Case study
Tire runout

Yokohama selects Sigmavision's portable tire runout measurement system

Yokohama Tire Inc recently selected Sigmavision Ltd to supply portable tire runout measurement systems for its distribution warehouses and service centres in the USA. The purpose of the systems was to overcome two problems. Firstly, Yokohama needed to provide a means of verifying tire runout on new tyres shipped from its Japanese manufacturing plants. Secondly, Yokohama's service engineers needed a more accurate and repeatable method of measuring runout on tires returned by clients for evaluation and testing.

Sigmavision was able to provide a portable tire runout solution using an SLS5000 laser spot sensor and a controller unit with an embedded software application. The laser sensor is mounted on a tripod and positioned next to a manual balancing machine which is used to rotate a tire/rim assembly. Data processing hardware allows an encoder to be used to couple tire position and sensor measurement data. Alternatively, when the tire is rotated at constant speed, a simple "Top of Tire" marker may be used to mark each revolution.

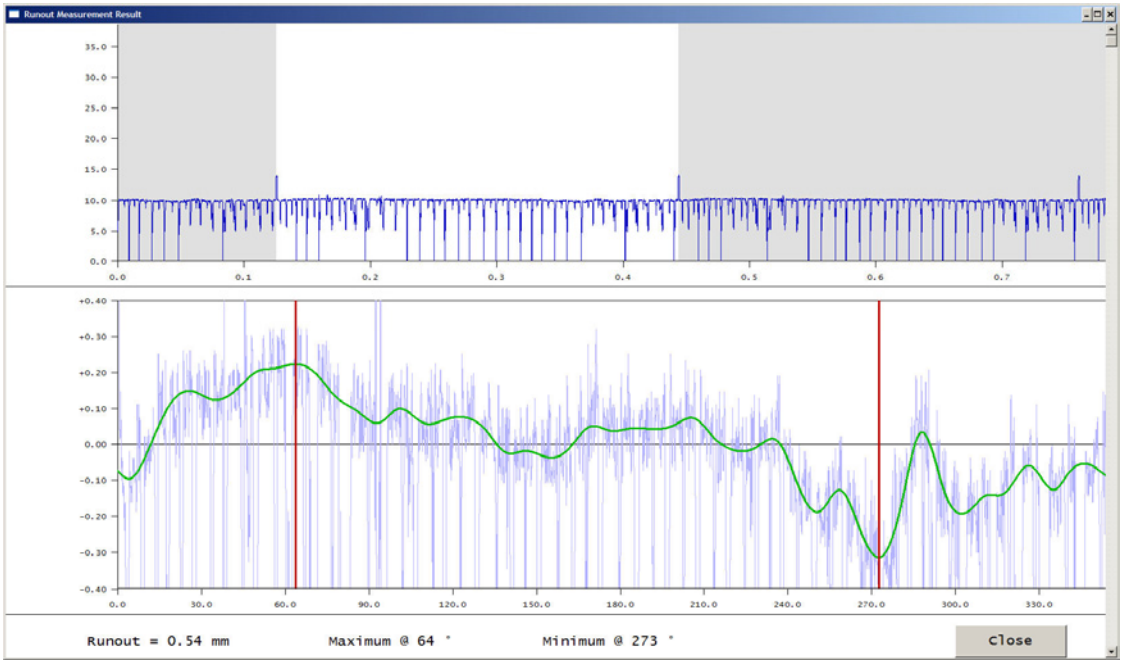
1) Manual balancer

2) Laser sensor mounted on a tripod with "Top of tire" marker

The Tire Runout Measurement System (TRMS) software application allows both radial and lateral runout to be measured by eliminating the effects of tread grooves, sipes and sidewall lettering, pin vents, logos and patterns. In addition the controller has a maximum of four sensor inputs allowing simultaneous measurement or radial and lateral runout. Yokohama selected the device after making comparative studies and verifying the measurement accuracy to be better than 0.01mm and Gauge R&R to be within internal specifications.

Results are reported on an operator interface that runs on a PC. The upper part of the user interface shows raw data acquired over several tire revolutions. A

single tire revolution is expanded on the lower half of the screen with the raw data, the computed result, the position of high and low spots and runout result.



3) Operator interface

The system does not need to be recalibrated and simply requires the tyre surface to be within the sensor's vertical measurement range within the entire test.

The TRMS System from Sigmavision is one in a range of cost saving, laser systems for rubber and tyre manufacturing including calendered sheet width, thickness and length measurement, extrusion profiling, TBM splice control and green tire runout measurement. For more information please contact Dr Andrew Pryce at:

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