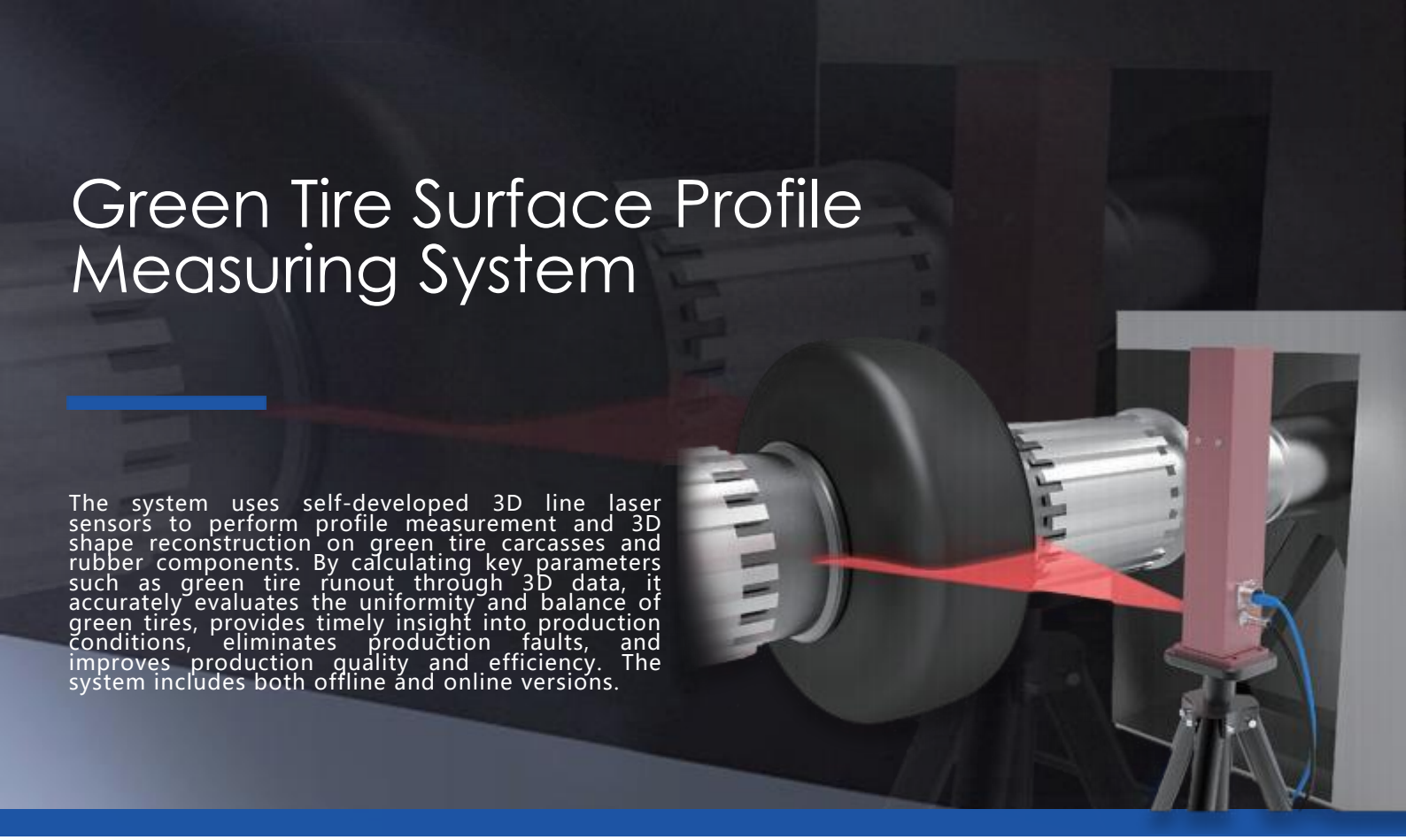
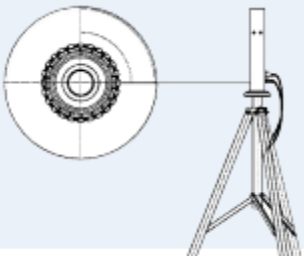
Green Tire Surface Profile Measuring System



The system uses self-developed 3D line laser sensors to perform profile measurement and 3D shape reconstruction on green tire carcasses and rubber components. By calculating key parameters such as green tire runout through 3D data, it accurately evaluates the uniformity and balance of green tires, provides timely insight into production conditions, eliminates production faults, and improves production quality and efficiency. The system includes both offline and online versions.

Offline Version

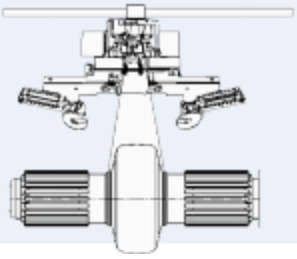
Flexible and Portable, Suitable for Various Scenarios



The offline GTG uses a portable tripod to mount the sensor, adjusting the tripod's height and position to ensure that the rubber material being measured is within the working range. By rotating the fitting drum, data can be collected and then measured offline.

Online Version

100% Real-Time Parameter Monitoring



The online GTG uses a beam to suspend the sensor, fixed directly above the tire carcass in the forming machine. After the green tire is formed, data is automatically collected and measured online. The online GTG can use multiple sensor combinations as needed.

System Functions

Measurement of the surface runout and its first and comprehensive harmonic values.
Measurement of the lateral displacement of the green tire carcass centerline and its first and comprehensive harmonic values.
Edge positioning and width measurement of the scanned object.
Measurement of the height of the green tire joint.
3D shape preview.

