Reliable rail traffic – from the very first day
Test- and Validationcenter Wegberg-Wildenrath
The whole rail world in Wegberg-Wildenrath

For every customer. Every technology. Every system – Anytime.
You as rail operators expect innovations that work properly from day one. But also your customers – whether passengers or cargo – have the same demand.

With the accredited and certified Test- and Validation-center we can fulfill these demands. With the most modern infrastructure, highly qualified experts and innovative test-services we can offer customized solutions from one hand.

A unique combination
The location Wegberg-Wildenrath unifies know-how and technology. We can test practically all standard-gauge and meter-gauge vehicles as well as rail systems and components commonly used throughout the world – 24 hours a day, 365 days a year.

You can set the agenda – as our service center is independent from public rail network operations.

Flexible testing area for regional and mainline rolling stock.
Special meter-gauge and standard-gauge test tracks allow a diverse range of tests to be performed – such as movement through curves and on gradients, leakage tests and high-pressure sprinkling tests. This is where you find out whether your vehicles are ready for use in everyday urban and interurban service.

Regardless of whether it is electric or diesel-powered – the Wegberg-Wildenrath Test- and Validationcenter is equipped to handle all rail systems. And realistic situations can be simulated under practical conditions on around 28 km of track.
Concentrated know-how

**Staying on track –**
A 50-m-long measurement track curve with a curve radius of 150 m and two measurement fields are available for determining wheel support and guidance forces. The safety of vehicles against derailment is assessed here, in accordance with DIN EN 14363:2005.

**Achieving rotations –**
Traveling through curves, over tops, and across dips can be simulated at standstill. Both standard and meter-gauge vehicles are tested on the turn-tilt table.

**Getting the weight right –**
Eight weighing elements are provided on a 52-m-long leveled track with standard gauge. The distance between these elements can be varied. Thus ensures the determination of the right weight.
Simulation standstill travel –
A tilting device is available for measuring the tilting behavior. The test stand is inclined in order to simulate the influence of lateral acceleration caused by factors such as centrifugal force or side winds.

Under voltage –
Lightning and switching impulse voltages can be applied for test purposes with the impulse voltage test system. This guarantees a safe operation in the electrical rail world.

Limiting noise –
Vehicles can be subjected to a noise test at speeds of up to 160 kph on an acoustic measuring rig, in accordance with TSI noise and DIN EN ISO 3095:2005. The track condition matches the strict European regulations, which undergoes continuous checks.

“The authorities are extremely accurate. Is a rail vehicle only by one decibel louder than allowed, they refuse authorization. Therefore, we do our measurements under controlled and comparable conditions, which would not be so easy on the public network during normal operation. By oscillated grinding the rail is brought exactly to the required value in the European directive. And the measurement starts.”
Worldwide unique
Real operation. Simulated extreme situation – In one place.

Continuous test for door signals
For three weeks a door-signal endurance test was performed for the metro of Taipei. Entering the station, opening and closing the doors, leaving. 15,000 km have been driven. And everything was fine – test passed.

Climate tests on Desiro Classic, Bulgaria
How warm will it get inside? This question is answered with an endurance test on Desiro Classic Bulgaria. The result: The air conditioning keeps the vehicle interior constant at 25 °C, even at 40 °C outside.

Deformation behavior of the Velaro RUS
The strength of the automatic coupler is essential for a safe rail operation. In early stage of design it was tested in real for the Velaro RUS using a freight waggon as crash element. Even here: Test passed.
The Test- and Validation center has been certified and accredited for its test methods by independent bodies. Whether stationary or dynamic, there is virtually no limit to the test that can be performed at Wegberg-Wildenrath. This knowledge not only helps us, but also the future maintenance providers. With our service to test the norm compliance, we certify that maintenance facilities work according to established guidelines and standards – so your rail systems remain fully functional in the long run.

Extreme operating situations
We are also well-equipped to cater to any unusual demands. Voltage gaps, sudden voltage changes, power supply failures and short circuits are just a few examples of our multi-faceted extreme testing program. Every day, our rail experts deal with developing new and optimizing existing tests – that rail systems match today’s and also future requirements.

Certification according to DIN EN ISO/IEC 17020
Inspection body for railway vehicles and their components in terms of geometrical, electrical, acoustical, driving technique and braking performance and verification of conformity with specified requirements, as well as checking the suitability of maintenance workshops and verification of conformity with specified requirements.

Certification according to DIN EN ISO/IEC 17025
Testing laboratory for measurement and braking performance investigations for rail vehicles, for dynamic functional tests of PZB, for the investigation of high voltage power supply facilities in the railway sector, for acoustic testing of rail vehicles and measurement tests for driving behavior of rail vehicles.

Recognition as an Associate Partner of EB-CERT
Execution of activities as part of tasks to test the EC conformity and suitability for use of interoperability components and tasks required for the EC verification of sub-systems.

