DB Systemtechnik: International Expertise for Rail Systems

Our Strategy
Our Structure
Our Know-how
Our Service Offer

Moving the Future. Deutsche Bahn.
DB Systemtechnik –
Straight to your destination

Dr Bernd Zirkler
Head of Business Development and Sales

Hans Peter Lang
Managing Director
DB Systemtechnik
As a high performance, customer-driven service provider with a vast array of expert knowledge, DB Systemtechnik is not just a competent partner to Deutsche Bahn, but is also increasingly active on the international rail market. DB Systemtechnik guarantees independence, neutrality and confidentiality in any work it performs for its customers.

The portfolio of services it provides includes advice in the fields of procurement, fleet support, operation and repairs as well as rolling stock redesign, in addition to a complete range of tests for components and entire vehicles, including the completion of any subsequent certification and homologation procedures.

DB Systemtechnik employs a workforce of over 780 people in various specialised technical units and 18 integrated test centres to ensure that the requirements and needs of both in-house and outside customers are fully met. Analysing problems, developing solutions, performing measurements and tests, preparing technical specifications, obtaining national and international homologation approvals and providing technical support during operations are just some of the services available from DB Systemtechnik.

DB Systemtechnik laboratories and test centres are accredited and provide a level of specialist expertise in all areas of rail technology that is virtually unique on the international market.
Our range of products

DB Systemtechnik offers a broad range of technical services

The rail market is in a constant state of flux. It is influenced by a variety of factors, including the trend towards greater liberalisation and greater focus on core processes and formalisation. DB Systemtechnik is fully equipped to cope with current challenges and future trends. It has pooled its expertise and, in their search for the best solution, the specialists in their respective fields look outside the box at all times.
This is one of the reasons why DB Systemtechnik is able to offer the following tailored services for rolling stock, the associated components, the infrastructure and interfaces in particular:

- International homologation management
- Redesign services
- Specialist expertise in fleet management
- Tests and expert reports due to increasing importance of standards and regulations

**Approval/Tests**

**Rolling Stock**
- Approval management
- Running tests and trials
- Safety assessment and Risk assessment
- Expert’s report
- TSI-Certification Rolling Stock

**Infrastructure**
- Condition monitoring infrastructure
- Part release infrastructure
- Tests and trials on the track
- Expert’s report
- TSI-Certification infrastructure

**Components**
- Certification of components/materials/working materials
- Laboratory tests and trials
- Expert Opinions
- Calibration of measuring and test resources
- Weak point analysis
- Damage and accident investigation

**Measurement and diagnostic systems**

**Measurement and diagnostic systems**
- Pantograph/catenary
- Checkpoints
- Instrumented wheelsets
- Rail-type measuring and testing methods
- Inspection systems for rail and switches
- Testing and diagnostic systems (for Rolling stock and infrastructure)
- Non-destructive testing of rolling stock and track components

**Practice-oriented**
**Sensitive to trends**
**Strong planning quality**
**Competent performance**

**DB Systemtechnik**
Our topics

Perfect understanding of  
the interplay between  
components and interfaces

System knowledge and practical experience are essential to fully understanding complex railway systems and to providing customers in the rail sector with the support they need.

With its broad range of technical expertise, DB Systemtechnik has the necessary experience in terms of operations and maintenance, and is a reliable partner for all technical issues. Its entire experience and expertise flow into its continuous resource optimising process, which is a key factor in ensuring that costs are reduced consistently over the entire life cycle and that quality standards remain at a high level. Any problems that arise in day-to-day business at the interface between the infrastructure, rolling stock technology and operations are eliminated in close consultation with the customer – the ultimate aim at all times being to achieve a smooth and economically efficient operational process.

