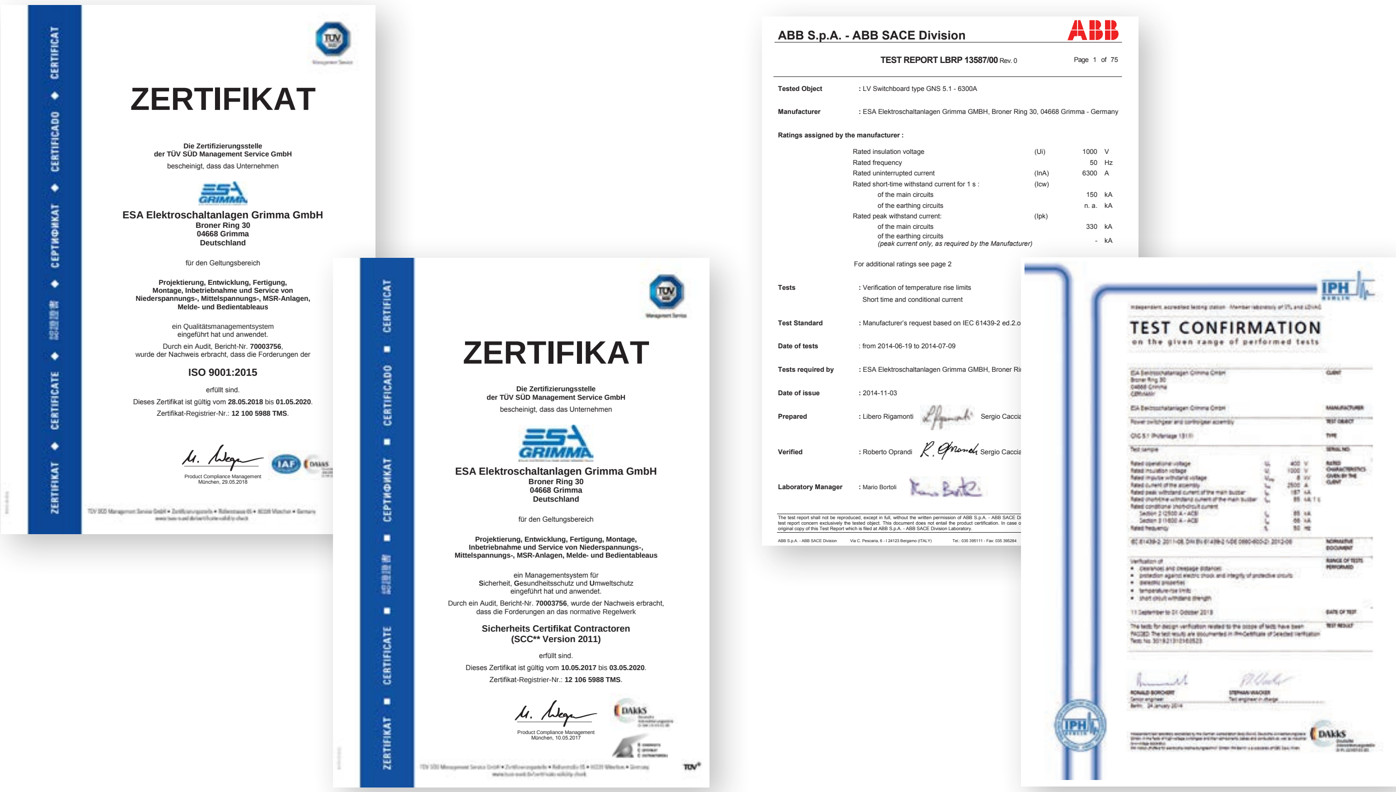
System solutions for electrical energy systems in the railway sector

An overview

ESA ELEKTROSCHALTANLAGEN GRIMMA GmbH



About us

We are a versatile company in the electrical industry with very high production depth especially in the field of sheet metal and copper processing. Our special competence is the safe and efficient electrical energy distribution and controlling, especially in the low-voltage sector. Our product range comprises development, project planning as well as production and installation of

- type-tested low-voltage switchgear and controlgear assemblies
- automation and control systems
- switchgears and components for complete power supply of hospitals and medical locations
- electrical point heating systems for railway industry

ESA Elektroschaltanlagen Grimma GmbH is one of the biggest employers of the industry near Leipzig in Saxony. All central business areas like administration, engineering, production, research and development as well as the service centre form the haedquarter and are located in Grimma.