Certification to ISO 9001, ISO 14001 and OHSAS 18001
Valid for development, sales, implementation and deployment of test equipment and testing and inspection services for railway, as well as for the testing infrastructure for railway technology.

Bewährte Kompetenz
Proven competence
Akkreditiert
Accredited
Certified
Zertifiziert
Internationale Normen
International standards
Real conditions –
Mechanical. Electrical – Static or dynamic.

When it comes to reliability of railway systems, the pertinent standards have to be set very high because millions of people rely on the safety of public transportation – every day and worldwide. As the competent expert at your side, we make sure that you get the degree of safety you need.

State-of-the-art infrastructure and extensive competence in testing of rail equipment are combined at one single location. This unique combination makes us the ideal full-service partner for testing, validation and certification of rail systems.

Therefore we are actively involved in the constant development of new test methods and related technology and systems. The result is test schedules that are individually tailored for your rolling stock or rail systems and components.

Rely on our wide range of facilities for testing high-speed, mainline, regional or mass transit systems.

Our facility is superbly equipped to meet all your particular requirements. With 28 km of track and special testing equipment, we have no difficulty in testing train operations under any real-life conditions.
Roof working platforms: safe assembly
The 62 m long roof working platforms are designed to protect employees against electric shock and at the same time offer optimal access to the vehicle. In addition to the fixed platforms, there are also a variety of mobile roof working platforms available.

Crane systems: exchanging roof-mounted components
The two crane systems have a lifting force of 20 t each. This makes replacement of large roof-mounted vehicle components fast and effortless.

Lifting jack equipment: controlled lifting
The train has to be raised slowly in order to provide access to the drive units and bogies underneath. Numerous synchronized lifting jacks can be positioned as required to perform this feat of strength of up to 16 t or 32 t without tipping or tilting.

Guarded and illuminated core area of the facility

Train formation hall 1 (with overhead contact line)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>at-grade standard-gauge tracks, some with work pits</td>
<td>each 220 m</td>
</tr>
<tr>
<td>2</td>
<td>elevated standard-gauge tracks, with work pits</td>
<td>each 220 m</td>
</tr>
<tr>
<td>2</td>
<td>elevated standard-gauge tracks, with work pits</td>
<td>each 75 m</td>
</tr>
<tr>
<td>1</td>
<td>elevated standard-gauge and meter-gauge track, with work pit</td>
<td>75 m</td>
</tr>
<tr>
<td>3</td>
<td>roof-height working platforms</td>
<td>62 m</td>
</tr>
</tbody>
</table>

Train formation hall 2 (with overhead contact line)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>elevated standard-gauge tracks, with work pit</td>
<td>each 220 m</td>
</tr>
<tr>
<td>1</td>
<td>bogie changing device with 30-ton lifting and 80-ton load-bearing capacity</td>
<td>7 m</td>
</tr>
<tr>
<td>1</td>
<td>crane with a load-carrying capacity of 20 t</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>diesel-gas extraction system</td>
<td>100 m</td>
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</tbody>
</table>

Workshop (not electrified)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>at-grade standard-gauge and meter-gauge track, with work pit</td>
<td>49 m</td>
</tr>
<tr>
<td>1</td>
<td>bogie changing device with 30-ton lifting and 80-ton load-bearing capacity</td>
<td>7 m</td>
</tr>
<tr>
<td>1</td>
<td>crane with a load-carrying capacity of 20 t</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>jacking system with a capacity of 4 x 32 t and 4 x 16 t</td>
<td></td>
</tr>
</tbody>
</table>

Stabling tracks (not electrified)

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<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Length</th>
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<tbody>
<tr>
<td>9</td>
<td>tracks with external power supply</td>
<td>Total length 1,732 m</td>
</tr>
</tbody>
</table>
Bogie pits: Changing bogies
Each seven-meter platform has a combination of a rotatable scissor-type lifting table in the elevated track section and a turntable in the parallel track. Both systems are designed for 80-ton load-bearing capacity, can lift 30 t, and allow fast, space-saving changing of bogies.

Voltage systems: Global rail power supply
The power supply in the two train formation halls is designed for all common DC and AC voltages in Europe. Both halls are equipped with overhead contact wires.

Elevated tracks: Working under-floor
Every corner must be accessible during commissioning or for inspecting the chassis area. Work pits combined with elevated tracks facilitate working under the train. Work can be carried out quickly and while standing in an upright position.

