Zurich University
of Applied Sciences

School of
Engineering

InES Institute of
Embedded Systems

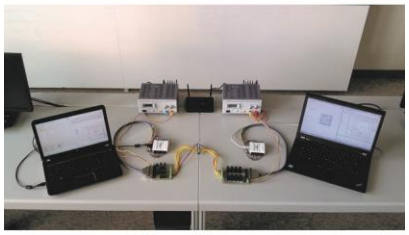
Test device for RhB-vehicles

Diplomierende
Patrick Gartmann
Joel Hämmig

Dozent
Hans Doran

The Rhaetian Railway is implementing a new train control system into their rolling stock. At the same time the train control system that was previously used remains in operation. Therefore there is a need for a test system which can be used to test both train control systems. There are different ways to design such a test device. Part of the bachelor thesis was to compare these options and to determine potential technical issues from which a proposal for either a part- or a fully automated test system could be specified.
The behaviour of the railway ground as a return conductor for the measurement of line resistances, a measurement method for determining the quality of the train bus lines used by the Rhaetian Railway, the implementation of an efficient wiring test method and the use of WLAN for wireless communication between the operator and test equipment were investigated. Simulations, calculations and measurements were performed on rolling stock at the facilities of the Rhaetian Railway. In addition, two prototype units were developed based on LabVIEW and National Instruments components with which a wiring and function test can be performed on selected lines of the train control system. With these prototypes the technical feasibility of the proposed test system for the train control system of the Rhaetian Railway was proven. A future step would be the implementation of a robust system based on the prototype developed during this bachelor thesis.

Connector of the train control system supported by the test device



Prototype for the continuity test through the vehicle