Safety on the track

Technical innovations, safety and foresight: ESA Elektroschaltanlagen Grimma GmbH helps the rail traffic to reduce delays and creates efficient solutions for the safe energy distribution and controlling. You desire system solutions individually planned and produced? You make appoint of high technical and safety standards? In this case, we recommend personal consultation by one of our specialists. The electrical railway engineering is one of our core competences. We accompany your project from planning to realisation. Even after our systems have been installed, we support you and your team. We train you in the handling of our products and do maintenance works on our installed systems if necessary.

Furthermore, we supply companies with electrical components from the point heating to the operating unit. Take advantage of the know-how of our highly qualified engineers!

Electrical railway engineering-products at the highest level:

- point heating systems
- lighting systems
- emergency power systems
- low-voltage switchgears
- visualisation

Save resources – controlling to exact one degree saves energy!

Snow fall and ice formation are the highest risks to a problem-free rail traffic in winter. To ensure the traffic of people and goods, the trouble-free switching of the point is indispensable. Heat keeps the movable parts of a point free of ice and snow. This can be ensured in a safe and comfortable way by using a modern electrical point heating of ESA Elektroschaltanlagen Grimma GmbH! We have developed the electrical point heating system WHVI® for free rail traffic in the cold months. For example, the German railway company Deutsche Bahn AG which we as certified supplier count to our customers and regularly supply trusts its innovative features.

The system WHVI® convinces with:

- intelligent control functions for a cost-saving heating of points
- fully-automated functioning of the heating system
- self-diagnostic system and auto-on in case of errors
- individual controlling via connection to remote monitoring system possible (visualisation)
- integrated weather station for recording of weather conditions (precipitation, flying snow, temperature and air humidity)
- monitoring of all connected tubular heaters

System WHVI®: Optimised maintenance and resources use

The desired rail temperature can be kept constantly by using our control and regulating devices of the series ISR25-4. For this purpose, only the energy required for reaching the set value is used. Our devices thereby enable safe and low-wear switching. They work as constant temperature controller and monitor the insulation resistance of each heating output at the same time. Failures of tubular heaters by damaged insulation can be detected automatically.

Use the time and information advantage for maintenance.

Each connection box for tubular heaters can be equipped with a insulation fault detecting device (RCM).

If a value falls below a threshold value, a warning message is displayed. By this, individual tubular heaters can be evaluated and located precisely. This enables a needs-based maintenance before there is a critical failure.

Fully-automated track field lighting system and platform lighting

For employees in the rail sector or passengers, lighting systems for a good view at night on platforms and in track fields is a must because safety is always top priority. You need a reliable and modern control which corresponds to the technical requirements of the operator to ensure problem-free operation.

Platform lighting - standardised distribution boards

We produce distribution boards standardised by Deutsche Bahn as low-voltage switchgears according to DIN EN 61439 Part 2. They are used for the controlling of lighting and supply of the infrastructural equipment at stops and small stations.

Features of the distribution boards:

- DB standardised distributions for new and reconstruction of passenger transport systems (PVA)
- usable in all network configurations
- for in- and outdoor installation

Track field lighting - controls compatible in the system

Marshalling yards and large storage and maintenance facilities need fully-automated track field lighting systems for the night operation. Control, monitoring and diagnostics functions for these systems have to be provided on-site as well as centrally. There is often the requirement to integrate further electrical systems into the bus topology of the track field lighting control.

For this reason, we have developed a modular system. Our lighting controls and systems fulfil the following requirements:

- simple operation
- modular system
- connection to control and visualisation system possible
- universal connection possibilities of further systems to the bus topology
- control with well-engineered safety functions

Emergency power systems ensure the power supply on electrical signal boxes

The supply of computer-based interlockings (CBI) is indispensable for the trouble-free rail traffic because they are needed at all times for the operation of points, signals, track barriers etc.
If the public network which usually provides the interlocking with power fails, the emergency power system for the supply from the overhead line becomes effective. ESA Elektroschaltanlagen Grimma GmbH offers reliable solutions with innovative features for this purpose.

Emergency power systems 16.7 Hz

Innovative technology for maximum safety

ESA Elektroschaltanlagen Grimma GmbH supplies Deutsche Bahn with emergency power systems 16.7 Hz, which are designed individually for the technical requirements of rail systems. They ensure reliable power supply of the control and safety technology of CBIs from the overhead line after failure of the public network.

