



Rittal – Rail technology



Technology packaging
for modern rail transport



**Rittal modules
for perfect solutions:**

Industrial enclosures

Outdoor enclosures

Electronic packaging

Data transmission

Climate control

Safety monitoring

System accessories

High-quality, standardised components for holistic individual packaging solutions for every area of rail transportation.



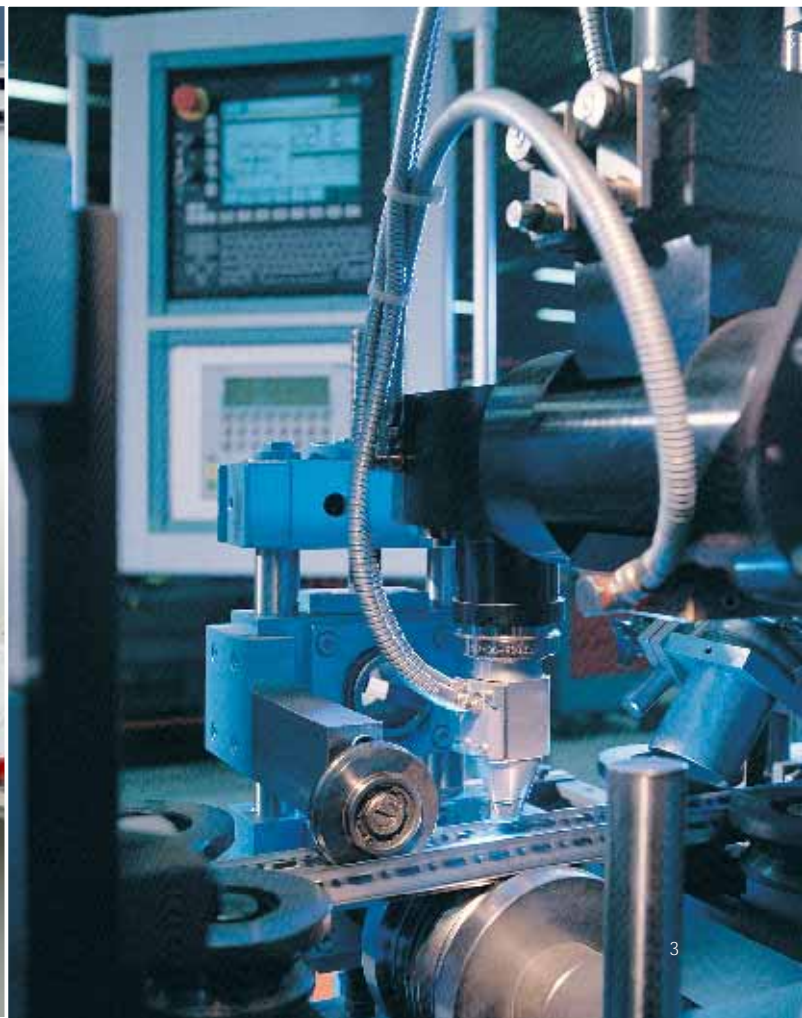
Rittal – On the right track for you.