DB Systemtechnik’s specialist expertise – from the system and system modules down to the individual components – is in line with the current state of the art in science and technology and is continuously updated.
DB Systemtechnik’s know-how on Rolling Stock, Infrastructure and Interfaces

**Rolling Stock**
- General vehicle
  - ICE
  - IC
  - Locomotive
  - EMU, DMU
  - Freight wagon
  - Passenger coach

- Module, Components, spare part
  - Battery technology
  - Bonding technology
  - Buffing and draw gear
  - Brake technology
  - Corrosion protection systems, coating materials
  - Coupler
  - Data bus systems (train bus) for passenger traffic
  - Fatigue strength
  - Fire protection
  - Heating, ventilation and air-conditioning
  - Lubricants, oils
  - Maintenance technology
  - Materials science
  - On-board power supply
  - Pantograph
  - Passenger information systems
  - Power supply
  - Running gear
  - Running technology
  - Tilting technology
  - Traction technology
  - Vehicle software
  - Welding technology
  - Wheelsets

**Infrastructure**
- Battery technology
- Lubricants, oils
- Maintenance shops
- Maintenance technology
- Materials science
- Passenger information systems

**Interfaces**
- Aerodynamics
- Acoustics and vibrations
- Electromagnetic compatibility (high frequency)
- Electro-magnetic compatibility
- Vehicle-track interaction
- Telecommunication
- Safety
- Transmission systems
- Interaction pantograph/catenary
DB Systemtechnik performs all kinds of tests on vehicles, their components and the infrastructure, and has the appropriate testing equipment and measuring vehicles available to cover every possible need.

**With its equipment and expertise, DB Systemtechnik has what it takes to meet every challenge!**

Temperatures ranging from -20 °C to +45 °C, for example, are simulated in its mobile climate chamber, while passenger information systems undergo thorough testing in the IT test laboratory. Tests are performed on the pantograph test bench to examine the interaction between contact wire and pantograph under all conditions, brake tests on wheels and brake blocks are performed at simulated speeds of up to 350 km/h on the friction dynamometer, and in the fire safety laboratory, tests are performed in accordance with national and international standards to update fire safety concepts, for example. Test benches for a wide variety of material tests are also available and railway-specific measuring equipment is also calibrated.
Rolling Stock
- ICE-S High speed measurement train
- VT 612 Tilting technology measurement train
- Different measuring coaches and locomotives

Test beds
- Pantograph test bed
- Strength test bed
- Wheel-on-rail system test bed
- Brake test bed
- Different others

Laboratories
- MEiK E climatic chamber
- IT laboratory
- Tribology
- Materials tests
- Different others
Our staff

Only a promise kept results in a satisfied customer. In line with this principle, highly qualified and committed members of staff are available at all times to solve the challenging issues that arise in development, procurement, support, testing and approval procedures for vehicles, infrastructure and their components.

Experts in specialised fields with expertise covering the entire range of rail technology work as members of flexible and interdisciplinary teams to ensure that the engineering and test services that have been ordered are delivered to the customer within the agreed timeframe and at the expected high quality.

DB Systemtechnik currently operates 19 locations in Germany and France. With its subsidiaries in the UK, the company is on course for growth and is systematically expanding its international business operations – which also creates excellent opportunities for young people to start on a career in the field of engineering and sales.
Our staff
DB Systemtechnik employees can pride themselves in around 100 successfully completed projects each year. The fact that it is possible to complete these projects in over 20 countries demonstrates DB Systemtechnik’s capabilities.

In 2012, however, DB Systemtechnik achieved something quite unique: in conjunction with the manufacturers, it successfully completed all the required national and international tests in parallel for eleven different trains and locomotives. This was an achievement that impressively documents the company’s unique capabilities, its efficient capacity management and professional approach.

The expertise applied throughout the entire homologation process and in the measurement and test services it provides for its customers is continuously optimised.
References
from DB Systemtechnik’s portfolio of services

“Our customers are becoming increasingly international – and so are we,” says Managing Director Hans Peter Lang. The following projects that were successfully completed last year emphasise this process of internationalisation, but also demonstrate the high degree of relevance on the German market. These projects again indicate the diversity of fields in which DB Systemtechnik provides support for its customers.

