

Medellín M

More ride comfort ...

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Portable diagnosis system for mobile data acquisition

A major project being run by the EAFIT University – Colombian Institute for the Development of Science and Technology (Colciencias) and the Medellín Metro analyzed the dynamic response of the passenger cars.

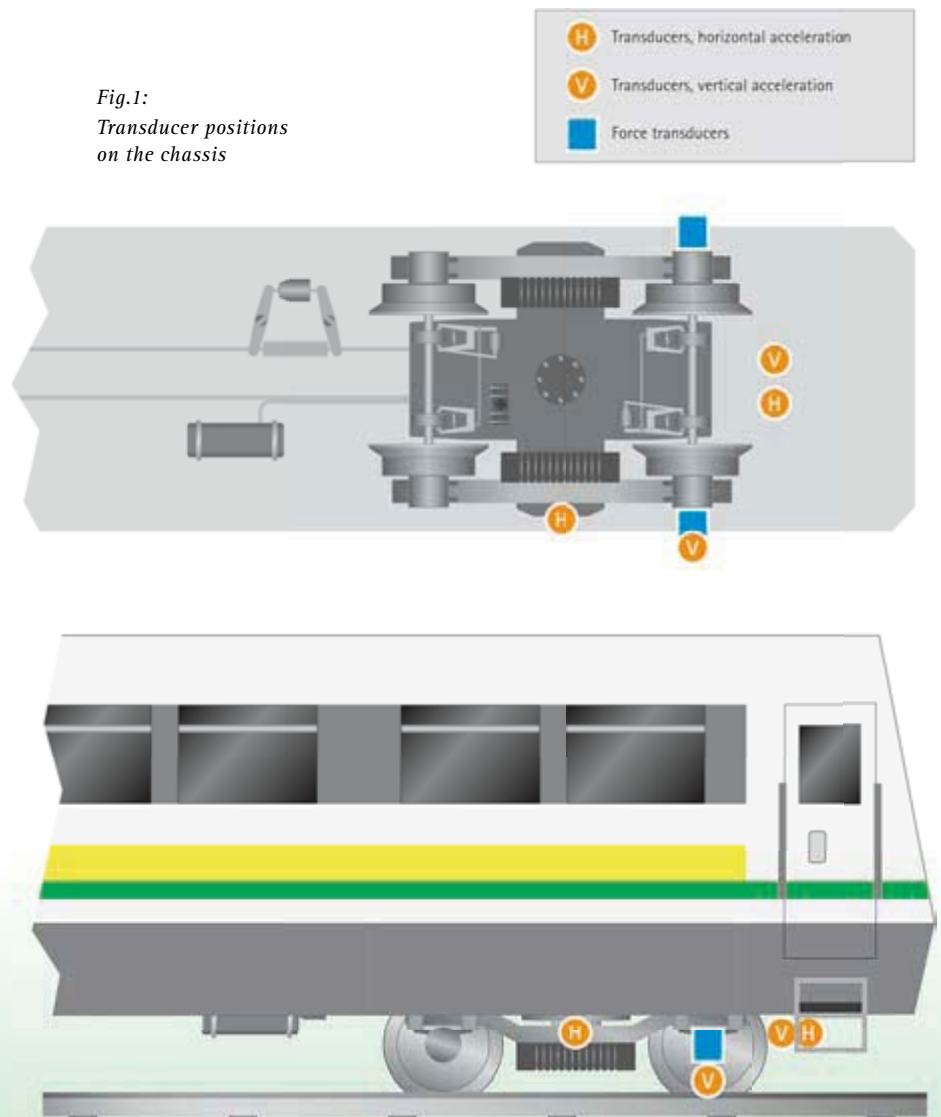
The two organizations needed to examine the operating conditions of the metro in Medellín to ensure it conformed with international railroad standard UIC- 518. This contains all the details for testing the ride performance of rolling stock from their dynamic response, in order to assess safety, track stress and ride conditions (stability, comfort, etc.).

Position and mounting of the force and acceleration transducers

HBM's U2B/100 force transducers were selected for mounting on the car axles of the train. The B12/500 acceleration transducers from HBM were installed in the bogie and in the passenger compartment in the vertical and transverse directions.

The MGCplus data acquisition system was used for signal conditioning, together with HBM catman® software. This allowed the measurement results to be read off directly and prepared for further processing by programs such as MATLAB®.

Fig.1:
Transducer positions
on the chassis



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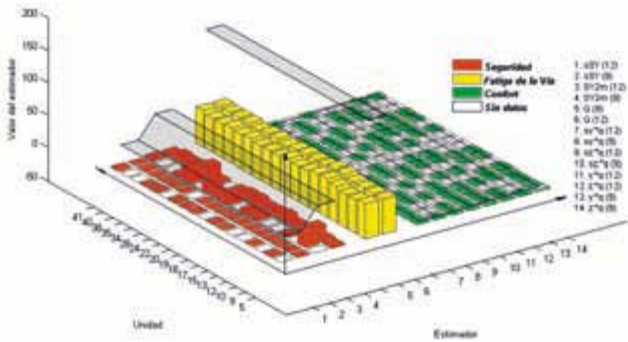


Fig. 2: The railway system of the Medellín subway network comprises 42 km of track

The speed of the metro was logged by MGCplus and the time was recorded internally. A total of 3.5 million measured values were logged and managed, at a sampling rate of 400 measured values/s per channel. This means that at a maximum speed of 80km/h, data is logged after only traveling about 55mm.

Fig.3: The HBM data acquisition system for testing the ride performance



Once the tests were completed, HBM's equipment proved that all the analyzed units satisfactorily met the UIC-518 railroad standard. ■



Fig. 4: Mounting the transducers

... with HBM measurement technology