RailMeasurement

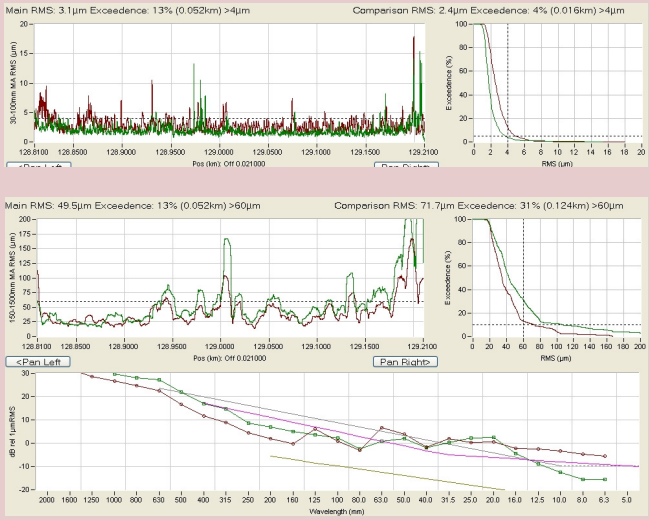
Corrugation measurement from hi-rail vehicle: MSRCA

The MSRCA has been fitted to a hi-rail vehicle that is used both to produce a grinding plan based on measured corrugation and transverse profile, and also to monitor how well grinding has been undertaken. The anticipated measuring speed is 35km/h.

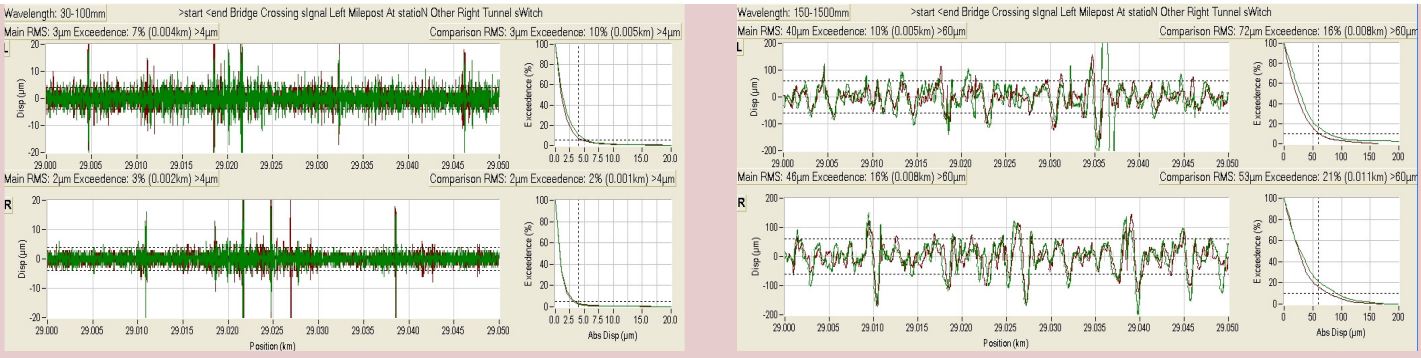
Hi-rail vehicles are commonly used for track inspections on freight railways in Australia, North America and elsewhere. RailMeasurement have worked with one such railway and their grinding supplier to produce a corrugation measuring system that is integrated with transverse profile measurement to produce a grinding plan and also to check that grinding has been undertaken satisfactorily. This system is RailMeasurement's **MSRCA** (Medium Speed Rail Corrugation Analyser).

The Quality Assurance function of this system is particularly demanding. The specification for residual corrugation includes, for example, a requirement that the RMS amplitude of relatively long wavelength corrugation (150-1500mm wavelength range) exceeds 0.060mm over less than 5% of a grinding site. The requirement for short wavelength corrugation (30-100mm) is essentially the same as that in EN 13231-3:2006 i.e. the RMS amplitude shall exceed 0.004mm over less than 5% of a grinding site. There is very little measuring equipment available (except from RailMeasurement Ltd) that can measure these amplitudes of corrugation at any speed, but to do so in a reliable, repeatable and validated way at 35km/h is extremely challenging.

The prototype MSRCA is undergoing final testing, but the results to date indicate that the full requirements for the system shall be fulfilled.



Comparison of CAT measurements and MSRCA (20km/h), 30-100mm and 150-1500mm over 400m



Reproducibility of MSRCA at 20km/h and 25km/h over 50m of track, showing waveforms at 30-100mm and 150-1500mm; full scale on 30-100mm is 0.020mm and on 150-1500mm is 0.200mm

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