



Choose certainty.
Add value.

Rolling stock services

Integrated approval support
for meeting European and
national requirements

Your challenges

It is essential that railway vehicle manufacturers and rolling stock operating companies meet mandatory, voluntary and contractual requirements for the assembly and functions of rolling stock and components. Navigating the mandatory requirements is challenging and time intensive. In addition, the risks of not meeting these specifications or requirements are high.

What factors are needed to meet requirements for rolling stock?

During the initial requirements phase, suppliers need to define which approval and safety requirements apply. These should be verified against customer requirements in order to avoid conflict between customer and approval body expectations. At the design phase, manufacturers must verify chosen design solutions against the approval and safety requirements to avoid subsequent approval issues or extensive reworking costs. Once rolling stock has been manufactured, it is necessary for companies to

perform installation testing on a subsystem or on a whole vehicle in order to validate to system requirements.

Why are these requirements important?

Your company may need to fulfil requirements relating to rolling stock for legal and contractual reasons. Country-specific legal requirements must be met in order to obtain authorisation to operate rolling stock on a railway network. For example, you will need an independent safety assessor to submit a positive safety and inspection report to obtain National Safety Authority (NSA) approval. In addition, your customers may specify contractual requirements such as special testing and inspection obligations for the supplier.

How can we help you?

TÜV SÜD offers extensive rail industry expertise and experience to facilitate the approval process for rolling stock. Our comprehensive suite of in-house services as well as our capability for rail vehicle testing provide



integrated approval support for companies working with rolling stock. In addition to providing thorough evaluations and reports, we offer TÜV SÜD certification marks, which are globally recognised and synonymous with quality and safety.

Our rolling stock services

Our integrated support will help your company to achieve greater efficiency and effectiveness during the entire approval process of your rolling stock vehicle through the following services.

■ Approval management

Approval management is one of the two most important pillars of a successful rolling stock project. With our experience in vehicle approvals worldwide and our close collaboration with international safety authorities, we can work with your organisation to identify applicable requirements, standards and technical rules for your approval strategy. This support is particularly beneficial when it comes to multinational rolling stock approvals, which are governed by a wide variety of complex national and international technical and safety requirements such as the European technical specifications for interoperability (TSI).

Based on our experience in conducting EC verifications and conformity assessments, we can support you in implementing an effective approval management strategy that limits the risk of not obtaining the approvals you need. We can also help you to correctly interpret Notified National Technical Rules (NNTR) and European requirements within the TSI.

■ Safety management

Safety management is the other critical pillar of successful rolling stock projects. This follows the introduction of the common safety method (CSM) for risk evaluation (352/2009/EC) and growing demand for functional safety according to CENELEC standards. Manufacturers and suppliers must conduct hazard identification, risk analysis and risk evaluation to identify and evaluate potential hazards in their products as prescribed by the mandatory CSM framework.

Although businesses may use recognised codes of practice or reference systems to ensure a technical safety level is maintained, an independent risk assessment nonetheless requires a good understanding of the different methodologies and safety systems available. Our experts support your company by first setting up an independent safety management system and then coaching your safety managers to take over the responsibility for managing the safety of your rolling stock products.

■ Maintenance management for ECM

In accordance with the European Safety Directive 2004/49/EC, a new stakeholder called the entities in charge of maintenance (ECM) has been introduced to the European Railway Safety Directive (2008/110/EC). This amendment emphasises the importance of maintenance to safety and requires rolling stock manufacturers, railway undertakings and keepers to seek ECM certification according to the regulation. The documentation accompanying a new rolling stock must therefore include a well-structured and justified maintenance and safety analysis programme.

TÜV SÜD is accredited according to Commission Regulation 445/2011/EC to provide ECM certification. Our experts have extensive experience in implementing similar standards such as DIN27201-1, and our consulting services can help strengthen your position to address these new requirements.

■ Rail vehicle testing

Practical tests are essential to prove that your rolling stock is rail-worthy. They must be passed in order to obtain your approval. These tests cover a variety of scenarios and include crash tests, fatigue tests, stress tests, tests for safety against derailment, container tests and also on-track tests for vehicles and train sets like brake tests, wheel slide protection test, running dynamics test and strength tests.



Rail vehicle testing facility in Görlitz, Germany

TÜV SÜD offers end-to-end testing services for rolling stock, from prototyping to final approval. Our experts have considerable experience in setting up tests, coordinating and planning efficient test series, and evaluating well-structured test reports under the control of an effective quality management system. We operate wholly owned labs and facilities that are accredited to the ISO/IEC 17025 standard.