<table>
<thead>
<tr>
<th>Customer</th>
<th>Project</th>
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<tbody>
<tr>
<td>DB Regio</td>
<td>Low-noise, low-wear brake pads for S-Bahn Dresden</td>
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<td>Transnet Freight Rail</td>
<td>Accident investigation on South African Coal Line</td>
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<td>DB Fernverkehr AG</td>
<td>ICE 2 fleet management: Use of steel reservoirs to replace aluminium</td>
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<td>DB Fernverkehr, DB Regio</td>
<td>Support fleet management for DB</td>
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<td>Ned Train</td>
<td>Support fleet management V 250 Ansaldo Breda</td>
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<td>DSB</td>
<td>Support fleet management</td>
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<td>DB Regio Nordost</td>
<td>DMU 642Warnow: New customer information system</td>
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<tr>
<td>DB Regio</td>
<td>Refurbishment of 8 doppel-deck driver coaches for Südhessenbahn</td>
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<tr>
<td>DB Fernverkehr</td>
<td>Refurbishment ICE 1/ ICE 2: reconstruction, sample redesign, redesign support, vehicle acceptance</td>
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<td>Russian Railway (RZhD)</td>
<td>Modernisation of the Russian Railways’ 2TE116: spreading maintenance intervals, increase in the reliability of electrical components</td>
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<tr>
<td>ERL Maintenance Support</td>
<td>Accident repair of two EMUs in Kuala Lumpur, Malaysia</td>
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<td>DB Fahrzeug-Instandhaltung</td>
<td>Modernisation of vehicle body paint shop in the Krefeld depot</td>
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<tr>
<td>CFL (Chemins de Fer Luxembourgeois)</td>
<td>Design and construction of a central CFL depot</td>
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### Approval/Tests
#### Rolling Stock, Infrastructure

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<td>Alstom Salzgitter</td>
<td>X 62: Tests for commissioning approval in Sweden for NORRTÄG</td>
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<td>Siemens AG</td>
<td>Velaro D: Running tests for the approval of the train control systems</td>
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<td>Alstom</td>
<td>Prima II: Pantograph tests for Rolling stock approval</td>
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<td>BLS, Switzerland</td>
<td>Lötschbergtunnel measuring overhead line</td>
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<td>Bombardier</td>
<td>Electric locomotive Traxx approval</td>
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<tr>
<td>Siemens</td>
<td>Electric locomotive Vectron approval in 4 countries</td>
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<tr>
<td>DB Netz AG Office South-West</td>
<td>Einsingen measuring station: remote monitoring of infrastructure quality</td>
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### Approval/Tests
#### Components, diagnosis systems

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<tr>
<td>Shenhua Group Cooperation Limited</td>
<td>Measuring system pantograph/catenary for coal line in China</td>
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<td>DB Fahrzeuginstandhaltung GmbH</td>
<td>Development of new wheel test benches for increase of reliability</td>
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<td>Funkwerk</td>
<td>Test in connection with the for certification or approval of GSM-R terminals</td>
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<td>Siemens, DB Fernverkehr</td>
<td>Approval of new powered wheelsets for the ICE 3</td>
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<td>ÖBB Technische Services</td>
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<td>Wabtec, Skopje</td>
<td>DB compatibility for brake components</td>
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<td>DB Waggonbau Niesky</td>
<td>Verification of mechanical strength for new bogie frames</td>
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<td>Different manufacturers</td>
<td>Certification of display systems in the IT-laboratory</td>
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<tr>
<td>DB Energie</td>
<td>Qualification of axlebox grease</td>
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Companies from the entire railway sector now put their trust in the service quality provided in the areas of engineering, testing and homologation.

From single orders to major projects – the fact that DB Systemtechnik customers, both national and international, come back again and again is the greatest source of motivation for the company.

Customer base

Rolling Stock manufacturer
Component constructor
Railway Companies
Maintenance companies
DB Systemtechnik

Extract from the customer base

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DB Systemtechnik is certified, accredited and recognised as a railway undertaking

Ensuring that trains arrive at their destinations safely and punctually requires comprehensive know-how and clockwork precision. Customers throughout the railway sector are supported with precisely these qualities – with tailor-made solutions that comply with the appropriate standards and requirements, are delivered at the right time and meet the highest standards of quality.

Certification, accreditation and recognition of DB Systemtechnik as a railway undertaking in its own right are the customer’s guarantee that DB Systemtechnik will deliver what it has promised.