### Power supply from the national grid

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<tbody>
<tr>
<td>U</td>
<td>20 kV / 50 Hz</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>15 MVA</td>
<td></td>
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### 2 static converters for AC systems

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<tr>
<th></th>
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<tbody>
<tr>
<td>P</td>
<td>2 x 7.5 MW</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>15 kV / 16.7 Hz</td>
<td>25 kV / 50 Hz</td>
</tr>
<tr>
<td>U</td>
<td>25 kV / 60 Hz</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>12 kV / 25 Hz</td>
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### 1 traction-supply transformer

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<tbody>
<tr>
<td>U</td>
<td>25 kV / 50 Hz</td>
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### 3 rectifiers for DC systems

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<tr>
<th></th>
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<tbody>
<tr>
<td>I</td>
<td>4,000 A</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>±750 V</td>
<td>±400 – 4,000 V</td>
</tr>
<tr>
<td>U</td>
<td>±400 – 1,800 V</td>
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### Regenerative capacity (stationary resistors)

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<th></th>
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<tbody>
<tr>
<td>AC</td>
<td>6 MW</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>4,500 A</td>
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### Test- and Validation center’s own power supply

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<tr>
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<tbody>
<tr>
<td>U</td>
<td>400 / 230 V / 50 Hz</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>1.2 MVA</td>
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Trackworks (*without overhead contact line)

- Connecting track leading to the railway network of DB AG (German Rail)*
- Stabling tracks*
- Test oval 1 T1 additional third rail (British type) 6,082 m $V_{\text{max}}$ 160 kph
- Test oval 2 T2 additional third rail (British type) 2,485 m $V_{\text{max}}$ 100 kph
- Test track T3 additional third rail (British type) 1,500 m $V_{\text{max}}$ 80 kph
- Test track T4 553 m Radii 50/25/15 m
- Test track T5 410 m Gradients 40/70 ‰

Test oval T1
The 6,082 m long test oval 1 is equipped with train protection and automation systems such as ATB-EG, ETCS Levels 1 and 2 as well as PZB (intermittent ATC). Tests at speeds up to 160 kph are possible here.

Test oval T2
With a curve radius of 300 m, test oval 2 is suitable for maximum speeds of 100 kph on standard-gauge and meter-gauge track. The 2,485 m long oval is also used for trams.

Test track T3
This straight and level track is especially suitable for braking distance measurements. Over a distance of 1,500 m, standard-gauge and meter-gauge vehicles reach speeds up to 80 kph.

Test track T4
Over a track length of almost 600 m, the curving performance of vehicles can be tested in different radii – both on standard gauge and meter-gauge track.

Test track T5
The shortest test track is 410 m long and is a gradient track for standard-gauge and meter-gauge vehicles. The gradients are 40 ‰ and 70 ‰.
Comprehensive range of services. Focused testing expertise. Real conditions. Individually and from a single source. This is what the Test- and Validationcenter Wegberg-Wildenrath stands for. Also in the future we will continue to ensure that only certified quality leaves our site.

Our mission: We are and remain state-of-the-art and therefore the test center for worldwide rail systems. Our experience makes us a solid partner at your side. With tailored offerings or an all-inclusive service, we ensure that your rail systems are fully functional during daily operation.

Ready for the future

Forum for rail technology
The site is not only used for testing, also new technologies are presented. There are also a variety of cooperation and research projects dealing with innovative solutions for the rail world of tomorrow.

Transportation to and from the center
If requested, we organize the transfer of vehicles and equipment to and from the Test- and Validationcenter. This considerably reduces the amount of effort our customers have to put into coordination and organization.
At the Test- and Validationcenter, the future has already begun. And still we have a driving pioneer force.

Already today the equipment of the large test oval with signal components and GSM-R radio towers allows extensive tests and trials in cross-border traffic.

Every three minutes cross-border movements can be simulated on the large oval. This enables the modeling of a realistic rail traffic across Europe – quickly and easily.

Even with the Galileo project, we are pioneers. On our site the Galileo signal is simulated in order to give you the opportunity to test innovative applications of the future already today. Together with our project partners, we examine the project railGATE and the advantages of Galileo applications in safety critical areas of rail transport.

This combination of technology, innovation, expertise and independence contributes to the uniqueness of the Test- and Validationcenter in the whole railway world. We look forward to seeing you in Wegberg-Wildenrath.
Siemens Rail Services
We keep the world running.

You keep people and goods moving – we do the same for rail transport
With our innovative technologies you can design your maintenance processes to be consistently efficient. Examples include Remote Services or status-based maintenance. Rely on our extensive know-how. This is based on many years of experience in maintaining track-bound transport systems of all kinds. As vehicle and system manufacturers, we are not only aware of the technical requirements; we also recognize the importance of rigorous obsolescence management and optimization of your spare parts assets.

You expect customized service – we have the answer
Our comprehensive range offers flexible, individually tailor-made services. Our service experts will be happy to work with you to develop fast and reliable solutions – over the entire life cycle of your trains and infrastructure. The services of our Test- and Validationcenter are just one part of the extensive Rail Service portfolio.

Investments in new rail concepts need to pay dividends in the long term and be sustainable. This requires effective service concepts. It is the only way to guarantee maximum reliability and availability of a transport system over its entire service life – or even to extend this in the best case scenario.

You can rely on Siemens Rail Services. We are your ideal partner for innovative service concepts to safeguard your investments.
The information in this document contains general descriptions of the technical options which are not necessarily available in individual circumstances. The required performance characteristics should therefore be defined individually when signing contracts.