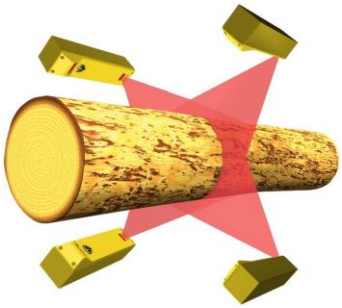
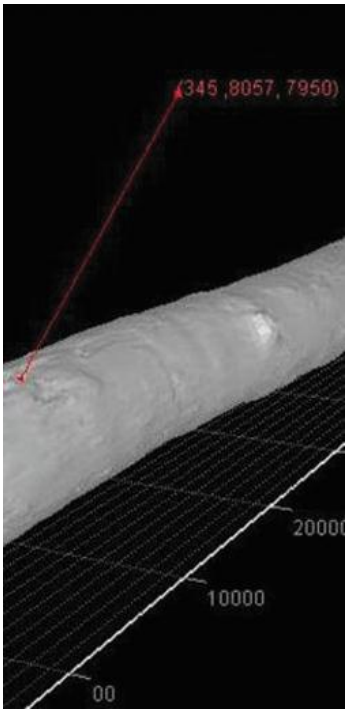
Gocator® | Log Scanning

THE APPLICATION



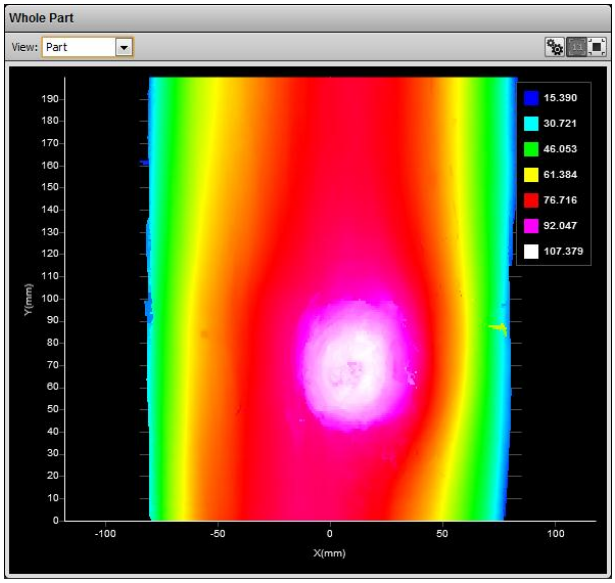
Optimization in the sawmill has a long standing tradition. From the earliest days of hand sawn boards, the question has always been the same – given the shape of a log, how can standard size lumber be cut out of it with the least amount of waste? In today's sawmill, this question is answered by laser-based 3D scanners and sophisticated software.

The process to convert a log into finished lumber involves several stages of cutting operations. The first stage is referred to as the Primary Breakdown, which as where the log is sawn into slabs of wood known as flitches and cants. To optimally control this breakdown the log is scanned into a complete 3D point cloud, revealing shape features such as taper, sweep and crook.

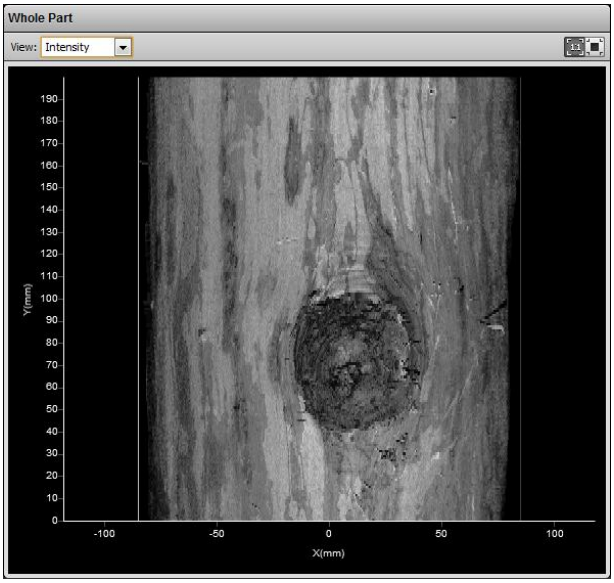


In addition to the shape of the log, defects such as bark, splits, knots, debarker tear-out and rot might contribute to the cutting decision. Some of these features require traditional 2D imaging for detection. With a compact and pre-calibrated smart sensor, using only a single light source, it's possible to get pixel-by-pixel matched and calibrated 3D and 2D data in a single scan at very high accuracy.

The raw scan data is delivered to a computer where it is processed to calculate a cutting solution that gives the highest possible value, based on a lumber size and a price database.



3D Colour Height Map …



… with matching 2D Intensity Image

THE IMPLMENTATION

Log sizes can vary from 4 inch diameter up to over 30 inches and the length can be from 6 feet to 26 feet. The Gocator sensors are mounted on a scan frame to cover the entire circumference of the log. Depending on the maximum diameter of the log, three or four Gocators can be mounted evenly spaced at 120° intervals or 90° intervals. The log is conveyed linearly through the scanner and an encoder on the chain triggers the sensors to capture the data at an even spacing, developing the full scan of the log.

The Gocator sensors are connected through a Master network controller which provides power, synchronization, encoder triggering, laser safety and data, all in a single cable. The time synchronization of the sensors allows the user to implement laser multiplexing to avoid unwanted cross-talk between the sensors, controlling the exact timing of the data capture down to microseconds.

An open source, platform independent Software Development Kit (SDK) is available to simplify control and acquiring scan data in real-time from the client application. The SDK provides the low level networking layer, sensor configuration and control, as well as asynchronous data protocol parsing. It lets the user focus on proprietary algorithms to analyze the shape of the log and optimization of the cutting decision.

THE BENEFITS

In today's competitive lumber market it is critical to maintain high production volume throughput with maximum value recovery. The Gocator is a sensor with great focus on ease-of-use, while at the same time providing faster scan rates and higher density data than sensors typically used in log scanning applications in the past.

The Gocator offers a compact and reliable solution to:

- automate and optimize the primary breakdown of logs
- scan at higher data density than traditional log scanning sensors
- seamlessly add 2D intensity data to the cutting decision
- provide the highest possible value recovery