

# SiCam™ REAL TIME LUMBER SIZE CONTROL SYSTEMS

Todd Buchanan  
Perforex Solutions  
Coquitlam, British Columbia, Canada

## The Mill

Weyerhaeuser Company refers to its New Westminster Division as "probably the most flexible operation." The business unit processes a range of species producing hundreds of different finished products. The sawmill operation consists of an optimized canter/quad line primary log processor, a horizontal gang edger for processing cants and an optimized board edger for processing the sideboards from the quad and jacket boards from the gang. The operation produces approximately 500 mfbm of lumber per day specializing in western red cedar and coastal white wood products.

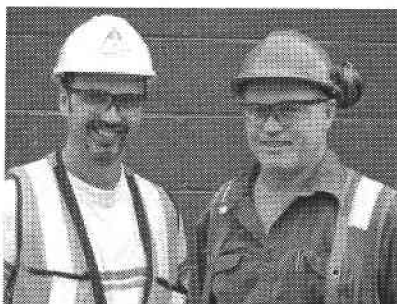
## The Project

Dan Bowes, Quality Control Supervisor, is a seasoned wood manufacturing expert. He has to be able to manage and assure the quality of the operation's extreme product scope and flexibility. He understands that his efforts and the efforts of his quality control team are best focused making sure that products produced are on-specification. When it comes to lumber size control, Dan knew there was a big opportunity in the mill. However, he also knew that there wasn't the time available to measure boards with a caliper to collect the data required to go after the opportunity. Instead he started looking for state-of-the-art lumber size control scanning technology for his operation.

First Dan looked within the Weyerhaeuser organization where online lumber size control scanning systems had been implemented in a number of mills. He also looked at the other systems available in the marketplace. After an extensive review, he selected the SiCam Real Time System from Perforex Solutions located in Coquitlam (Vancouver), British Columbia.

Dan states: Todd Buchanan visited our site a number of times to discuss the project. His experience in coastal sawmilling and knowledge of lumber size control technology instilled confidence that his company with the SiCam RealTime System would be the best choice for our operation. We are very pleased with the system and especially with the training and support services. We have achieved bottom line impacts from the technology far exceeding our forecasts."

Shawn Scheer (left) and Dan Bowes (right).



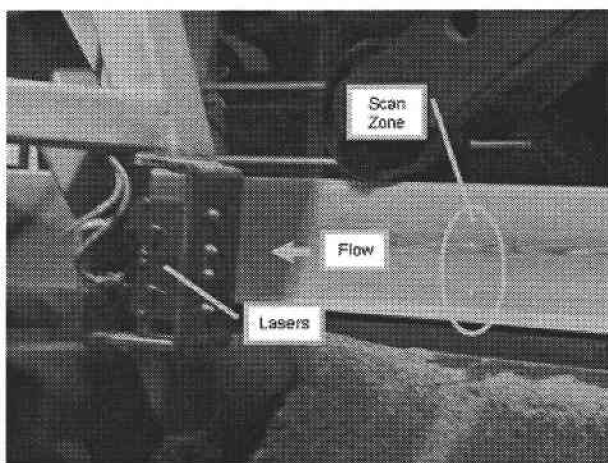
Dan Bowes credits his Quality Control team as being a big part of the success of the lumber size control program. Shawn Scheer, pictured above and Daljit Dhesi (not pictured) both use the system day-in and day-out to control sizes.

The following sections provide details about the scan centers and the results of the project.

### Phase 1 - Canter Quad Cants

Together with Todd Buchanan and Nick Barrett from Perforex Solutions, Dan and the team at New Westminster Division designed a system, training program and project plan specifically suited to the needs of the operation. Dan wanted to install one scan center and get some experience with the system. The first scan center has two zones with 4-lasers differentially scanning cants lineally at the outfeed of the canter/quad primary processor.

