

Noise Report

KELTRACK® Trackside Freight

Portec Protector IV Trial

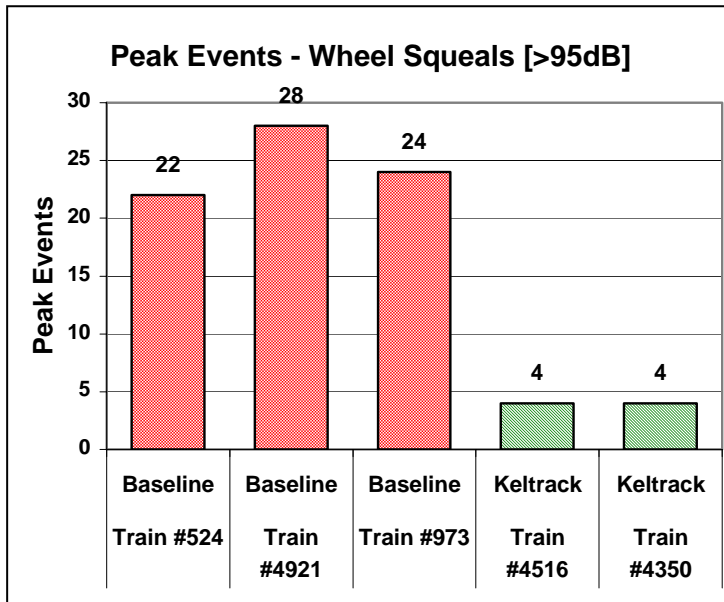
Western US Freight System

EXECUTIVE SUMMARY

Kelsan® Technologies Corp., a Western US Freight System (WUSFS) and Portec Rail Products conducted a lateral force, friction and noise trial on July 31 and August 1, 2001 to evaluate the effectiveness of KELTRACK® Trackside Freight. One of the objectives was to decrease wheel/rail interface sound generation, thereby reducing the ambient noise levels.

KELTRACK Trackside Freight friction modifier was applied through a Portec Rail Products, Inc. Protector-IV™ TOR Trackside applicator. KELTRACK applied to the top-of-rail contact zone controls friction in the wheel/rail interface. Results in this document include the sound levels recorded for baseline and KELTRACK Trackside applied to both rails.

The noise reduction capabilities of KELTRACK were tested on revenue service freight trains at WUSFS's instrumented curve in Siberia California. The test site had a curvature of six degrees and is constructed of 136lb RE rail with concrete ties and direct fixation. Noise readings with KELTRACK applied to the top of both rails were compared to baseline readings with dry rail. The best comparisons were possible with double stack container trains, which were the most frequent traffic during the trial. Comparisons include average peak decibel levels per train, average decibel levels by frequency (Lleq), and the number of peak wheel squeal events above 95dB.



Average Peak Noise: The KELTRACK/Protector system produced an average 9.3-dB decrease in rail/wheel sound generation for the trial vehicles on the 6° curve. This equates to almost a halving of perceived noise, as the decibel scale is logarithmic.

Peak Noise Events: The KELTRACK trial resulted in an average 83.7% decrease in wheel squeal noise events greater than 95dB for the trial vehicles relative to the control vehicles on the 6° curve. These are defined as events with frequency's greater than 1000 Hz.

***High Frequency Noise:** The KELTRACK trial resulted in an average 15.6 dB reduction at the frequencies between 1000Hz and 16000Hz. These frequency ranges are associated with wheel squeal and flange contact. Reductions in lower frequencies, especially the 500Hz-1600Hz range were also observed.*

The reduction in the high frequency noise is most important, as these are the most irritating to the human ear.

Note: To obtain a copy of the full report or find out the identity of the Western US Freight System, please contact John Milobar, Vice President Sales & Marketing at 604-984-6100 or jmilobar@kelsan.com.