

TechLine

A QUARTERLY NEWSLETTER FROM THE RMSS DIVISION OF HOLLAND L.P.



Volume 1, Number 1, January 2010

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Holland Railway Measurement Systems and Services Tech Line

Measurement of track conditions began as soon as the first rails were laid on ties well over 100 years ago. As technology advanced so did the development of automated measurement of track geometry, and later, rail profile measurement. Today most of the Class 1 railroads own and operate track geometry cars that are efficiently scheduled throughout their properties. The data that is collected by automated measurement systems is used for mandated



Holland TrackSTAR® on track

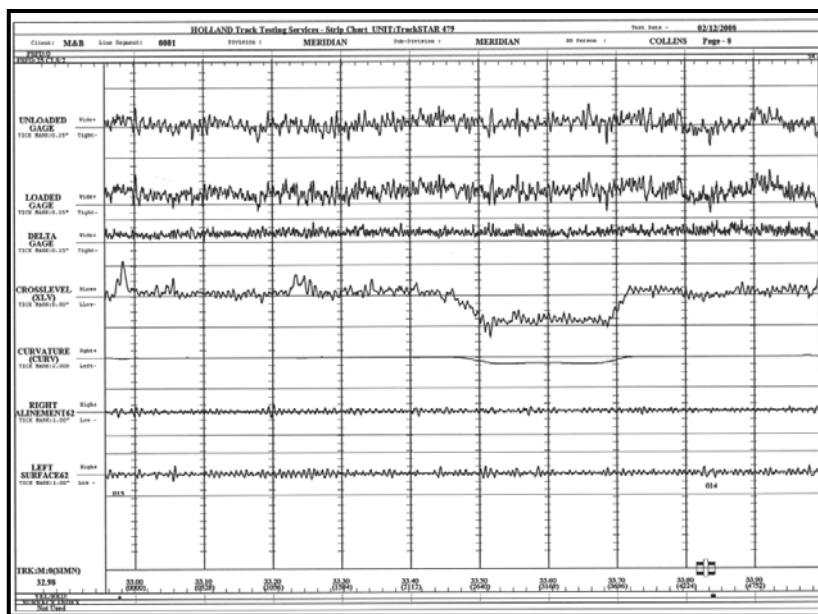
track safety verification and track maintenance planning. Most Class 1 railroads also use hi-rail vehicles, such as TrackSTAR® to augment their testing. TrackSTAR® also provides a measurement of track gauge strength which most track geometry cars do not measure. Very few smaller railroads or transits own any automated test vehicles due to their limited testing requirements and are therefore dependent on contractor-provided testing or manual inspection methods.

Holland's TrackSTAR® hi-rail vehicles complete approximately 70,000 miles of contract-service track testing for more than 90 railways annually in North America. There are three primary

measurement systems on TrackSTAR®: track geometry measurement, rail (wear) profile measurement and track gauge strength measurement. Holland's fleet of patented TrackSTAR® vehicles is uniquely designed for North American requirements, but TrackSTAR® vehicles have also been adapted for various track gauges and international-specific requirements. Holland also operates a Transit Testing (TTV) hi-rail vehicle specifically designed for the unique conditions of transit systems with capability for broad gauge, tight tunnel and power rail clearances, and sharp curvature.

Track Geometry Measurement

Using the latest generation inertial-based technology and non-contact laser optical systems, TrackSTAR[®] measures and evaluates existing track geometry to FRA or customer-established track class thresholds, just the same as the Class 1 railroad geometry cars. Real time reporting of exceptions provides the required detail on exception type, magnitude and length, both in MP distance-based and GPS location. All common track geometry data (gauge, cross-level, curvature, surface, alignment, etc.) is collected in one-foot increments, providing for a complete measurement of track, including all calculated parameters.



Typical Geometry Strip Chart

Rail (wear) Profile Measurement

Measurement is obtained using four laser line optical cameras mounted on the gauge and field sides of each rail. Digital measurement is commonly collected every 10 feet of distance (like “snapshots”) to provide detailed measurement of the changing wear patterns of both rails. The accuracy of the measurement system allows for identification of the rail section, and complete

assessment of all required rail wear and shape parameters, including gauge-face wear, vertical wear, gauge-face angle, rail cant, etc. Rail wear reporting with all calculated measurements is delivered post-testing, through printed reports or through Holland’s Rangecam software. Data can be overlaid with previous tests to support rail replacement planning and maintenance.



Rail wear profile overlays showing wear over time

Track (reserve) Gauge Strength Measurement

Reserve gauge strength is a measure of how much the cross-ties and fasteners can resist train/wheel forces. Reserve gauge strength is measured on TrackSTAR through the use of two measurements of track gauge (one unloaded and a second at the split loading axle), along with a measure of the actual loads during testing. TrackSTAR's split load axle delivers a constant, but nondestructive, vertical and lateral loading that effectively locates the weakest track locations. Delta Gauge (change in gauge between loaded and unloaded) and Gauge Widening Projection (GWP) are the resulting parameters that provide one-foot incremental detail on



TrackSTAR's split load axle delivers constant, non-destructive vertical and lateral loading

reserve track gauge strength. TrackSTAR provides real-time exception reporting of Unloaded and Loaded Gauge, Delta and GWP, helping to identify weak track gauge locations, which can help focus maintenance resources where they are most immediately needed. Additionally the measure and variation of GWP can provide important performance-based information to develop or support tie replacement plans. TrackSTAR is also reporting one-foot increment rail cant measurement at the split load axle to help identify locations of differential plate-cutting on wood ties, rail-seat abrasion on concrete ties, or areas of negative cant that may need maintenance attention.

Contract Testing Service

Holland's fleet of TrackSTAR® vehicles and experienced personnel are available throughout Canada, the U.S., and Mexico. Over the past 10 years we have tested more than 150 railway properties, from the largest to the smallest. The hi-rail format provides for timely and flexible scheduling of work at any location. The typical testing speed is 10 - 25 mph, depending on track condition. Testing can be performed day or night. (See Contact Us)

Contact Us

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