SPLICE CHECK SYSTEM

By utilizing 3D line laser scanning technology, tire materials joint areas such as BELT, TREAD, PA, CARCASS are scanned to obtain the 3D point cloud data of the adhesive, then key indicator values are calculated through software to determine if there are any anomalies like lap amount/flash, mismatch, material deviation, material width issues, etc.

The measurement values can be fed back to the molding machine host to form a closed loop, thereby enabling automatic detection of the quality of tire adhesive joints as well as real-time monitoring and optimization of adhesive joint process indicators.

▶ Measurement Details
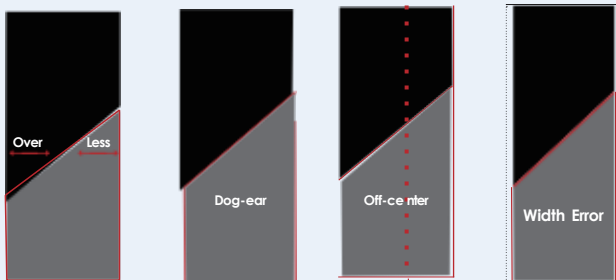
| Flash | Dog-ear | Off-Center | Width Error |

It can measure overlap (Over, joint value >0), flash(Less, joint value <O), mismatch (Dog-ear, front and rear sides staggered), material deviation (Off-Center，inconsistent left and right material width), and material width (Width, overall material width).It can also detect defects like missing adhesive (No Material) and incorrect material (Material Error).

▶ Technological Accumulation

The earliest domestic research and development on splice inspection. Since 2014, research on the use of laser triangulation on bundle joints has been conducted, and a complete patent chain for splice inspection has been formed.
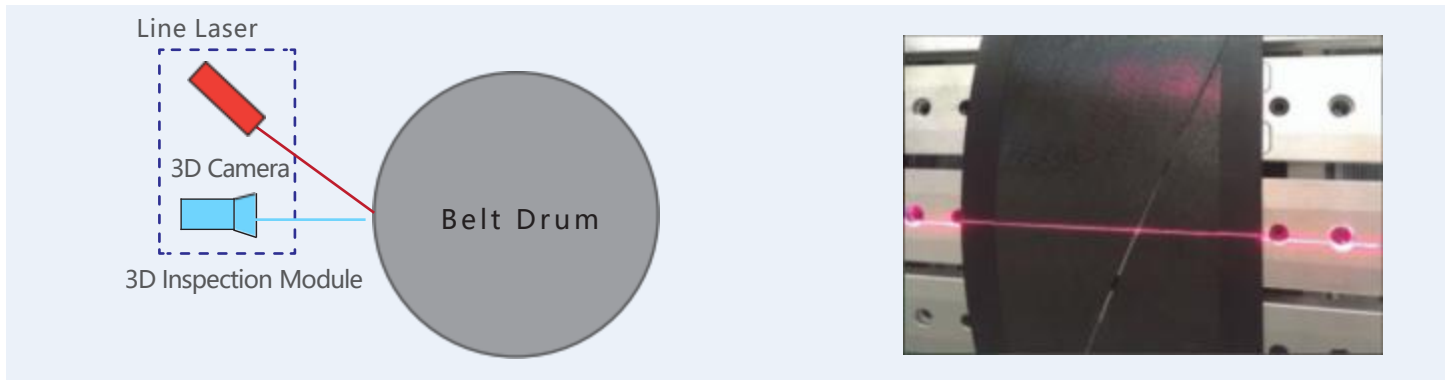
5	2
Invention Patent	Design Patent
6	10
Utility Model	Software Copyright

▶ Detection Principle

Line Laser
3D Camera
3D Inspection Module
Belt Drum

Using belt drum splice inspection as an example

Oint detection extracts the start line (collection of red points) and end line(collection of green points).

The lap is calculated by subtracting the distance between the end point (green point) and the mapped start point (red point). A positive value indicates overlap, while a negative value indicates a gap.To detect material staggered joints, the horizontal coordinates of the edge points(blue points) are compared to calculate the staggered value.