Features of the ESA emergency power systems 16.7 Hz:

- high quality produced low-voltage distributions completely in pre-assembled concrete stations approved by Detusche Bahn
- there are all components for the supply (control, single-phase oil transformer, power current component, mast switch control, monitoring components)
- no additional emergency generators and buffering batteries necessary
- interface for remote control and remote monitoring
- synergy effects in connection with other systems regarding data transfer

Full service from the first consultation on

You wish for a professional emergency power system including all-round service?
We organise and coordinate the whole course of your project: besides planning, delivery and installation we also do maintenance of the emergency power system.

Your advantages:

- no storage of stationary emergency generators required
- full compatibility with approved remote control systems
- possibility of remote operation and control of the system, if desired,
- standard designs for rated currents of up to 400 kVA

Supply of 50 Hz consumers from the overhead line System VNO

There are lots of electrical consumers along the rail which are supplied by the public 50 Hz network. These are often located remotely from the energy feeding point. Our emergency power systems can supply rail radio stations (GSM-R), lifting units and many more systems cost-effectively and constantly from the 16.7 Hz network of the overhead line. The supply of consumers not located in an area supplied by the public 50 Hz network becomes economically possible.

Well-engineered technology - Supply without interruption

ESA Elektroschaltanlagen Grimma GmbH offers emergency power systems for the 50 Hz supply from the overhead line. These systems provide a network with three phases 230/400 V 50 Hz at each point of the line operated with overhead line. They ensure the power supply of 50 Hz consumers.

Features of the ESA emergency power system 50 Hz:

- complete system installed in ready-to-connect pre-assembled concrete station
- low-voltage distribution boards including power current and control component with mast disconnecting switch control
- transformer 10...100 kVA/230/400 V and inverter
- accumulators (buffering batteries for the control)

Full service from the first consultation on

You wish for a professional emergency power system including all-round service?
We organise and coordinate the whole course of your project: besides planning, delivery and installation we also do maintenance of the emergency power system.

Your advantages:

- 50 Hz systems can be supplied economically advantageous at any location near overhead lines
- failures of the overhead line (e. g. due to maintenance works) are bridged battery-buffered (control)
- compact, safe and ready-to-connect solution

Safe low-voltage switchgears supply important sectors

Regarding power supply, companies like Deutsche Bahn often face the challenge to be confronted with different technical specifications of the system operators or upstream local system operators. To ensure the supply for long-term, special distribution systems are necessary. ESA Elektroschaltanlagen Grimma GmbH offers individual solutions with full service for this purpose.

Solutions for the indoor installation

We plan and produce individual distribution systems for the indoor use with up to 7000 A. We trust in German system manufacturers as licensee as well as own distribution systems. The solutions can also be ordered as ready-to-connect switchgear and controlgear assemblies.

Solutions for the outdoor installation

Many supply systems require a distribution board which is designed for the outdoor installation. We create solutions of up to 1000 A which do not only provide high supply safety but are also economically appropriate. All distribution systems of ESA Elektroschaltanlagen Grimma GmbH are adapted to the actual operating and environmental conditions on-site and ensure thereby an optimal use.

Our products offer:

- optimal price-performance ratio due to a wide system offer
- constantly high quality by routine testing of each distribution board before delivery
- competent consultation by rail-experienced employees in planning, production and service

Power supply of tunnels
in the IT system

The guarantee of the electrical safety is the top priority for all facilities of railway companies, e. g. operator buildings, railway tunnels, interlockings etc. For this reason, the demand for reliable and reactive monitoring systems, in addition to high quality, is necessary for each electrical system resp. equipment. To prevent failures and ensure operational reliability, it is necessary to ensure a time and information advantage before critical situations can occur.

Low-voltage distribution boards for the energy supply in railway tunnels have to be designed for IT system with insulation and supply voltage monitoring to ensure the system is not switched off immediately when the first error occurs. The signalization of the first occurring error is conducted by the insulation monitoring. The system is only switched off in case of a second error. To prevent the system from switching off after the second error, the first error has to be repaired immediately.

