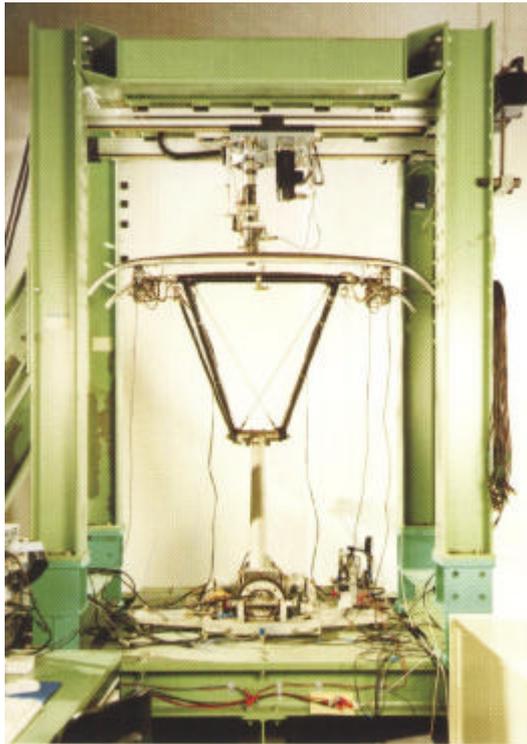


Current Collector Measurement

Dept.: International Sales

Every new type of rail vehicle has to pass a number of tests before it can start its operation. Among others, the quality of the interaction between the current collector of the rail vehicle and the overhead-line is very important for safe, reliable, and efficient operation. To ensure this level of quality, the measurement of the contact force between the overhead-line and the contact strips of the current collector is part of the test sequence for a new vehicle.

Bombardier Transportation has developed a measuring system by which it is possible to carry out all required measurement tasks. It is based on imc's data collecting system μ -MUSYCS and its pre-processing software online-FAMOS. This software is used to compensate for the inertia of the contact strips at higher vibration frequencies. For the test, the current collector will be equipped with sensors (e.g. for force and acceleration). Then the measuring system is calibrated offline in a test rig shown below.



Calibration of measuring equipment in the test rig

The actual tests will be carried out under real operational and environmental conditions (i.e. the current collector is attached to the electrified overhead-line with the vehicle at maximum speed).

The main challenge for the measuring system is that it is electrically connected to high voltages up to 25 kV. The example shows an equipped current collector on a double-decker train in the Netherlands. Fibre optics are used for signal transmission and data exchange between μ -MUSYCS and the computer inside the train.



Current collector for 3 kV equipped with measuring equipment

A sampling time of less than 5 ms is required for all channels in order to achieve the required accuracy, especially at high speeds. Transitional data recording is used to reduce the necessary storage space at lower speeds and standstill. Alternatively, external posts or landmarks can trigger the measurements.

imc's post-processing software FAMOS and its report generator are used for fast calculations and a comfortable presentation of the results. The printout below gives an example of a chart with signals and calculated figures. The speed of the program makes it possible to analyse the results and to continue the test runs without delay.

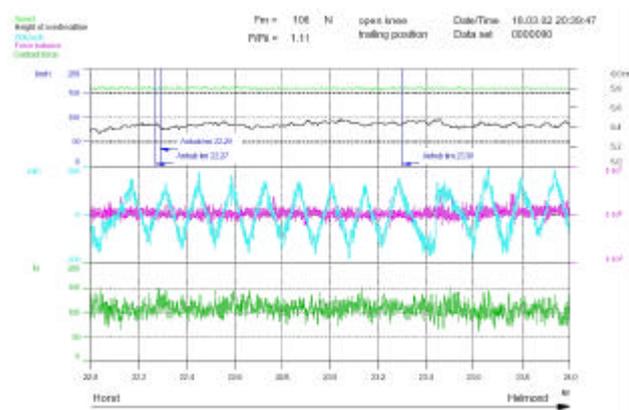


Chart with data analysis

