



Rail services on Europe's most modern test infrastructure

Profile of the Test- and Validationcenter in Wegberg-Wildenrath

The Wegberg-Wildenrath Test- and Validationcenter (PCW) was opened in January 1997 on the 35-hectare site of a former British Royal Air Force airfield. It has a 28-kilometer track network on which local, regional and long-distance trains can be tested under realistic conditions.

The PCW infrastructure comprises two large test ovals, which can be used for testing trains at speeds of up to 100 and 160 kilometers per hour respectively, and three other standard and meter-gauge test tracks including special sections with tight track radii and steep upgrades and downgrades. The total length of track at the PCW is about 28 kilometers. To test the rail infrastructure, Wegberg-Wildenrath can provide line voltages for all conventional traction supply power systems, including the third rail for metros and for rail vehicles intended for the German and British markets. In terms of rail safety and signaling equipment, the PCW has an electronic interlocking and the equipment for all conventional automatic train control and communication systems such as ETCS, GSM-R, intermittent ATC and coded audio-frequency track circuits. The test center is recognized by the German Federal Railway Authority and is accredited according to DIN EN ISO/ IEC 17025 to test systems and products from both Siemens Mobility and external customers under realistic operating conditions.

The facility gives rail companies the opportunity to test their own rail systems – even if they do not come from Siemens – and to evaluate possible changes and additions in the light of practical requirements before the systems are finally put into operation. Extreme test conditions with high transport loads can also be reproduced at the PCW – something which would not be possible on an operator's own rail network. Faults and defects occurring during the tests can be rectified in the on-site workshops. Last but not least, use of the PCW can considerably shorten development times. The test site offers intensive training in the practical operation of new vehicles and systems, thereby enabling its customers to put their products into operation successfully.

Workshop services are another important component of our international service network. They are offered not only in Wegberg-Wildenrath but also locally all over the

world. Siemens Mobility uses this network to refurbish and repair accident-damaged rail vehicles for mass transit, mainline, regional, and industrial railway systems.

Testing infrastructure and services

The trackworks offer a test infrastructure which is state-of-the-art for practically all European rail systems. The test center is equipped with standard and meter-gauge tracks, British and Berlin-type conductor rails, overhead contact lines, and features such as measuring curves, a turn-tilt table and a vehicle weighbridge. So there is almost nothing which cannot be tested there.

State-of-the-art train formation buildings and workshops

- With bogie drop pits, jacks and crane facilities
- With elevated tracks, working pits and roof-height working platforms

Test infrastructure conforming to standards

- Acoustic measuring station according to TSI noise / DIN EN ISO 3095:2005
- Measuring curve (150 m radius)
- Turn-tilt table and vehicle weighbridge
- High-pressure water spray unit

Special tests and examinations

- Measurement of the rolling angle coefficient and rolling pole
- Verification of derailment protection and wheel vertical forces
- Insulation and high-voltage tests

Cross-border traffic simulation over 6 km

- Separation of the large test oval into two independent feeder sections
- Simultaneous change of voltage and train protection systems
- Emulation of the Betuwe route with ATC EU, ETCS and intermittent ATC

Transfer of vehicles

As a rail transport company, the PCW also undertakes the transfer of customer vehicles. They are transported to and from the test center along a connecting track to Möchengladbach-Rheydt, the transfer station to the German Rail network. As the last 15 kilometers of the line are not electrified, electrically powered vehicles have to be hauled by the PCW's own diesel locomotive. This service from one source saves the

customer of a great deal of the time and money that would otherwise be required for coordination and management.

Worldwide references

Starting with the Class 152 for German Rail, the PCW has since tested many other locomotives, such as the Rh1016/116 for Austrian Federal Railways (ÖBB) and the DJ 1 for China. High-speed electric trainsets such as the ICE 3 and the ICE T were put through first paces here, as were the ET 424/425, the Heathrow Express and the countless Desiro UK multiple unit trains. The PCW has also subjected many mass transit vehicles to comprehensive testing. Other references include the metros for Munich, Bangkok and Athens, as well as the light rail transit system for Bursa and the tram system for Stuttgart. Furthermore, brand-new components such as bogies and IGBT converters have also been tested and accepted here.

The latest project to be realized at the PCW site is "railGATE" – one of four testing areas for the new "Galileo" satellite navigation system. This system, which will compete with its military predecessor "GPS", is due to enter operation in 2012 and expected to be considerably more accurate. Galileo signals are simulated at the PCW by means of a total of 8 pseudo-satellites mounted on 30-meter transmitter masts and will enable future, innovative rail-based transportation applications to be tested. These will include automated shunting, the localization of train positions to the meter, continuous separation and speed measurements, and satellite-based train operation in moving blocks with shorter headways. Completely new applications can be tested and made safe to operate, such as satellite monitoring and control of trains on low-traffic tracks, on which the installation of an ETCS infrastructure would not be economical.