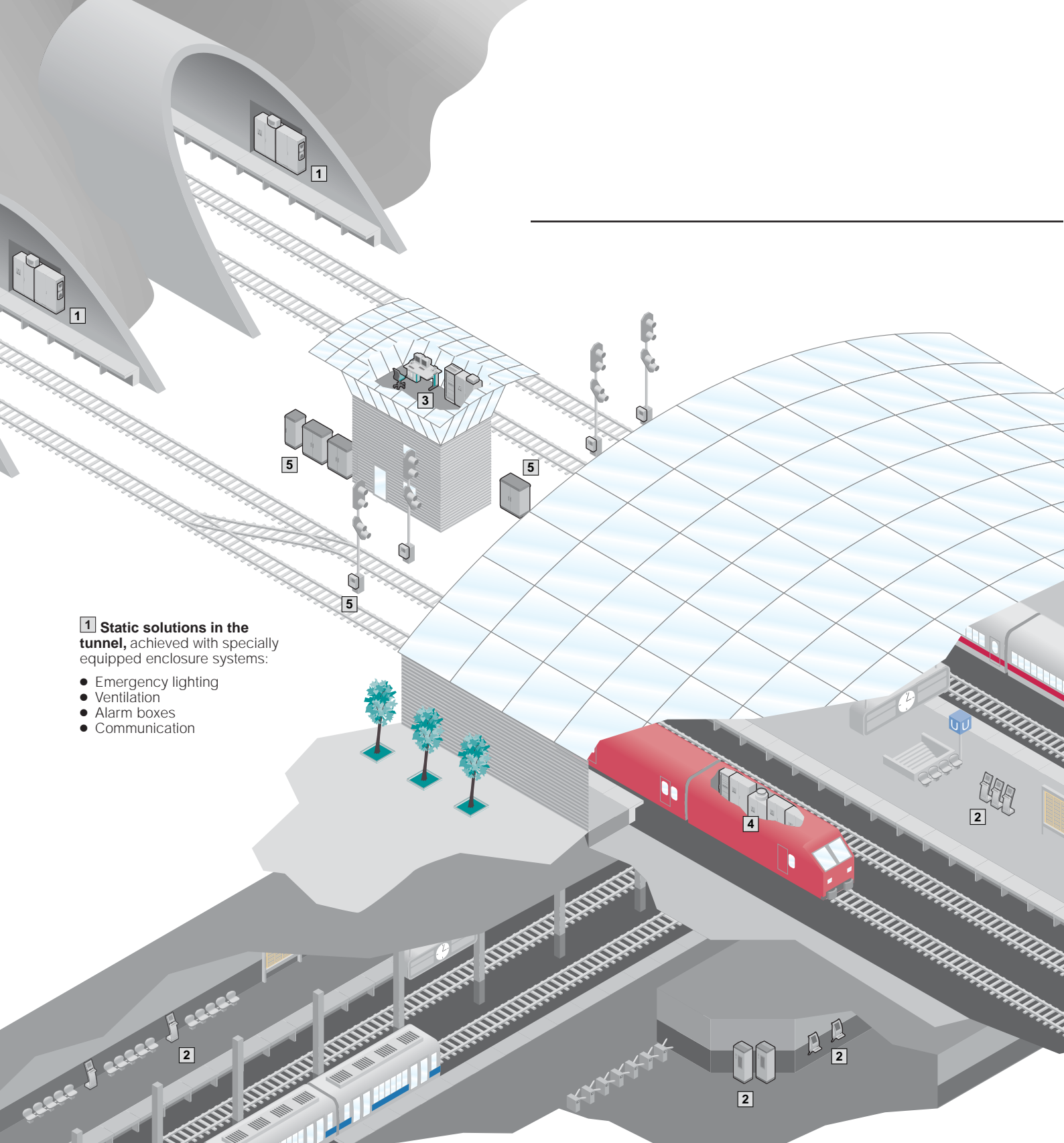
System solutions with technical and financial benefits.

Industry-oriented solutions demand specific market knowledge. We have the necessary know-how for **rail technology** based on our many years of experience and supplemented with the very latest findings. In dialog with our customers we repeatedly devise fascinating solutions for **mobile and static use**. World-class technology in all Rittal system divisions is the basis for **technical and financial synergies** when developing individual system solutions.

These Rittal solutions are available worldwide, because Rittal is present wherever there is a market – with **high-tech products**, comprehensive logistics and fascinating new approaches. This is impressively reinforced by more than 150 locations around the globe.

For every requirement in the field of railway technology, Rittal has a customised solution.