Features of the IT system supply:

Main distribution boards:

- one or more outputs
- 400 V/230 V 3/N AC 50 Hz
- configuration of the transformers outside the distribution board

Sub-distribution boards:

- one or more IT system outputs
- 3/N AC 50 Hz 230/400 V
- design for indoor installation in protection class II

Your advantage:

- one or more IT system outputs 3/N AC 50 Hz 230/400 V
- voltage monitoring
- insulation monitoring and insulation fault detection system per output for quick and safe error fixing
- residual and operating current monitoring system for earthed system available
- central service hotlines

Our solution:

ESA Elektroschaltanlagen Grimma GmbH has developed a system solution for insulation monitoring and fault detection for insulated systems (IT systems) which enables to detect, report and locate errors quickly and precisely under difficult system conditions. In addition, there is a residual current monitoring system for earthed systems which helps to locate and report faulty system outputs.

Electric hook-up columns
in the daily use

Electrants (Type AS) and electric hook-up columns (Type ES) serve for mobile energy supply for platforms, workshops, loading ramps etc. ESA Elektroschaltanlagen Grimma GmbH offers standard as well as customised designs for different ranges of applications. UV-resistant socket configurations in sheet steel housings for high currents of shed testing systems as well as sockets for train preheating systems or heat retaining systems complete our product range in the field of power supplies. Furthermore, the mobile supply with gas, water and compressed air is needed in railway companies. You can also find adequate solutions in our portfolio.

Individual customised solutions

In addition to individual equipping and to design in special sizes, the three basic types can be equipped with further media on-site. Racks for rolling up wires, for holders of compressed air pistols or spray water sprinklers are available on request. If designs with connected media like compressed air or fluids is required, these media have to be provided on-site and installed separately from electrically conducting parts.
We support you in search for the optimal solution for your needs. Please contact us for an individual project planning.

Further possible customised solutions

- locking system (cylinder lock, square ...)
- consumer metering of the outputs
- insulation monitoring of the outputs
- remote monitoring of the protection device