These are the factors on which DB Systemtechnik bases its business activities and proof for manufacturers, operators and maintenance providers of DB Systemtechnik’s know-how – trust us.

The DB Systemtechnik

- holds DIN EN ISO 9001 certification
- is an associate of the certification agency EBC
- is an administrative support for the EBA for ECM issues
- Experts’ organisation accredited under DIN EN ISO/IEC 17 020
- The test centre and experts’ organisation are recognised by the EBA
- Over 40 EBA-recognised assessors and other experts
- The notified body and over 200 test procedures and instructions required for approval in 27 specialist fields are accredited under DIN EN ISO/IEC 17 025

The notified body RAL is part of the DB Systemtechnik Group
Contact

Management

Managing Director
Hans Peter Lang
Phone 0049 571 393-5435
Fax 0049 571 393-5645
hans-peter.lang@deutschebahn.com

Director for Finance, Controlling, Human resources
Bärbel Aissen
Phone 0049 571 3 93-5700
Fax 0049 571 3 93-5645
baerbel.ainen@deutschebahn.com

Dependenzen

England
Martin Horsman, ESG, RAL
Managing Director
Phone 0044 7515 054055
martin.horsman@esg-rail.com

France
Jérome Robin
Sales Director
Phone 0033 178 423715
jerome.robin@deutschebahn.com

Sales

Business Development and Sales
Dr Bernd Zirkler
Phone 0049 571 393-5437
Fax 0049 571 393-5645
bernd.zirkler@deutschebahn.com

Technical Engineering
Sergej Samjatin
Phone 0049 571 393 5442
Fax 0049 571 393 5645
sergej.samjatin@deutschebahn.com

Maintenance Technology and Construction
Martin Grab
Phone 0049 571-393 5575
Fax 0049 571-393 5645
martin.grab@deutschebahn.com

Approval/Tests
Rolling Stock, Infrastructure
Dr Lars Müller
Phone 0049 571 393-5405
Fax 0049 571 393-2409
lars.l.mueller@deutschebahn.com

Approval/tests
Components, Diagnostic Systems
Josef Rixner
Phone 0049 89 1308-5464
Fax 0049 89 1308-7522
josef.rixner@deutschebahn.com

Marketing, Communications
Alfred Hechenberger
Phone 0049 89 1308-3441
Fax 0049 89 1308-7522
alfred.hechenberger@deutschebahn.com

Further Information
www.db-systemtechnik.de
Technics

**Technics and Production**

**Johannes Gräber**  
Phone  0049 571 393-5600  
Fax  0049 571 393-5227  
johannes.graeber@deutschebahn.com

**Brake and Coupling**

**Frank Minde**  
Phone  0049 571 393-5100  
Fax  0049 571 393-1082  
frank.minde@deutschebahn.com

**Running Systems and Fatigue Strength**

**Dr Stephan Schubert**  
Phone  0049 571 393-5436  
Fax  0049 571 393-1218  
stephan.schubert@deutschebahn.com

**Traction Technology and Air Conditioning Systems, Aerodynamics, Acoustics, Command Control**

**Nils Dube**  
Phone  0049 89 1308-7470  
Fax  0049 89 1308-7322  
nils.dube@deutschebahn.com

**Vehicle Engineering, IT-Application and Diagnostics**

**Heiko Gau**  
Phone  0049 69 265-55360  
Fax  0049 69 265-55393  
heiko.gau@deutschebahn.com

**Maintenance Technology**

**Dr Burkhard Schulte-Werning**  
Phone  0049 3381 812-320  
Fax  0049 3381 812-105  
burkhard.schulte-werning@deutschebahn.com

**Approval Management**

**Dr Thomas Erpenbeck**  
Phone  0049 571 393-5423  
Fax  0049 571 393-5653  
thomas.erpenbeck@deutschebahn.com
Imprint

DB Systemtechnik GmbH
Weserglacis 2
32423 Minden, Germany

Further Information:
Internet: www.db-systemtechnik.de
E-Mail: systemtechnik@deutschebahn.com
Contact: Alfred Hechenberger

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