1 Static solutions in the tunnel, achieved with specially equipped enclosure systems:

- Emergency lighting
- Ventilation
- Alarm boxes
- Communication

Static solutions at the station, achieved with interactive terminal systems (kiosks), operating housings, small enclosures and network enclosures:

2 Terminal systems

- Information terminals
- Ticket machines
- Operating housings

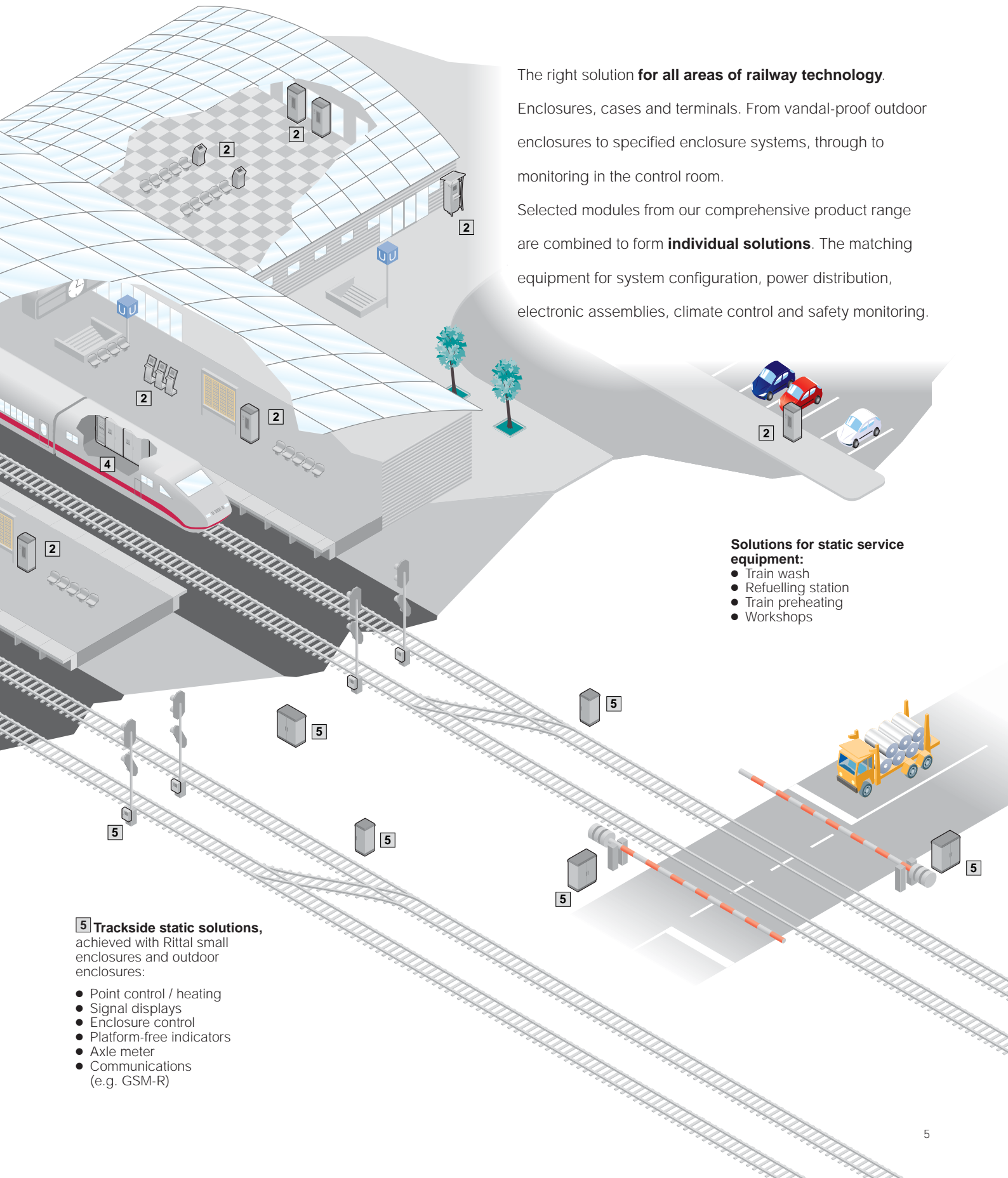
3 Case systems

- Enclosures and cases for controlling the points
- Network enclosures for complete communication
- Monitoring technology
- Signal control
- Advertising technology