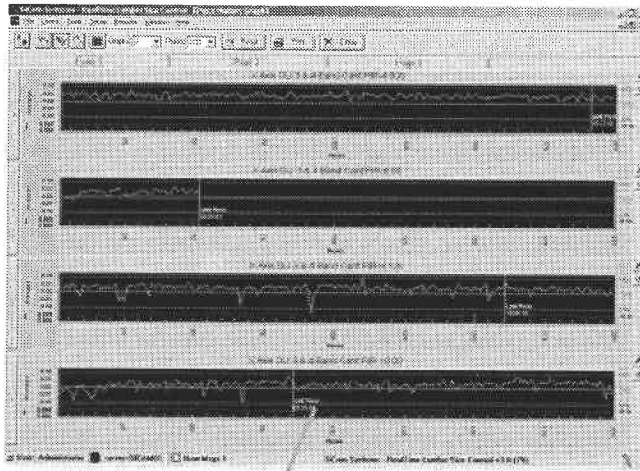
Canter Quad Can Scan Center



This configuration allows the system to collect information on every cant processed at the canter quad. Dan Bowes states that on a typical cant the SiCam RealTime System will collect approximately 200-400 measurements in each of the two scan zones. The system is accurate to  $\pm .002$  as we confirmed with repeated performance testing.

Control charts, tabular listings and shape diagrams are displayed on a monitor in the canter quad operator's booth and on several other computers connected to the mill local area network. The longitudinal shapes of snake, snipe, flare and taper as well as monitors of specific products and size categories are displayed in operator friendly screen views. The bevel in each cant is also tracked and that is the reason for the two scan zones. The in-depth longitudinal and bevel shape analysis provides predictive maintenance information to the sawfilers and maintenance team. The screen captures below provide examples of some of the reporting capabilities.

## Control Charts Viewer

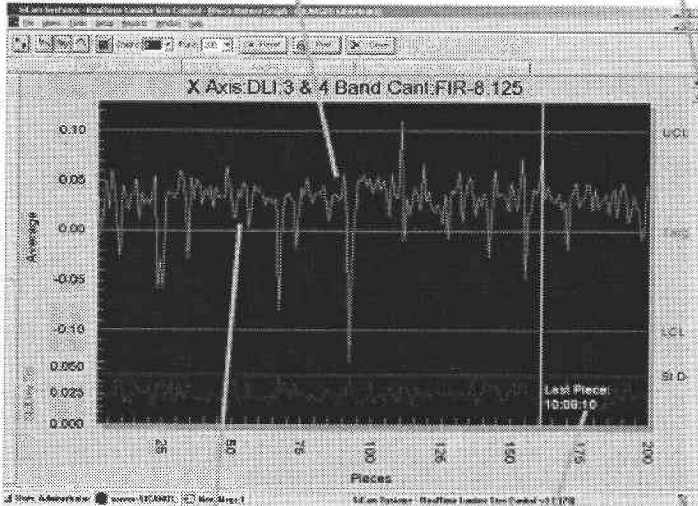


View user defined - multiple sawlines and products viewed separately or together.