■ **Independent safety assessments**

Independent safety assessments (ISA) are mandatory in many countries where national railway safety authorities are in charge of issuing safety certificates or safety authorisations. However, ISA requirements vary depending on the vehicle type and the country or region in which approval is sought.

Some countries require individually recognised assessors, while others only require the organisation to hold the recognition in order to carry out an ISA on behalf of the authority. In addition, the focus of an ISA may vary depending on the project – while light-rail vehicles and metro projects may need to follow specific national standards and requirements, trains running main-lines may need to adhere to a more complex process. European countries are particularly concerned about rolling stock interoperability, which must be verified by a Notified Body. In order to obtain a national approval, NNTR need to be assessed by a Designated Body (DeBo) covering the national rules in each applied country.

TÜV SÜD is authorised to carry out assessments on behalf of many rail authorities. Our ISA services cover electrical, electronic and software-controlled systems, mechanical, hydraulic and pneumatic systems, propulsion, and energy supply. By covering all technical categories of rolling stock production, we can offer efficient ISA not only for single categories but also for an entire vehicle or train set.

■ **Technical documentation**

A railway vehicle is a highly complex system. Unintentional misuse by railway undertakers may lead to avoidable disruptions to operating schedules and potentially dangerous situations. With proper user documentation, however, manufacturers can ensure that their products are used safely and correctly.

Rolling stock documentation comprises operational aspects such as driver's manuals, operational constraints and emergency plans. It should also include installation manuals, maintenance manuals and other documentation necessary to operate and maintain the vehicle as required. TÜV SÜD can support the development of these documents according to your needs and the agreements in place with your customer. Our technical writers have extensive experience with documentation development and can produce consistent and well-structured user manuals.

■ **EC verification/conformity assessment**

Obtaining approvals for rolling stock vehicles or main-line trains within the EU demands certain interoperability requirements. To prove that all necessary interoperability requirements have been fulfilled, a Notified Body must verify the product against the applicable TSI. A constituent component or product may also be assessed in an EC conformity assessment to prove that it is compliant to the applicable TSI and may be integrated into a rolling stock vehicle subsystem without additional product-level inspections.

As a leading European Notified Body, TÜV SÜD's EC verification reports are accepted in all European member states and by all NSAs by law. We conduct assessment according to all relevant TSI and leverage our Notified Body status through Railcert (a subsidiary of the TÜV SÜD Group) and through our associate partnership with EISENBAHN-CERT (EBC).



■ Fire protection services

Current and upcoming standards such as the new EN 45545 standard for fire testing railway components will place additional requirements on rolling stock manufacturers. TÜV SÜD's experienced railway fire protection experts can provide assessments as well as high-level testing, advisory, training and consulting services to help manufacturers and suppliers meet these requirements. Our range of services includes system evaluations based on international fire protection standards, damage investigation, evaluation of emergency and rescue concepts, smoke simulation in vehicles and underground stations, fire and smoke tests, and training for topics such as fire risk analyses and fire protection concepts.

Your business benefits

- **Save money** – by taking advantage of our familiarity with the regulatory requirements to avoid costly rework of test specifications.
- **Save time** – through our experience in understanding and meeting requirements with efficiency and speed.
- **Minimise risk** – with an expert partner that can help you avoid the danger of recall, rework and reputation damage.

Why choose TÜV SÜD?

TÜV SÜD provides complete one-stop support for rolling stock, from conceptualisation to approval. Drawing

on nearly 50 years of experience in the rail business, we have a deep understanding of the regulatory requirements. Over the years, we have built up an international network of 300 dedicated rail experts who are stationed around the world to conduct your rolling stock testing tasks in our state-of-the-art facilities. We are recognised worldwide as a Railway Safety Assessor and many of our experts are recognised by the German Federal Railway Authority (EBA).

Choose certainty. Add value.

TÜV SÜD is a premium quality, safety and sustainability solutions provider that specialises in testing, inspection, auditing, certification, training and knowledge services. Represented in over 800 locations worldwide, we hold accreditations in Europe, the Americas, the Middle East and Asia. By delivering objective solutions to our customers, we add tangible value to businesses, consumers and the environment.

Related services

TÜV SÜD provides the following related services:

- Approval management
- Generic safety system services
- Training for the rail sector