4 Applications in vehicles, achieved with bayed enclosure suites, command panels and electronic enclosures:

- Frames in the engine area
- Enclosures for train safety components
- Consoles in the guard's cabin
- Electronic enclosures in carriages with information display
- Operating terminals for goods waggons (refrigerated transport, waggons with hydraulic or pneumatic components)
- Underground enclosures
- Roof-mounted enclosures

Rittal expertise in complete diversity for railway technology.



The right solution **for all areas of railway technology.**

Enclosures, cases and terminals. From vandal-proof outdoor enclosures to specified enclosure systems, through to monitoring in the control room.

Selected modules from our comprehensive product range are combined to form **individual solutions.** The matching equipment for system configuration, power distribution, electronic assemblies, climate control and safety monitoring.

Solutions for static service equipment:

- Train wash
- Refuelling station
- Train preheating
- Workshops

5 **Trackside static solutions,** achieved with Rittal small enclosures and outdoor enclosures:

- Point control / heating
- Signal displays
- Enclosure control
- Platform-free indicators
- Axle meter
- Communications (e.g. GSM-R)



Rittal enclosure systems in static use.

Rittal has the components for the railway technology packaging of the future. Also for the demanding conditions of mobile use.

Current examples include: Compact, safe technologies for the industrial Ethernet, for simple modifications to procedures in the locomotive and coach service.

Modular enclosure technology is advantageous in terms of rapid assembly and adaptation of controllers. At the human/machine interface, your ergonomic requirements are precisely realised with the Command Panel and Industrial Workstations.

High-end products + matching accessories + modular mounting = Perfect solutions at reasonable prices.

A high standard of safety and permanent availability are the basic requirements for achieving the principal attribute of rail transport – punctuality – to a high level.

With specialist expertise and a comprehensive range, Rittal offers a system solution from its standard range for every packaging task.

Special customer requirements are also accommodated on a daily basis. Together, we develop customised solutions for your specific application area. From planning, to project planning and application engineering, right through to the finished product.

Rittal boasts comprehensive expertise accumulated over many years. In many projects, this is reflected in an optimum result.



The way ahead is clear for all railway technologies ...

Setting signals for the future.

Rittal Power Distribution – Power handling at its most contemporary.

Innovative systems such as Rittal Maxi-PLS, Rittal ISV distribution enclosures and, most recently, Rittal RiLine60, have set standards in the low-voltage distribution market.

All our ranges offer system fascination with superb customer benefits: Assembly-friendly, time-saving, individual and modular.

Above all, the diversity from the "system building box" offers fast, reliable and hence cost-effective configuration of individual low-voltage distributors.

Rittal electronic systems for transport and rail technology.

Rittal offers professional electronic packaging for various segments of rail and transport technology: the subrack system Ripac Vario-Mobil, enclosures and microcomputer packaging systems. Each comes with its own extensive range of accessories. The modular configuration facilitates individual adaptation to the respective application.

The products are tested by an independent test institute to standard EN 50 155 (electronic equipment in track vehicles). This ensures the protection of passengers and goods.

The application areas range from systems for the control of points and signal installations, to train information systems, through to control systems directly in trains or in traffic guidance systems. Shock and vibration resistance plays a key role in this respect, since highly-sensitive electronics must continue to operate faultlessly even with constant acceleration and permanent vibration.



Rittal system climate control – moving safely into the future.

Everyone is talking about the future; Rittal is helping to shape it – The same applies to climate control,

Development work focuses on the holistic protection of process control with the minimum possible energy consumption. Modern cooling units with excellent efficiency and perfect interface technology, together with liquid cooling concepts, offer fresh new perspectives for the correct cooling of electronic components. This is crucial to the availability and reliability of machinery and IT technology.

