

Railway Structures and Components Testing



What Is Railway Structures and Components Testing?

Railway structures and components testing is critical for ensuring that freight and passenger trains comply with global standards. Since safety is paramount in the railway industry, the structural integrity and reliability of **locomotives, bogies, and various components** must be rigorously assessed.

At [Applus+ Laboratories](#), we specialise in comprehensive testing services that guarantee your [railway](#) vehicles meet the highest safety and performance criteria.

Why Is Railway Component Testing Important?

Railway component testing is critical for rail manufacturers due to several key benefits:

- Ensure Safety and Compliance
- Save Time and Reduce Costs
- Enhance Operational Efficiency
- Build Stakeholder Confidence

What Railway Structures Do We Test?

We test a wide range of railway structures to ensure they meet international standards and your specific requirements. Our primary focus is on the approval and development of **bogies** and **bogie frames** for locomotives, freight trains, and passenger trains.

What Railway Structures Testing Options Do We Offer?

We offer a comprehensive suite of testing options to assess the strength and functionality of railway structures:

- **Static and Dynamic Tests:** We conduct both static and dynamic strength tests to evaluate the structural integrity of bogies under various load conditions.
- **Testing of Two- and Multi-Axle Frames:** Our facilities are equipped to test bogie frames with different axle configurations, ensuring their reliability and performance.
- **Normal and Head-First Position Testing:** We simulate real-world operational scenarios by testing bogie frames in both normal and inverted positions.
- **Multi Load Components:** Our advanced testing equipment can apply different load components simultaneously for comprehensive analysis.
- **Bogie Frame with Passive and Active Inclination:** We assess bogie frames under conditions of both passive and active inclination to mimic actual track conditions.
- **Ongoing Damage Control:** Continuous monitoring during tests allows for immediate detection and analysis of any structural issues.
- **Measurement of Strains and Deformations:** We utilise precise measurement techniques, including visual methods upon request, to record strains and deformations during testing.

In addition to these options, we provide a full range of additional services, including **non-destructive testing, damage analysis, test program development, track measurement,** and **finite element method (FEM) analysis.**

What Railway Components Do We Test?

Our commitment to safety and performance extends to a variety of railway components. We meticulously examine each component to ensure it meets both your specifications and international standards.

We conduct strength and performance tests on a variety of components, including:

- **Motor and Trailer Bogie Frames:** We assess the structural integrity and performance of both motor and trailer bogie frames under operational stresses to ensure they meet durability and safety requirements.
- **Axlebox Bearings:** We perform strength tests in accordance with DIN EN 13749 and performance checks as per DIN EN 12082.
- **Springs and Dampers:** Assessing durability and functionality under operational stresses.
- **Axlebox Bearing Housings and Axle Control Arms:** Ensuring structural integrity and reliability.
- **Brake Components:** Testing for safety and compliance with braking performance standards.
- **Couplings and Brackets:** Evaluating strength and durability for secure connections.

- **Wheel Swing Arms and Cross Members:** Assessing their ability to withstand dynamic loads.
- **Anti-Roll Bars and Stabilisers:** Testing for effectiveness in maintaining vehicle stability.
- **Crash Elements and Coupling Elements:** Ensuring they meet safety requirements for impact scenarios.
- **Slider Carriers, Cradle Carriers, and Magnetic Brake Frames:** Verifying their performance and reliability.

We also conduct **service life testing** that considers the effects of oscillation and vibration to ensure long-term durability.

What Railway Components Testing Options Do We Offer?

To guarantee the strength and stability of your railway components, we offer tailored testing options designed to meet your specific needs:

- **Development of Test Bench Concepts:** We design test benches according to the required test conditions to simulate real-world operational scenarios.
- **Static and Dynamic Strength Assessment:** Our tests evaluate components under both static loads and dynamic conditions for comprehensive strength analysis.
- **Damage Monitoring and Analysis:** Continuous monitoring allows us to detect any damage during testing, followed by detailed analysis to identify causes and solutions.
- **Non-Destructive Testing (NDT):** We utilise advanced [non-destructive testing methods](#) to examine the internal and external integrity of components without causing damage.
- **Environmental Simulation Through Vibration Testing:** Our vibration tests simulate environmental factors to assess how components perform under oscillation and vibration effects.

Why Choose Applus+ Laboratories for Railway Structures and Components Testing?

Choosing Applus+ Laboratories for your railway structures and components testing aligns you with a distinguished leader in the railway testing industry. Our services are geared towards ensuring that bogies, components, and assemblies are structurally sound and compliant with global regulations and standards.

We offer comprehensive testing services combined with exceptional client service, making us ideal for your railway testing needs. We support the full spectrum of your project, from development through to market entry across multiple countries. This includes:

- **Accredited and Certified Testing:** We are an accredited and certified testing centre for approval testing in line with DIN EN 13749 and UIC regulations, ensuring compliance with global standards.
- **Comprehensive Testing Services:** We provide a full spectrum of testing services for both railway structures and components, including strength tests, performance assessments, and service life evaluations.
- **Advanced Testing Facilities:** Our state-of-the-art laboratories are equipped with advanced testing equipment capable of simulating real-world operating conditions.
- **Expertise and Experience:** Our team of experts brings extensive knowledge and experience in railway testing, providing valuable insights and guidance throughout your project.
- **Additional Services:** Beyond testing, we offer a range of services including non-destructive testing, damage analysis, test programme development, measuring runs, and FEM analysis.

Choose Applus+ Laboratories as your trusted advisor and partner. Our high-quality services and expert guidance are designed to streamline your path to market while navigating the complexities of railway product certification with confidence and precision.