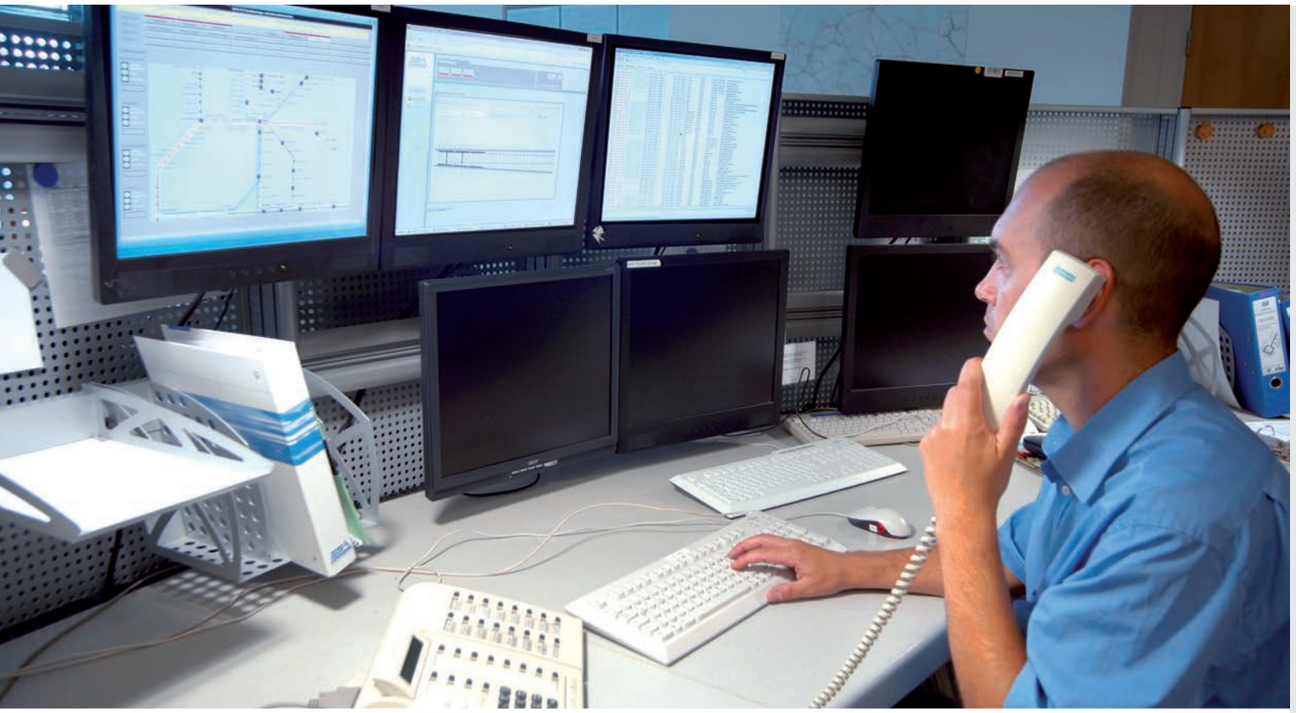
Ranges of application

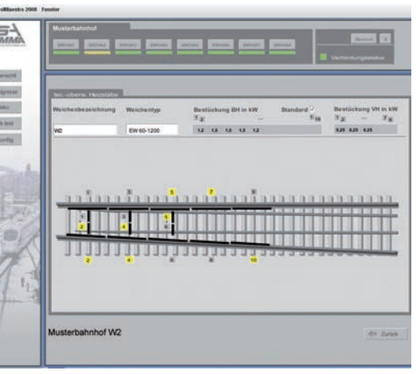
- industry
- track area of railway companies
- shipbuilding/harbour facilities
- power plants
- maintenance and service sector for vehicles
- workshops
- sports and recreation facilities, gardening facilities, public areas

Your advantages at one sight

- plug distributors of plastic and additional outdoor housing of steel sheet
- high UV-resistance
- excellent robustness
- long-term protection by double corrosion protection (galvanised + powder-coated)
- designs in stainless steel on request available
- optimal protection of your investment against vandalism, impact and shock by high resistance electric hook-up columns in:

  - standard sizes with standard equipment
  - standard sizes with individual equipment
  - special sizes with individual equipment





VIS-CM –
Use in the daily business

The remote monitoring, remote controlling and diagnosis of systems of the railways often means bundling of several parallel systems to one technical complex. The control and visualisation system VIS-CM simplifies operation, maintenance and service of electrical point heatings and other electrical systems for you.

Control and visualisation system

Due to the use of our control and visualisation system VIS-CM, you can represent, archive and evaluate process information even more detailed. The comprehensive prevention of errors of monitored systems is possible even with several thousands of process values.

Visualise and control the processes of:

- point heating systems
- pumping systems
- air conditioning
- track field lighting
- brake test systems
- gate systems and others

Your advantages at one sight:

All existing electrical energy systems of one or more areas of responsibility or maintenance can be monitored and controlled centrally by a user interface via webbrowser by the use of the M2M technology with our control and visualisation system VIS-CM.

- visualisation of all existing electrical point heating and energy systems of one or more areas
- providing of interfaces (OPC) for systems of third parties e. g.
- representation of the general system state in topographic view
- representation of process information, operation and parameterisation according to user authorisation
- safe data transfer via VPN technology as well as high safety against data loss in case of disconnection by integrated data storing on system level
- low costs for data transfer with GPRS volume rates by the use of the M2M technology

Ready-to-connect transformer stations for an optimised construction process

Railway companies benefit from turnkey transformer stations for the trouble-free energy supply. The solutions of ESA Elektroschaltanlagen Grimma GmbH are efficient, operational in short time and fulfil the technical requirements. Our full service starts with planning and reaches to the delivery.

ESA-Grimma - service from soup to nuts

As specialist for electrical railway engineering, ESA Elektroschaltanlagen Grimma GmbH stands out by extensive organisational and technical services. The transformer stations are delivered, installed and handed over to the customer including all installation plans, certifications and approvals according to the project requirements.

Ready-to-connect complete solutions for maximum comfort

We do not only produce and install transformer stations for our customers but also other systems serving for the energy supply in stations and on railway tracks.

We are pleased to provide you with:

- special transformers 16.7 Hz with transformer protection
- low-voltage switchgears of protection class I or II as floor or wall installation
- installation of all system components in one certified and approved ready-to-use concrete station
- earthing systems including protective earth and LV signal ground

Additionally, the concrete station can be equipped with other elements like for example medium-voltage switchgears and reactive power current compensation systems.

Competent consultance
Individual planning
Service
Maintenance and repair

Our services for you

Each project includes its own complex requirements regarding law, technology, business and economy. ESA Elektroschaltanlagen Grimma GmbH knows the guidelines of the customer and implements them professionnally in project planning. Our goals: functionality, safety and simple operation for our plants and systems.