For this reason, Rittal collaborates closely with you to develop customised climate control concepts.

Rittal IT solutions helps to ensure availability.

Permanent availability of your IT systems is undoubtedly a critical issue – particularly in the field of transport technology. For this reason, it is important to ensure stable conditions for your complex server and software system architecture.

With this in mind, Rittal combines the five key elementary infrastructure components to create an extremely variable, and above all secure system under the name RimatriX5: Rack, Power, Cooling, Security, Monitoring & Remote Management.

RimatriX5 = 5 modules + comprehensive service

With Rittal, a high level of IT availability is guaranteed.



... with components and know-how from Rittal.

Rittal Terminals – Information anytime, anywhere.

Passenger information and announcement systems help customers to find their way easily around the station and obtain up-to-the-minute information. Emergency call and information systems/pillars ensure the necessary security at key technical junctions. Automatic ticketing machines help to optimise ticket sales.

This information pillar was developed for use on platforms at the German railway company, combining both visual and technical considerations.

The modular structure of the door means that the configuration is freely selectable depending on the locational requirements (monitors, clock, service hotline unit, hotspot for W-LAN or GSM-R).

Rittal Communication Systems – without limitations.

Rittal outdoor enclosures, outdoor climate control components and remote monitoring systems will withstand even the toughest conditions. In this respect, we are uncompromising. From basic requirements such as humidity, temperature fluctuations and sunlight, to extreme conditions such as seawater resistance or earthquake resistance, through to protection against vandalism, Rittal has the answer.

There are no limits to the railway engineering requirements adjacent to the track (point, signal and barrier controls, track-free indicators, axle meters, communications technology such as GSM-R).



1



Convincing references.

- 1. Duplex X40, Metro, Scandinavia
- 2. Rh 1216, locomotives, Austria
- 3. Talgo 350, high-speed trains, Spain
- 4. Re 474, goods locomotives, Switzerland

Trains, locomotives, trams, metros, special and high-speed vehicles based on the very latest technology – with enclosure and case technology "Made by Rittal".

2



Reference projects from the mobile sector.

Enclosures and cases in trains and locomotives.

All railway technology requirements are met by our **enclosures, cases and frames**: from high-voltage frames, apparatus cases, auxiliary operating and low-voltage frames, to electronic enclosures with fixed or swivel 482.6 mm (19") levels, through to subracks. Produced in sheet steel, aluminium zinc and stainless steel **to your specifications**.

Of course, the same also applies to surface finishes. Primed, spray-finished or brushed – everything is possible. The system accessories are preinstalled, and the system is prepared for plug & play installation of special components and equipment boards.

Rittal also offers the following specialities: **Cast aluminium enclosures** for brake equipment with turntable frames or **plastic enclosures** in the field of current collectors.

Rittal – a complete enclosure range for rail vehicles.



1



Convincing references.

1. Double-decker regional train, Germany

2. BR 185, E-locomotives, Germany

3. BR 189, E-locomotives, Germany

4. CORADIA LIREX X60, Sweden

Rittal climate control components in the driver's cabin or engine area are solutions for maximum reliability and availability.

2



Reference projects from the mobile sector.

Climate control and configuration.

Also for the **cooling of heat-sensitive locomotive technology** and the climate control of trains and driver's cabins Rittal offers expertise and technology.

The climate control system may be designed as an interior module, roof container or under-floor component. Be it new buildings or retrofits, our solutions are **complete packages tailored to your requirements.**

Even at the project planning stage, allowance is made for future fire protection to EN 45 545.

Other **Rittal climate control components** for rail vehicles:

- Air/air heat exchangers in special sizes, with special voltages (e.g. 110 V DC) and in RF-shielded variants.
- Rack-mounted fans and heaters, fan-and-filter units and outlet filters for applications subjected to dynamic stresses.

Application-specific tests such as EMC protection or splash-proofing are carried out in our own, certified Rittal laboratories.

