

Instrumentation for high-speed railway applications is a very specialized field. Particular demands such as a distributed measurement organization, high channel counts and real-time data evaluation are only start the list of measurement critical requirements.

When preparing for performance tests on the design of the German ICE3 train, the consortium of German and other international train manufacturers chose **imc** instrumentation for its flexible and distributable architecture, and extendable software environment.



The ICE measurement system is based on **μ-MUSYCS**, imc's original Ethernet based networkable system. Apart from the standard characteristics of a high precision laboratory grade instrument, the **imc** solution provides test engineers users with the following advanced features:

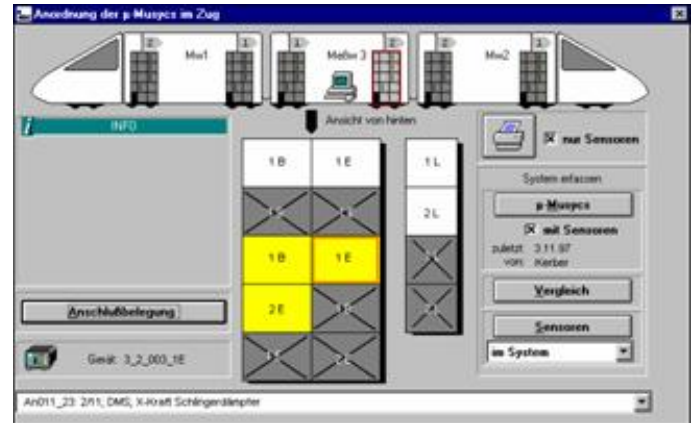
- Synchronized distributed hardware acts as one instrument
- Signal conditioner near sensors
- Multi-trigger concept
- Automatic sensor detection
- Online data evaluation in accordance with European railway standards
- Multi-point monitoring



Inside the ICE Test & Measurement car.

As with any system with a large channel count, one of the most important requirements for the ICE testing crew is having an easy way to configure the over 500 channels of the multiple measure-

ment systems throughout the train. Based on this, and other specialized requirements, **imc** developed a unique special software application and the patented "Automatic Sensor Detection."



ICE measurement configuration software developed by imc.

Finally, with the help of **imc FAMOS**, the offline data evaluation program, development engineers can easily move from data collection to data analysis and data interpretation. In addition, the integrated **imc Report Generator** allows creating test documentation and the necessary test certificates.

The entire turn-key solution for the ICE collaboration was constructed from 16 standard 32-channel imc systems, with Ethernet interface and absolute clock synchronization and the following integrated imc signal conditioners:

- DC / AC bridge amplifiers
- DC / AC high voltage amplifiers
- DC / AC current amplifiers
- Temperature amplifiers, with integrated cold-junction compensation
- FRAME (now COM) programming environment



An ICE3 passing near the Rhein river during testing. 80