▶ Plan Advantages
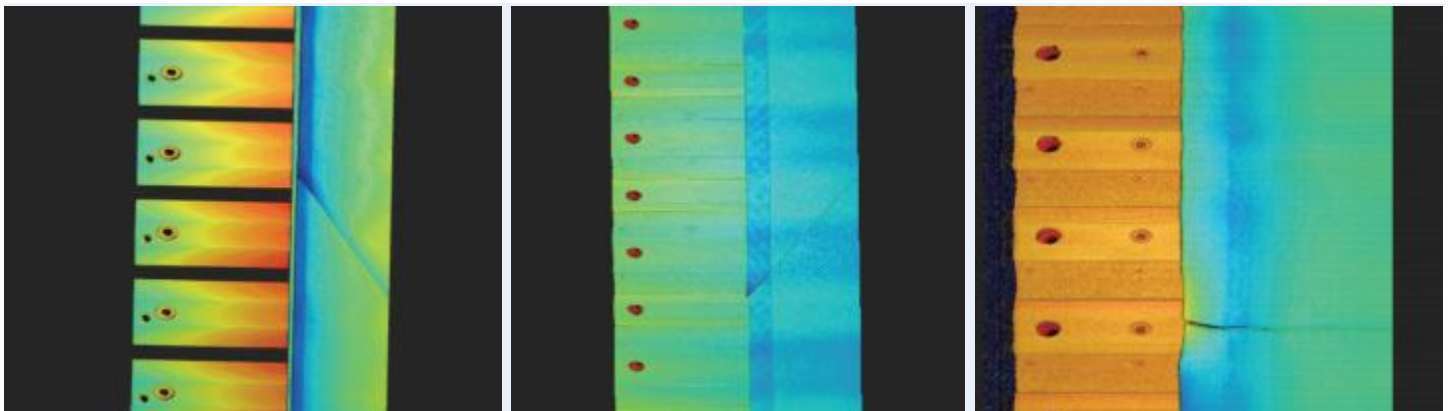
Economical

Eliminates manual inspection. effectively reducing labor costs.

Comprehensive

One inspection system measures multiple key metrics across components.

Automated

Flexible parameter settings for automated measurement and NG alerts.

Precise

Detection accuracy as high as 0.1mm* improves product yield *(3delta repeatability)

Intelligent

Quantifiable splice data enables assessment of machine condition and dynamic adjustment of production parameters for process optimization.

▶ Series Of Products

It has the most comprehensive joint detection application scenarios, including steel belts, tire thread, linings, ply, pre-laminated parts and cutter seam splice detection.Cutter Belt Splicing Joint Detection Instrument.
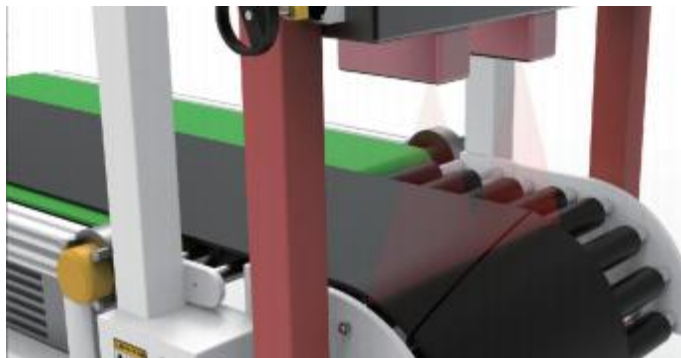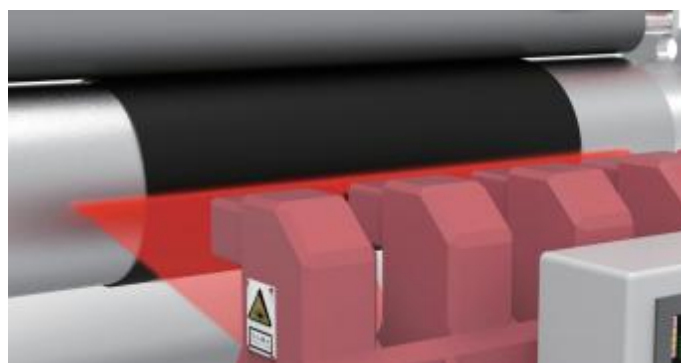