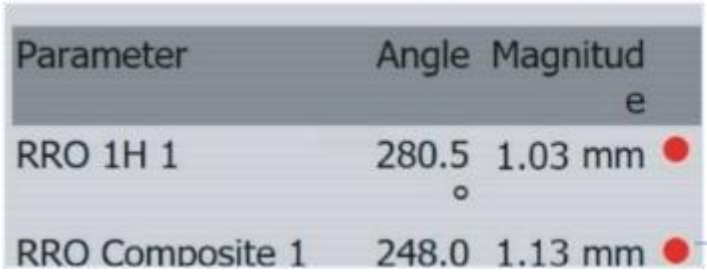
Point-to-Point Measurement / Convex Hull - Pit Local Measurement

Harmonic Waveform Analysis Tool

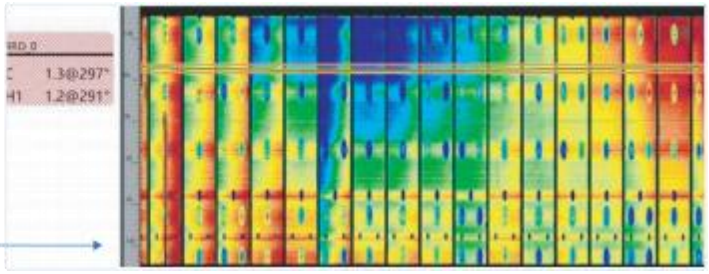
Profile Measurement Tool for Scanned Objects

Green Tire Taper Measurement

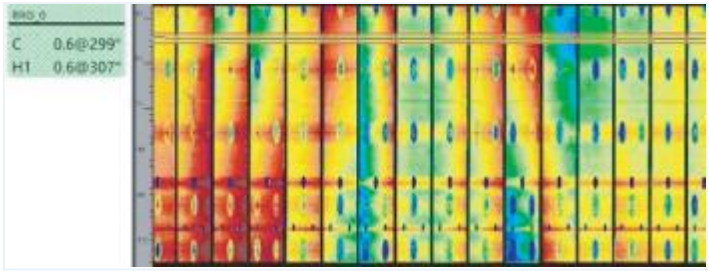
Use GTG to trace the production process, identify faults, and resolve issues:



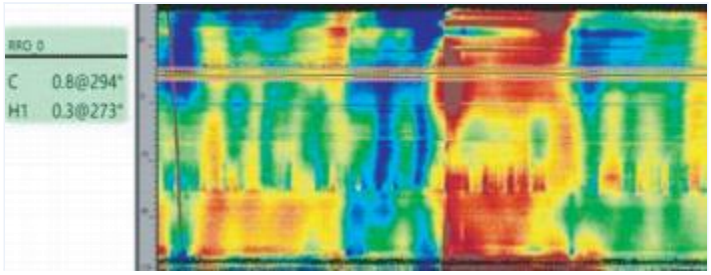
① The dynamic balance test machine RRO exceeds 1mm, triggering an alarm.



② Using GTG for inspection, it was found that the issue originated from the runout of the drum plate in the bundle drum.

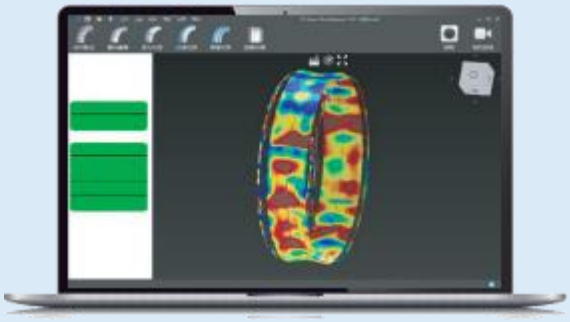


③ Adjust the runout by raising the lower side of the drum plate locally; GTG shows an RRO result with a 1mm increase on the low side.



④ Using GTG for inspection, it was found that the issue originated from the runout of the drum plate in the bundle drum.

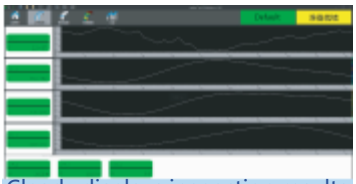
Supporting Software



SupportingSoftware SliceBalance

Developed on the OI-SMART VISION software platform

Accurately acquires 3D point cloud data of green tires



Clearly displays inspection results and harmonic curves

Records and saves the inspection results for each green tire

Technical Parameter

Sensor	OI-PS3-1280-250R	OI-PS3-1280-350R
Field of view (mm)	200...350	300...450
Working distance (mm)	250...600	650...1100
Resolution(px)	1280	
Frame rate (fps)	100...1880	
Accuracy (mm)	0.01...0.03	0.015...0.04
Repeatability (mm)	0.025. 0.15(3-sigma)	0.05...0.15(3-sigma)
Laser		
Wavelength(nm)	660	
Output Power(mW)	10...100	
IEC Rating	3R/3B (EN 60825-1)	
Electrical Interface		
Power(W)	Rated8, Max10	
Power Supply(Vdc)	+ 24 (±5%)	
Trigger input(Vdc)	+5 ... +30	
Encoder Input(Vdc)	RS422 / AB Trigger (-7 ... +7)	
Data transmission interface	RJ45,Gigabit Ethernet	
Interface	M12 12pin + M12 4pin	
Environment and Certification		
Operating Temperature(C)	0...+40	
Operating Humidity(%)	+5...+75(non-condensing)	
Protection Rating	IP65(Customizable IP67)	
Certification	CE + RoHS	
Appearance and Installation		
Dimension (mm)	100*78*388	
Weight (kg)	2	
Install	M4x8 (4x) (sensor)	
	Φ6.6 (4x) / M5x8(1x) (Adapter board)	
Material	Aluminum alloy, red appearance	