

## **WCRR 2008 ABSTRACT**

### **Comparison of full-scale and model-scale slipstream velocities**

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There is strong European interest in virtual homologation and the desire to move away from full-scale testing replacing this with proven model-scale tests and simulation techniques. The TRAIR moving model rig has already been extensively validated against full-scale test measurements for numerous aerodynamics quantities including pressures in the open air and in tunnels. Previous slipstream investigations showed very good agreement with full-scale test measurements. However, some differences were detected in the development of the boundary layer alongside the train which were not resolved. These were suspected to be attributed to the differences between the track profile in the full-scale tests and the flat ground configuration normally used in TRAIR testing and between the length of the model train and that of the full-scale test train.

Full-scale slipstream measurements were undertaken at the trackside for a 4-car Lanzaderas train. An extensive set of model-scale slipstream measurements have been conducted on the DeltaRail Transient Railway Aerodynamics Investigation Rig (TRAIR) replicating the full-scale tests. The model-scale tests were undertaken at 1/25 scale, using the actual scaled train length, unscaled train speeds and model representation of the track profile at the full-scale test site. The paper describes the model-scale tests and compares the measured slipstream velocities with those from the full-scale tests.