Cutter Belt Splice Detection Instrument
OI-SCS-CSB
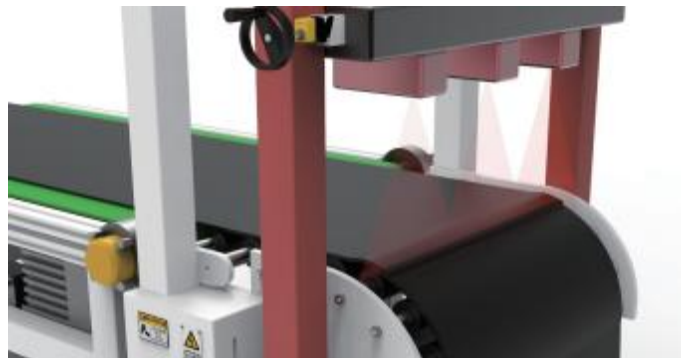
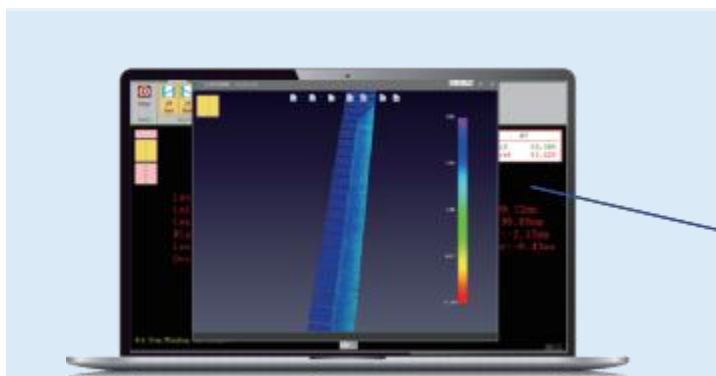## Cutter PlySplice Detection Instrument
OI-SCS-SCB

TBM B&T Splice Detection Instrument   OI-SCS-XBT

TBM CC Splice Detection Instrument
OI-SCS-XCC

S P L I C E   C H E C K   S Y S T E M

▶ Bundled Software

Automatic alarm

Real-time data

Inspection images

Splice check supporting software

The software features guided installation and configuration, one-click backup and restore, and automated calibration and validationfunctions. This enables easy software setup and debugging even foelectrical technicians. Out-of-factory presets are tailored for variousscenarios and contingencies, ensuring accurate defect detection.

▶ Product Parameters

Models		OI-SCS-XBT	OI-SCS-XCC	OI-SCS-CPL	OI-SCS-CSB
Inspection Details		Detects belt/tire surface joint status	Detects lining/composite parts/curtain joint status	Detects status of curtain splicing joints	Detects status of belt splicing joints
System Characteristics		Plug-in universal interface. worksindependently. 0ptional closed loop automatic focusing.	Unique PA joint detection module. Maximum 1im width range adaptation.	Supports manual and automatic sensor position adjustment to adapt to different sized objects.	Supports manual and automatic sensor position adjustment to adapt to different sized objects.
Sensorchar acleristics	Inspection width(mm)	400	1100	650/750 Adjustable ** (dual senors)	400 (dual senors)
				300(single senor)	200(single senor)
	Working distance(mm)	250 ± 10	250 ± 10	290 ± 10	220 ± 10
	Frame rate(fps)	MAX. 40000	MAX. 40000	MAX. 18540	MAX. 18540
	Lateral Accuracy(mm) (3-sigma)	0.2	0.2	0.2	0.2
	LongitudinalAccuracy(mm)(3-sigma)	0.1	0.1	0.2	0.2
	Number of Sensors	2	5	4 (2 groups top & bottom)	2
	Inspection Error (mm)*	Less/0vers≤±0.15 Width/off-center/Half-width/Dog-Ear≤±0.25	Less/0vers≤±0.15 Width/off-center/Half-width/Dog-Ear≤±0.25	Lap≤±0.1 Width/Dog-Ear≤±0.15	Width/Dog-Ear≤±0.15
Laser	Wavelength(nm)	640			
	0utput Power(mW)	500			
	IEC Rating	3B(EN 60825-1)			
Electrical Interface	Power(w)	Rated 150	Rated 300	Rated 300	Rated 150
	Power Supply(Vdc)	220VAC (±10%) 50/60Hz			
	Trigger input(Vdc)	+5 ... +30			
	Encoder Input(Vdc)	RS422 / AB Trigger (-7 ... +7)			
	Data TransmissionInterface	RJ45,Gigabit Ethernet			
	Electrical Interface	WS16-3 * 1 + WS16-10 * 1			
Environment and Certification	Operating Temperature(°C)	0...+40			
	0perating Humidity(%)	+5...+75(Non-condensing)			
	Protection Rating	IP65(Customizable IP67)			
	Certification	CE + RoHS			
Sensor Appearance and Installation	Dimensions(mm)	300 * 307 * 298	980*400*450 (excluding base)	300 * 100* 105	300 * 100* 105
	Weight(kg)	15	100(excluding base)	50	30
	Installation	6XM6 Mainstream manufacturers'molding machine models can be installed	9XM6 Mainstream manufacturers'molding machine models can be installed	Dragon Gate Installation (1000-2200MM width customizable)	
	Material	Aluminum alloy, default silver appearance		Aluminum alloy, default black appearance	
Others		Auto Calibration/Auto Verification**			
		MES Data Upload ***			
		Closed Loop Auto Focus ***		Auto Adjust Detection WidthMechanism***	