

## BARK PRESENCE DETECTED BY NEW SCANNER

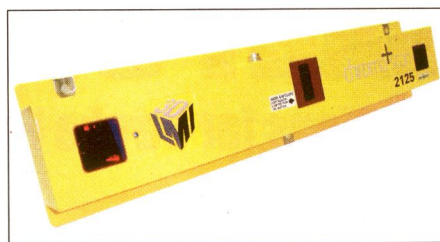
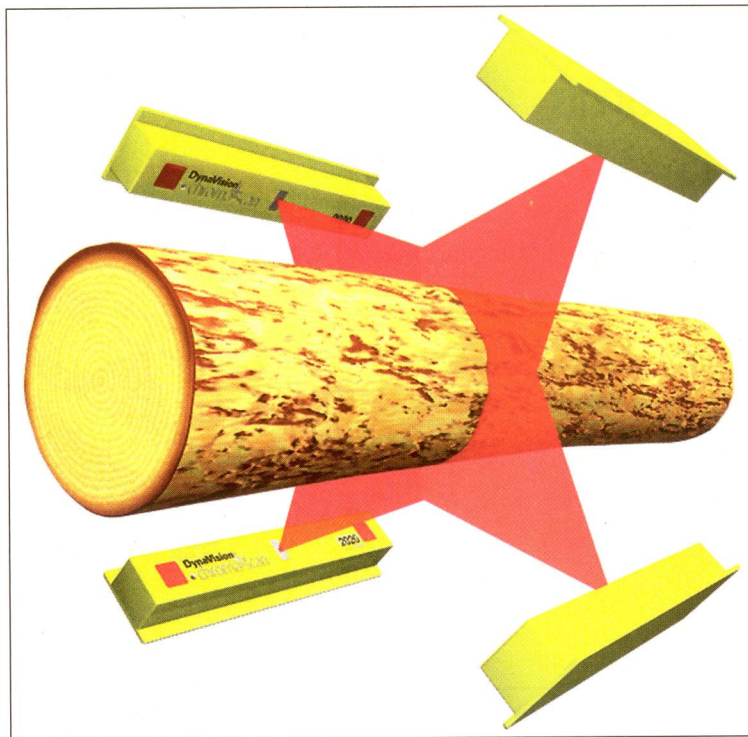
European mills are particularly sensitive to bark measurement.

The latest generation 3D laser line scanners for logs, the LMI chroma+scan 2000 family, have proven very effective in providing high speed, high density 3D profiles—all the dimensional information needed to make rapid, high quality first cut decisions. The only thing that needed to be added to these scanners is ability to detect presence of bark on the logs.

Bark detection is particularly important in European mills where logs are cut to length in the forest and then transported to the mill for scanning and sorting into groups of similar diameter, with the bark on. Even though the bark is on the log, the goal is to figure out the true log diameter under the bark. There has been a lot of research in Sweden on how to estimate this true log diameter based on the diameter with bark. One problem that occurs is when the bark has fallen off the log in some parts and not in others. Unless the areas where bark has fallen off are detected, the log diameter will be estimated as too small, causing a large diameter log to be grouped with smaller diameter logs, resulting in reduced yield of finished boards.

To address the issue, LMI has introduced a new log scanner, the chroma+scan 2125. This new scanner is essentially identical to the chroma+scan 2020, with addition of a third camera in the center of the scanner, which acquires a 2D image of the log surface used to measure the scatter or distribution of the laser line. This 2D data is used by the system builder to determine presence of bark on the log. The operating principle is the laser line has a narrow line width on bark, but is wider on bare log surfaces due to scattering.

To simplify implementation of bark detection from scattering data, the chroma+scan 2125 scanner automatically normalizes the laser intensity, applying range scaling inside the scanner package. The result is that intensity profiles are



not affected by changes in the distance between the scanner and the target. The data from the chroma+scan 2125 scanner make it possible to see the exact shape of the log under the bark, resulting in improved log sorting, reducing wane and increasing yield.

The 2125 scanner features a dual triangulation configuration for 3D profiling. This design uses two imaging cameras, located on opposite sides of the laser beam. The result is a full 3D profile of the log, with no data dropouts caused by shadowing of the laser beam at obstructions such as protruding branches, knots, cracks or the flights on the conveyor. When one camera is blocked from detecting the laser line, the profile is automatically filled in with the profile from the second camera. This configuration also allows “dead zone” creation to eliminate problem light sources or reflections that

generate spurious data without loss of profile data. The problem source will appear in only one camera view and can be automatically removed from the profile data, with data used from the second camera. Single camera sensors do not provide this feature and can lose data in parts of the sensor’s measurement range.

The 2125 scanner provides scan rates up to 500Hz. The result is very high density data for the best results in optimization. At the same time, the sensors maintain excellent dark wood performance and ambient light immunity. The sensors achieve dark wood sensitivity equivalent to level 18 on the Kodak gray scale chart. They are insensitive to laser saturation on light wood and are immune to high levels of ambient illumination.

Typical installed configuration of a log scanning system has 3 or 4 scanners mounted in a ring around the log on the conveyor to provide full 360° coverage. To simplify the task for the system integrator, the chroma+scan 2125 scanners are based on LMI’s field-proven FireSync platform, which provides a synchronized, scalable, distributed vision processing architecture for building reliable, high performance systems.

The FireSync platform integrates both 3D and 2D data from all scanners into a synchronized real time file for ease of analysis.

High reliability and simple, rapid installation are achieved with a single cable for power, data and synchronization. Communication with the host is via industry standard Gigabit Ethernet, making system integration simple.

By combining high speed high density 3D profiling with 2D vision scanning, the chroma+scan 2125 solves the issue of determining the true shape of logs, even with bark present. The result is better sorting and better recovery. Visit [lmi3d.com/brand/chromascan-family](http://lmi3d.com/brand/chromascan-family). 3305