Detect trends and drifts in on-size and sawing performance

Click to maximize/minimize a control chart

Control Chart Viewer

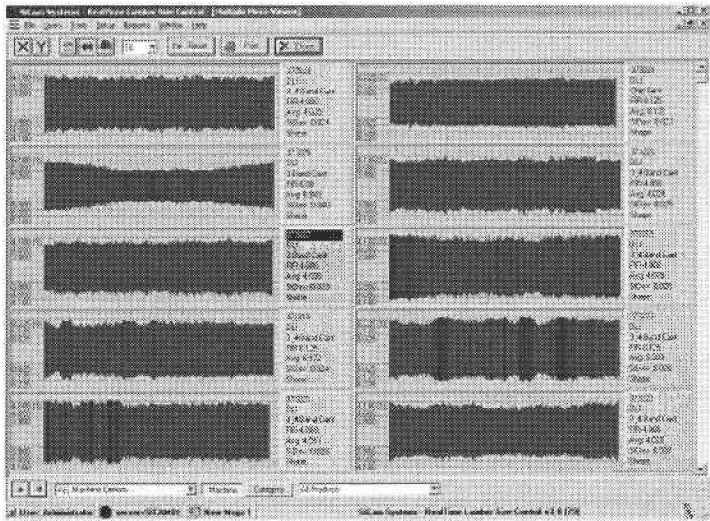


View the average size on each piece

View the variation (standard deviation) on each piece

The computer monitor in the Canter/Quad operator's booth displays a number of useful real-time reports. The main report used by the machine operators is the multi-piece viewer that displays the shape of the cants processed by the machine. With the leading end always to the left, the "in control" areas on each piece are displayed in green and the out of control areas are displayed in red. When there are red areas on boards the operator knows something is wrong. Sawfilers can view the boards and based on the shapes, troubleshoot the problem quickly. The multiple board shape viewer is shown below.

Multiple Board Shape Viewer



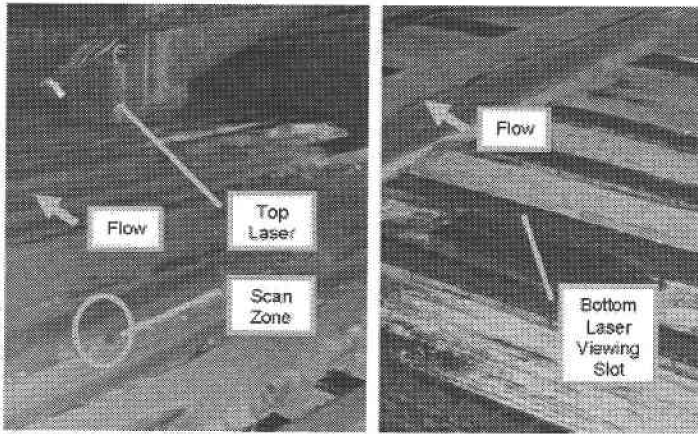
The system is integrated with the controls on the line. The PLC provides sawline, chipped cant, banded cant and chip/band cant details and product information to the SiCam RealTime System. The integration was accomplished by Chris Barry the mill electrician.

Training is a key element of any real-time lumber size control project. Dan says that one thing we did that made the whole project more successful is we had Todd Buchanan in to do four lumber size control workshops. We put about 30 people through the workshops. Getting the manufacturing team up to speed on lumber size control and how to best use the information in the SiCam RealTime System has helped us maximize the impact of the system. Lumber size control is much more than just lasers and software. It is also management disciplines and practices that must be followed minute-by-minute. People have to understand and believe in the technology and that means the physical system and the management technology.

**Phase 2 - Canter Quad Sideboards**

After the successful implementation of the 1 scan center, Dan decided to install a second scan center to track sideboard thickness on the outfeed of the canter quad machine. A transverse scanner with one top laser and one bottom laser was installed. Although the sideboards sometimes pile up in the scan zone, the system captures good data on about 50% of the sideboards produced, plenty for a reliable sample.

