

# DB Fahrzeuginstandhaltung

## Your partner for electronic maintenance

The increasing use of electronic components in rail vehicles is leading to a growing need for maintenance services. Estimates see a sharp rise in demand, especially over the next two decades. Vehicles for passenger transport are being equipped with comfort features such as WLAN, video monitoring systems, customer information systems or the complete networking of electronic components. New electronic systems are also finding their way into freight transport. These include systems for railway carriage localisation or relate to the retrofitting of ETCS in locomotives as the train control system of the future.

### Repairs, maintenance and parts logistics

We perform repairs on numerous electronic components from a wide range of manufacturers and supply the appropriate logistics where necessary. Our product portfolio covers the repair of components from the following product groups: Radio systems, control and safety systems, control electronics, passenger information systems, mechatronics, on-board network electronics, terminals and control elements.

### Rapid fault identification

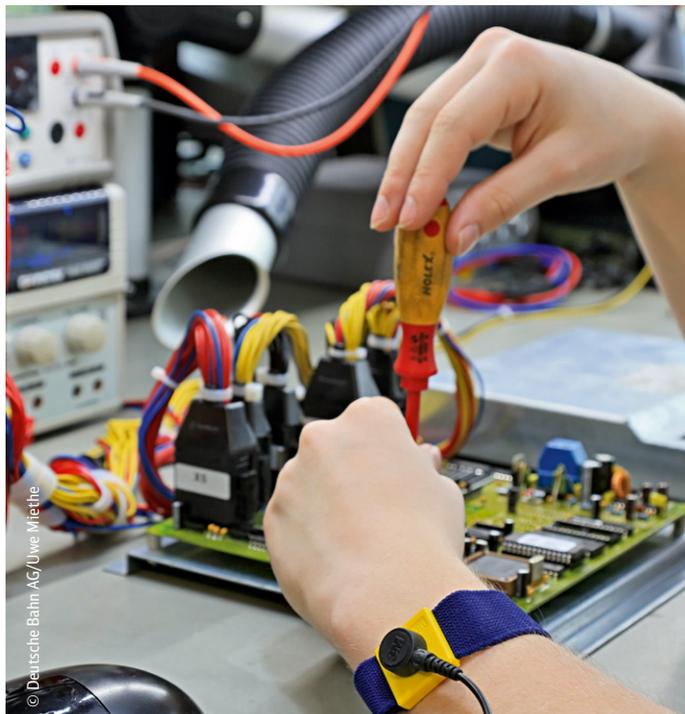
We perform testing to identify the causes of faults in electronic components. Numerous test benches and test devices are available for this purpose in Central electronics workshop Munich. After identifying the fault, we suggest solutions to remedy the issue.

### Development of a testing strategy

A suitable testing strategy is developed in accordance with the problem to be solved and a test bench is set up. With several hundred test benches at their disposal, the Central electronics workshop has a suitable test bench for every product and every functional system. A software created specifically by Central electronics workshop for this purpose is used to test the relevant functions in partially automated, complex test procedures to ensure fault-free functioning when in use.

### Final checks

Every component that leaves the Central electronics workshop receives its own test certificate and identification number. After the repair, the person responsible for the order documents the work procedures in a repair statistics, on the basis of which Engineering can then conduct research on faults and make optimisation suggestions relating to the product.



### In-circuit tester and flying probe

The Central electronics workshop has three industrial bed-of-nails testers for testing at the printed circuit board level. Since 2012, the testing infrastructure has been supplemented by a flying probe. The fault diagnosis is fully automated. Eight X/Y/Z-controlled test probes move to defined test points at high speed. This method reliably detects open lines, short circuits and component faults.

### PinPoint

PinPoint is a compact, flexible in-circuit/function testing system for the localisation of faults on printed circuit boards. The individual ICs are checked for proper functioning using test clips. The PinPoint diagnosis technology enables a rapid and efficient fault analysis and has demonstrated a high fault detection rate in testing-intensive processes and of sporadic faults.

### Infrared camera

To find faults more rapidly and efficiently and to verify optimisations, an infrared camera is used. It was developed specifically for finding faults on printed circuit boards and in electrical systems.

### Function testing system and Labview

The function testing system (FTS) developed by Central electronics workshop is a building-block system of individual interface modules that are used to flexibly test different components in the railway industry. The electrical connections are configured individually and the control software is assembled from various software modules. The vehicle environment can be simulated in this way. The software is created by means of Labview (National Instruments), which is a graphic development environment.

### Obsolescence management

Obsolescence management at DB Fahrzeuginstandhaltung helps customers prevent costly downtimes. This allows us to replace electronic and mechanical components and elements fitted in your vehicle interiors as quickly as possible. The services include: Obsolescence risk analysis, end-of-life inventory, rebuilding/redesign, substitution/adaptation and used part management.

### Contact

DB Fahrzeuginstandhaltung GmbH  
Weilburger Strasse 22  
60326 Frankfurt am Main  
GERMANY

[sales-fzi@deutschebahn.com](mailto:sales-fzi@deutschebahn.com)  
[www.db-fzi.com](http://www.db-fzi.com)

Subject to alterations.  
No liability for errors or omissions.  
Last updated: June 2018