

Running dynamics type tests on the new low-floor double-deck coach NDW



Rake of coaches with specimen during the measuring runs at Ostermundigen station

Customer Requirement

The consortium Siemens / Bombardier had to obtain approval in Switzerland for its new low-floor double-deck coaches. The accredited testing laboratory of PROSE was commissioned with the implementation of the running dynamics type tests according to EN 14363 as well as other related tests. Tasks include on-track running dynamics tests according to the complete procedure with measuring wheel sets, proof of derailment safety on twisted tracks, running through switches, evaluation of running comfort, measurement of eigenfrequencies using drop tests, and static and dynamic determination of the rolling behavior.

Realisation

Preceding the type tests PROSE prepared a test specification defining the subsequent tests and measurements as well as the evaluation and documentation of test results. This specification was settled consulting the manufacturers, the end users and operators as well as the authority. A full on-track test according to EN 14363 was specified. This requires the determination of wheel-rail forces. For this purpose the PROSE measuring wheel set technology was applied, an evolution of the German measuring wheel set technology PROSE bought two years ago.

The on-track running tests according to EN 14363 were supplemented by running tests through switches to provide proof of compliance with the maximum allowable forces when running through switches, as required by the SBB.

Furthermore drop tests were performed to measure the eigenfrequencies and the damping rates of the coach swinging behavior. The loading and unloading of the coach with loads, to simulate the weight of passengers, was also organized by PROSE.

Customer Advantage

Minimizing the number of interfaces reduces processing time, risks and consequently directly the costs to carry out running tests. PROSE provided this by taking care of the development process of the specification with the many parties involved, and through integration of related measurements into the running dynamics type tests. Furthermore the application of PROSE measuring wheel sets and the organization of load tests by PROSE also contributed to the reduction of interfaces.

The knowledge of operational processes, good communication links to the operators and the flexibility of PROSE are crucial in case of deviations (e.g. in case of bad weather), to provide optimal handling of the process and to ensure throughput time of the tests remains short.

Last but not least the ongoing monitoring of the results during the running tests constantly checks, whether the coach fulfils the requirements for approval or whether modifications are needed.

Factsheet 2.00036

Detailed Information

Project information

- Customer: Siemens
- End User: Swiss Federal Railways SBB / Sihltal Zürich Üetliberg railway SZU
- Period: 2011

Project content

- Development of test specification
- Preparation and organization of measurements in cooperation with SBB (as operator)
- Performing on-track running dynamics tests and runs through switches with PROSE measuring wheel sets
- Performing drop tests and static swaying tests
- Assessment of safety against derailment on twisted tracks
- Evaluation and documentation of measurement results according to the test specification and standard EN 14363

Project Responsibility

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