

High Speed Rail Corrugation Analyser

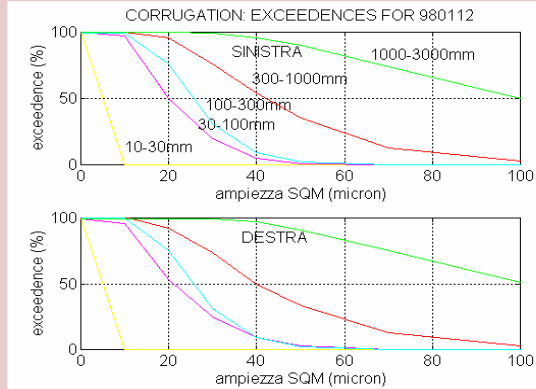


The HSRCA can be installed on standard rolling stock for 'in service' surveys

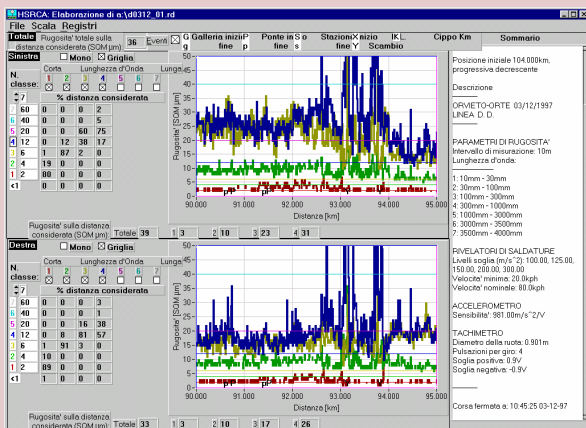
The HSRCA is an instrument that is designed for corrugation surveys of a complete and fairly large railway system at relatively high speed (typically 80km/h or more). It is extremely robust and reliable: the earliest version of our system has been used routinely in Australia since 1987, without significant need for maintenance. The most recent version is used routinely by the state railways in Italy (FS), whilst other versions have been used in Poland and in Israel. Calibration of the HSRCA is verified by using both it and the CAT to measure the same length of track.

electronics, and the industry-standard PC used to run the HSRCA data acquisition and analysis software, are normally cab-mounted to allow easy operator access.

One of the most useful forms of output from the HSRCA is illustrated below. These results are taken from measurements made over a 35km length of track in Italy:



The upper and lower parts of this Figure show data for the left and right hand rails respectively. The data shown are the so-called *percentage exceedences* for corrugation in different wavelength ranges as functions of the corrugation amplitude in microns SQM (i.e. RMS or root-mean-square). For example, for the left hand rail in the 30-100mm wavelength range, corrugation exceeded 20 microns RMS over about 50% of the 35km stretch of track, and 40 microns RMS over about 10% of the track length. Presentation of data in this format helps to establish simple objective criteria for grinding such as "Any 200m length of track should be ground when corrugation on either rail in the 30-100mm wavelength range exceeds an amplitude of 10 microns RMS over at least 50% of the site, or 20 microns RMS in the 100-300mm wavelength range."



A typical HSRCA analysis. Note especially:
 - the tables of corrugation exceedences on the left
 - the graphs of RMS corrugation levels
 - the summary results report on the right

HSRCA measurements are taken using measurement transducers usually mounted on the axle boxes of a suitable wheelset. The wheelset should be neither driven nor braked, and should have a good primary suspension. The wheels on the train, especially the measurement wheels, should have minimal irregularities. The train must also be fitted with an electronic tachometer to enable the HSRCA to measure speed and distance travelled. Signal conditioning



HSRCA equipment can equally be mounted in maintenance and instrumentation cars