Rittal leaves nothing to chance.





Perfect individual solutions based on system platforms.

1. For vehicle washing and maintenance:

Enclosures and cases – available in stainless steel, with a high protection category, also 'ex' proof.

2. For the control of signals and points, power supply and activation of the system lighting:

Indoor and outdoor enclosure – with vandalism and graffiti protection.

3. For ticket machines, passenger and employee information systems:

Interactive terminal systems, wall-mounted and stand-alone devices for indoor and outdoor use.

4. For tunnel safety:

Enclosures with exceptional suction and pressure resistance.

Whichever areas of rail technology you are involved in, you can rely on an effective solution from Rittal.



Reference projects from the static sector.

Indoor and outdoor solutions for every eventuality.

We offer the best possible solution to suit every packaging task associated with rail transport. Be it stainless steel enclosures with an extremely high protection category of IP 69, or **suction and pressure-proof enclosures** for use inside the tunnel and beside the track, Rittal has the right solution to suit every application, from the ordinary to the extraordinary.

For special outdoor applications, we supply enclosures with a sandwich construction which offers exceptional **resistance to vandalism**. A special nano-spray finish offers **protection against graffiti** and is easy to clean.

Individual **climate control concepts** effectively protect the controllers from overheating and help to prevent damage from humidity caused by condensation.

Interactive terminal systems provide **information services** 24/7 – whether you opt for indoor or outdoor, disability-friendly or vandal-proof models.

Whichever you choose, you can be sure of reliable products from Rittal to safeguard the availability of your rail technology applications.





**Ergonomics and safety
to your specific requirements.**

1. For repairs:

Enclosures, operating housings, workstations. For any task, in any environment.

2. For safety at the control desk:

Workstations, electronic and IT racks, all perfectly climate-controlled. CMC monitoring of access, climate and power supply.

3. For point and signal technology:

Outdoor enclosures in any format – also vandal and graffiti-proof.

4. For production:

Operating housings, control cases, power distribution components, system climate control and monitoring technology.

We work with you to project-plan the best solution.



Everything must work well, even behind the scenes.

You think in terms of systems – so do we.

Electronic and electrical platform monitoring and signal technology components in the systems and control rooms demand a high degree of safety and ergonomics. For these requirements, Rittal has exactly the right “packaging”.

Industrial Workstations in control room technology, **control cases and enclosures** in signalling systems and **state-of-the-art command panels** in production and maintenance are always the first choice.

Rittal offers world-class enclosure technology.

Worldwide approval, in various materials such as stainless steel, cast aluminium, plastic and sheet steel – also with **high protection categories** for reliable use under changeable conditions.

With over 8,000 standard modules available for immediate delivery, we at Rittal speak a clear language. Our products are synonymous with fast, high-quality, cost-effective individual solutions.





You can rely on solutions which pass the Rittal tests.

Test techniques

Thermography produces a heat image with the system operational. Hot spots are identified immediately.

