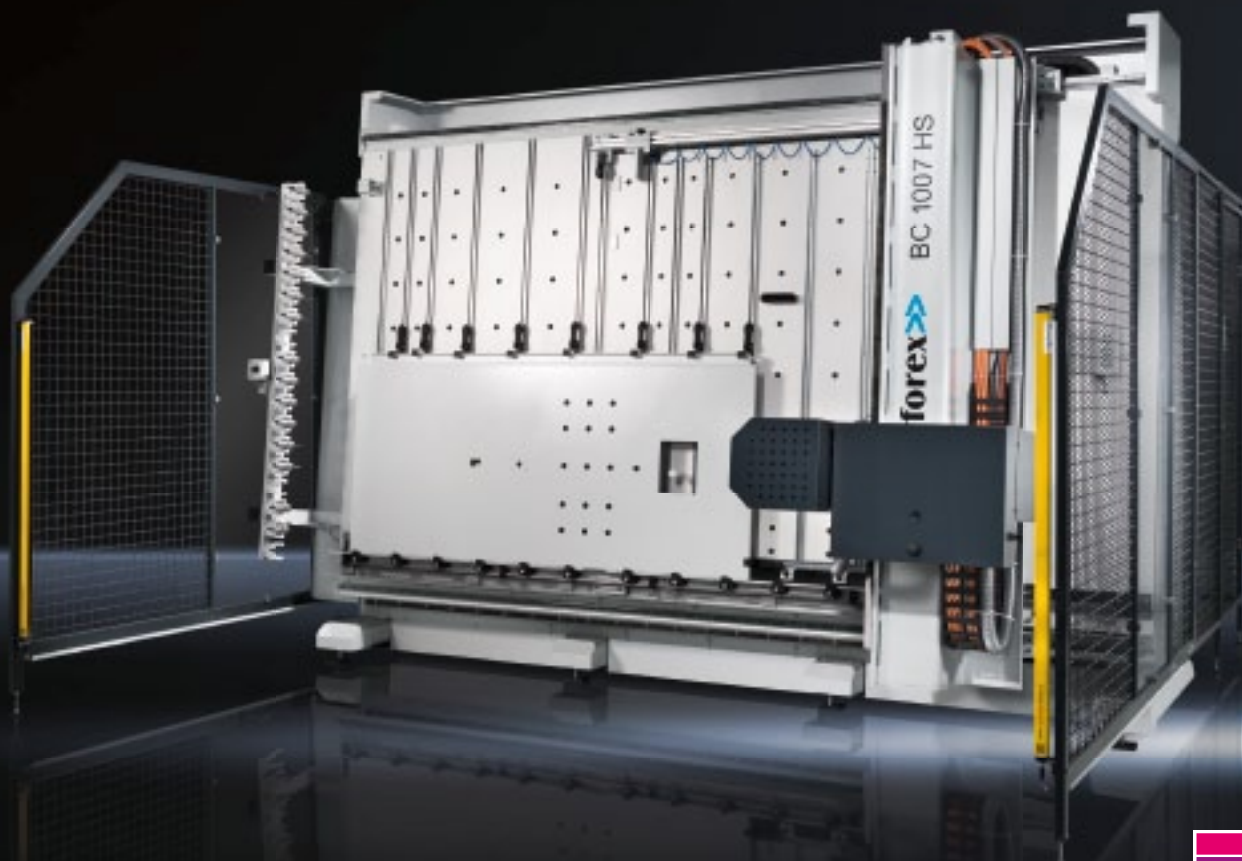


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Kiesling – we automate panel building.

- Kiesling Perforex – Machining of enclosure solutions
- Kiesling Secarex – Cable ducts and support rails cut to length without delay
- Kiesling Athex – Automated terminal block assembly



IT INFRASTRUCTURE

SOFTWARE & SERVICES



Danke – Merci – Thanks.

We would like to say a big thank you to everyone involved for all their hard work. We can all look back proudly on what we have achieved. The projects not only produced exceptional system solutions at the relevant locations but also resulted in new findings that will benefit customers across the globe. We are particularly pleased that our joint efforts have led to long-standing partnerships with real substance that have played no small part in turning us into a strong and reliable solution provider.

Our customers in this brochure.

- ABB
- Allseas
- ATR Industrie Elektronik
- AUDI
- Australian Stock Exchange
- Bizerba
- BKT
- Blumenbecker
- BMW
- Bombardier
- Bonfiglioli
- Bürger
- Comau
- Daimler
- Delhi Airport
- deller plastics
- DFS Deutsche Flugsicherung
- Doosan Infracore
- Almirante Irizar ice-breaker
- Enercon
- Facebook
- Festo/Merck Serono
- Munich Airport
- Riga Airport
- Fraport
- Ewersbach volunteer fire brigade
- Friesland-Campina
- Frühauf
- GE Healthcare
- GEA Group
- gefeba Elektro
- Haldex AB
- Harris CapRock
- Hennig
- Herkules Group
- Honeywell
- IBM
- IGN
- IUCAA Inter-University Centre for Astronomy and Astrophysics
- Jain Irrigation
- Johannes Gutenberg University Mainz
- Karl Schnell
- Kladno
- Klampfer/Miratorg
- Nablus water treatment plant
- Landgeflügel
- Kassel Rural District
- Licking Memorial Hospital
- Bangalore metro
- Meyer Wert
- Microsoft
- Moscow City Council
- Naturgas Energia
- Nordex
- Orion New Zealand
- Peters Schiffbau
- Petronas
- Promontan/Dragon Oil
- Protec
- Quad/Graphics
- Rhätische Bahn
- Ripplloh
- RWE/Amprion
- Sayano-Shushenskaya hydro-electric power station
- Schäftlmaier/E.ON
- SHW Werkzeugmaschinen
- Siemens WKC
- Singapore Power/ABB
- St. John Ambulance
- Trumpf
- TSDIG, Chinese State Railway
- University of Basel
- VARTA
- Vatican Apostolic Library
- Vitos
- Volkswagen
- Wemag
- Wollschläger Group

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

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