

Information Systems

Primary Breakdown

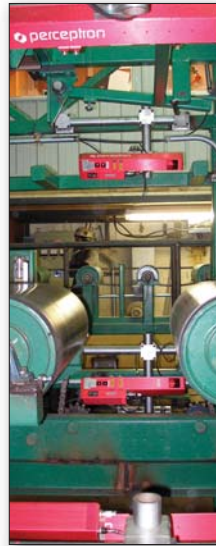
Secondary Breakdown

Control Systems

LINEAL SCANNING

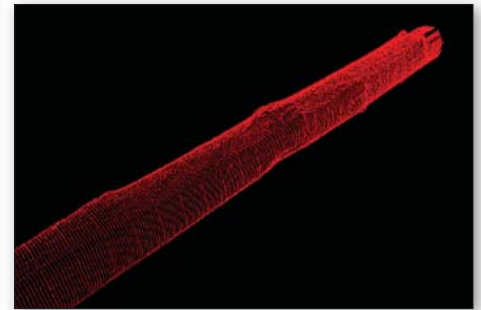
Smart TriCam™ Lineal Scanning System

Most Accurate and Highest-Density 3D Lineal Scanning System in the Industry



◀ Lineal Smart TriCam scan sensors mounted in doughnut configuration. Smart TriCam sensors are available in single-laser and dual-laser models.

▼ Actual raw scan data from the Smart TriCam™ sensor is shown.



The Smart TriCam™ lineal scanning system provides complete profile measurements of objects moving longitudinally through a set of scanners. Smart TriCam™ sensors are available in single or dual laser line models. Smart TriCam™ Lineal scanning systems are ideally suited for: lineal bucking systems, extended length infeeds, sharp chains, lineal gangs and lineal edgers.

Typical Configurations

A typical stem, log or cant system consists of 4 scanners mounted in a doughnut-shaped scan zone that the piece passes through. With a 4-head system, opposing sensors have lasers of different wavelengths, an innovation that prevents crosstalk between the sensors which causes improper measurements – a common problem with our competitor’s systems.

Custom-engineered “pulsed lasers” are combined with a proprietary camera design to provide the maximum signal return along with ambient light rejection that is far superior to that of any other sensor in the industry. These features provide the capability to measure “black logs” and burnt logs that other manufacturer’s sensors have problems with. This allows the sensors to be mounted, in many cases, without ambient light shielding in an interior lighting situation. Shielding is required in sunlight conditions.

With a lineal edger system, top-mounted sensors scan the flitch as it passes underneath. High speed systems may use as many as six separate scanners spaced down the length of the flitch to reduce the required flitch transfer distance allowing you to fit this high-density system into extremely tight spaces. Multiple sensors per scan zone can also be used for very large flitch infeed systems. The dual laser line module is the usual choice for these systems because of feed speeds of the flitch.

Optimization

Scanning Process and Data Density

The scanner makes up to 60 high-density profile measurements per second – up to 680 points per laser line. Each profile consists of several hundred measurements around the perimeter of the piece. Each measurement is the X-Y coordinate of the piece's exterior location. At 300 feet per minute, a profile is made approximately every 1 inch along the length with single laser sensors and every inch at 600 feet per minute with the dual line sensors. Multiple scan zones are supported for close-coupled applications to reduce the total transfer length required.

Sensor Replacement

The TriCam's™ patented sensor mounting system requires only a single wrench for mounting. The sensors are manufactured to exacting tolerances. The result: replacing a sensor on a mount can be done without need for immediate re-calibration, which greatly reduces overall downtime in the event of a failure.

Many of our competitors' laser sensors require precision recalibration and adjustment when being replaced because no two of their sensors' lasers point exactly the same way, and because poorly-engineered mounting system are employed.

Accuracy and Repeatability

The accuracy of the TriCam™ sensor is superior to any other sensor available in the market and tested to prove it. Each sensor undergoes an automated accuracy test before it leaves the factory. It is an ANSI-approved test specification designed for imaging systems. The table below lists statistics for these sensor models derived from the population of sensors used in lumber scanning applications.

Models	Repeatability*	Accuracy*
911-0050 and 911-0051 (800mm Model)	Y Repeatability - 11 μ m (0.00044 in) 3 Sigma Z Repeatability - 13 μ m (0.00052 in) 3 Sigma	Y Accuracy - 141 μ m (0.00058 in) 3 Sigma Z Accuracy - 270 μ m (0.0108 in) 3 Sigma
911-0052 and 911-0053 (1000mm Model)	Y Repeatability - 13 μ m (0.00052 in) 3 Sigma Z Repeatability - 15 μ m (0.00060 in) 3 Sigma	Y Accuracy - 145 μ m (0.00058 in) 3 Sigma Z Accuracy - 312 μ m (0.0125 in) 3 Sigma
	*(average for all sensors produced)	*(average for all sensors produced)

Cross Section Profiles Versus Feed Speed

Sensor Model	Feed Speed			
	300 ft/min	450 ft/min	600 ft/min	900 ft/min
Single laser line Smart Tricam	1" scans	1.5" scans	2" scans	3" scans
Dual laser line Smart Tricam	1" scans	0.75" scans Average	1" scans	1.5" scans Average

Each Smart TriCam sensor contains an integral DSP processor frame grabber that allows the sensor to acquire scans, process the image, filter the data, and convert it to dimension coordinates. The onboard processor system automatically downloads its processing software, which is set up for the specific system configuration, when the controller computer powers up. The system can be set up to maximize the data capture capability for any environment and configuration.



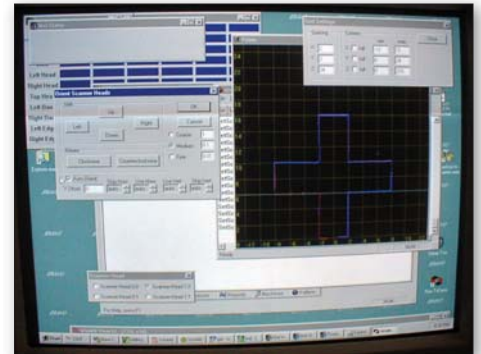
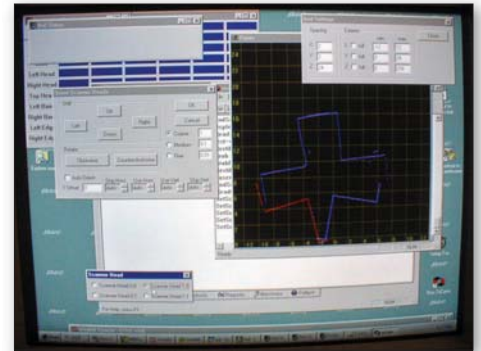
Note: USNR continually adds new features to enhance our products, based on customer requests. Our closeness to our customers' needs and attention to the demands of the marketplace keeps us in the forefront of wood processing technology. Because of that, please note that the specifications for our products will change rapidly as we improve our systems further.



Millwide. Worldwide.



SMART TRICAM™



Sensors immediately after installation (above) and after one-click calibration (below).