Service

ESA Elektroschaltanlagen Grimma GmbH stands out by a wide range of complete services and qualified personnel. We offer turnkey solutions in the railway sector from planning to installation. Our electrical systems correspond to the state of the art and are adapted individually to our customers' needs. Commissioning is usually conducted by our technicians or engineers.

Flexibility, timeliness and quality are the focus of our work. For this reason, our customers trust in us for many years.

Range of services

- competent consultance - even before your investment if you like
- individual planning regarding your special requirements
- personal support during the whole project
- creation of project documents
- complete realisation including delivery and installation
- organisation of the approval according to valid standards and guidelines
- maintenance and repair
- training and workshops

Sustainable service: Maintenance and repair

Regular maintenance and repair is necessarily required for the trouble-free functioning of different electrical systems.
These tasks are carried out by our technicians on-site.

Your advantage:

Your systems are always operational. Furthermore, all recently gained knowledge and technical development flows directly into your systems.

You can use this service according to your needs - our team is available soon so that you are able to plan your maintenance and repair measures flexibly. This is important for the constant availability of the systems.

Always stay up-to-date with our workshops

customised
comprehensible
competent

For problem-free use:

Workshops

We train your staff!
Planners get to know the most recent developments in our workshops. Even after installation of systems with new technology, familiarising your employees with the new system is an important issue of our workshops.

Possible workshop content:

- energy saving with control and regulating devices of the series ISR
- visualisation of systems of the railway with VIS-CM
- optimised maintenance with RCM

Training

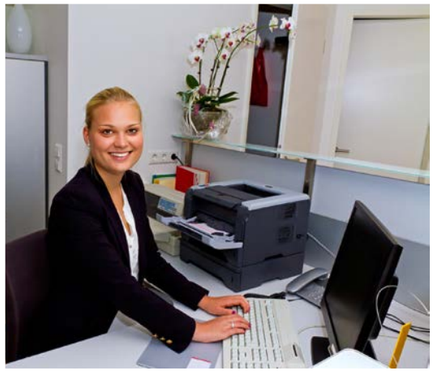
Our training offer is especially for employees who are responsible for maintenance and repair. The participants should be able to carry out tasks of maintenance in a simple and effective way after the training.

Possible training content:

- weather station and their components
- control in the distribution board
- insulation monitoring in the connection box
- central unit as data collector
- communication of the individual components
- control and visualisation system

All events can take place either on your premises or in one of the training rooms of ESA Elektroschaltanlagen Grimma GmbH. Our events are carried out by competent personnel having high practical relation. All training content is adapted especially to your wishes. Please contact us!

Production and administration are located in the headquarter in Grimma, Saxony



Our sales offices nearby

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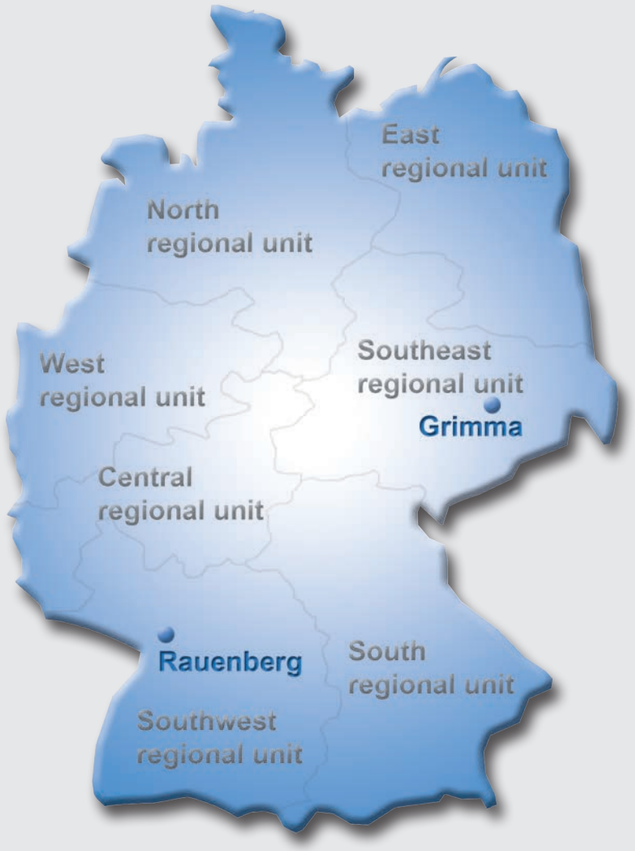

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