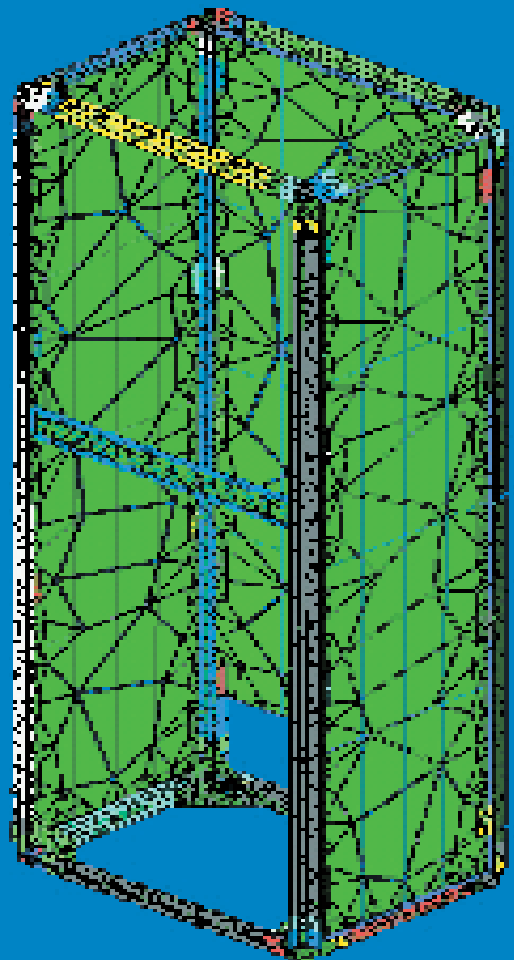
Project planning

Rail-friendly specifications also include calculation of the enclosure and the principal components in an FEM program allowing an assessment of mechanical strength.

Rail standards

At our own accredited laboratories, we test e.g. welding seams, paint quality, protection category and many other parameters and scrutinise them closely in accordance with current standards.

Use the Rittal all-round service to develop the best possible solution.



High quality standards worldwide.

Nothing can shake us.

Frames, enclosures and cases produced for railway technology are project planned and manufactured in accordance with European standards and guidelines. Project planning is designed so that mechanical (EN 10 155), EMC (EN 50 121) and fire protection requirements relating to the end system are met. All Rittal plants in Germany (Herborn, Rittershausen, Haiger, Burbach and Wissenbach) are certified to **welding authorisation DIN 6700**. Based on severe daily tests, welding seams and screw connections meet the highest quality standards. Additionally, our **paint quality** is verified by certification to DB TL 918340.

Rittal supports the rail industry and rail operators from the word go:

- With the project planning of **technical specifications**,
- With **prototype production**, tests and simulations,
- With manufacturing and assembly,
- With a warehousing service and **prompt delivery**.

Expert contacts throughout the entire project ensure smooth operation.



Looking for solutions in the railway sector? Talk to us.

Providing customers with a personal contact person is an important part of our corporate policy. Our team of experts in the railway technology sector will be happy to provide detailed answers to your questions and show you opportunities that this brochure can only hint at.

Hermann Becker

Director Key-Account Management
 Tel. +49(0)2772/505-2307
 Fax +49(0)2772/505-5307
 mobile +49(0)175/2613189
 eMail becker.h@rittal.de

Dirk Eisenmenger

Key-Account Manager
 Tel. +49(0)2772/505-2095
 Fax +49(0)2772/505-5095
 eMail eisenmenger.d@rittal.de

Sandra Debus

Key-Account Manager
 Tel. +49(0)2772/505-2681
 Fax +49(0)2772/505-72681
 eMail debus.s@rittal.de

Arrange an appointment with us.



Challenge us! Your requirement profile, e. g. for a cabinet for railway applications:

Dimensions (WxHxD)

Sender

Application area: mobile (on rail vehicles)

- Locomotives
- Carriages
- Suburban and underground railways
- Engine room
- Passenger section
- Outside

Application area: static

- On the embankment
- In the tunnel
- In the station (indoors)
- At the station (outdoors)
- Distance from the rail: _____
- Installation height above ground: _____

Surname/first name

Company/department

Address

Telephone/fax

E-mail

Design

- Case
- Enclosure
- Frame

Paint finish:

- Standard RAL 7035
- RAL _____
- Other _____

Calculation:

- Climate control/CFD
- FEM

Material

- Sheet steel
- AlZn
- Stainless steel
- Aluminium

UV-resistant

- UV-resistant
- Anti-graffiti (available as an optional extra)

Protection category

- IP _____
- Vandalism
- EMC

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Rittal GmbH & Co. KG
Fax (+49) 2772 505-2563
rail@rittal.de

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Rittal GmbH & Co. KG · P.O. Box 1662 · D-35726 Herborn
 Telephone: +49(0)2772 505-0 · Telefax: +49(0)2772 505-2319 · eMail: info@rittal.de · www.rittal.com