## Sideboard Scan Zone

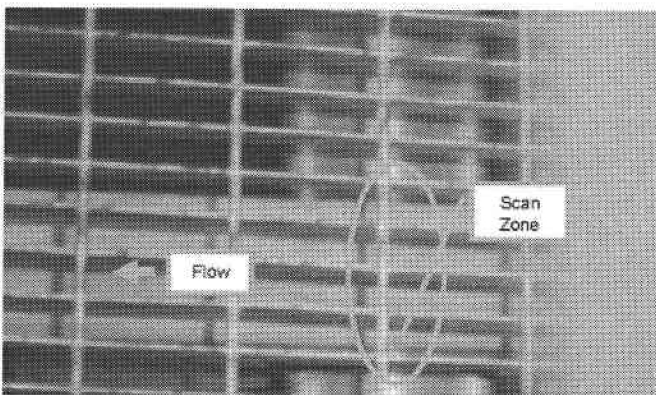


### Phase 3 - Edger and Gang Scan Centers

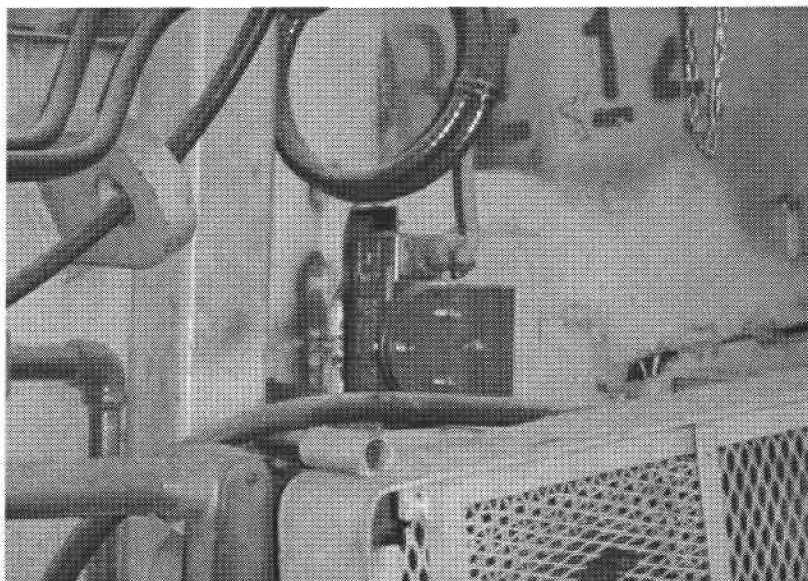
With the outstanding success of the Canter Quad scan centers, Dan proceeded with phase 3 of the project. In this phase Dan decided to increase the alarming and real-time reporting capability with the addition of a site-based radio frequency pager system. The pager system is configured to send the right information to the right people. Key personnel on shift get timed, user defined, update messages with key performance indicator results. Alarms are paged immediately for fast response.

In addition to the pagers, 2 new scan centers were added in phase 3. One lineal scan center at the Edger outfeed scanning board widths and one transverse scan center at the pre-sorter area scanning the thicknesses of every piece leaving the mill were installed. The pictures below show each scan center.

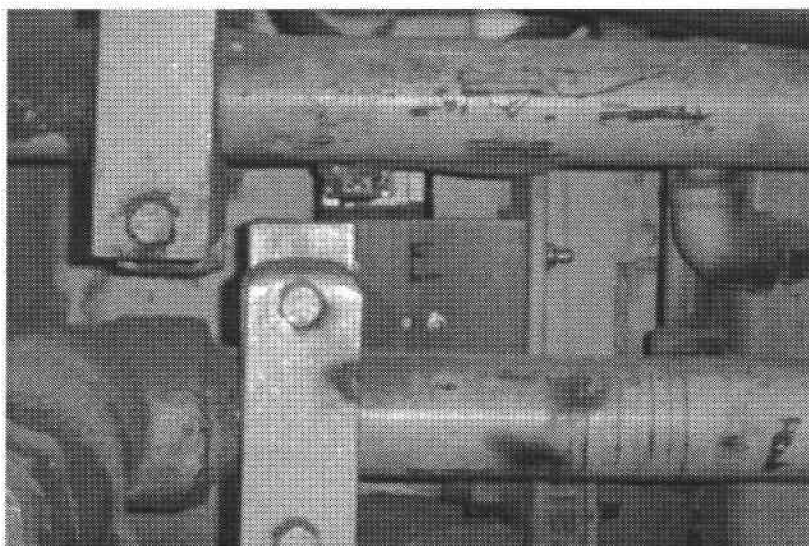
### Edger Outfeed - Scan Zone



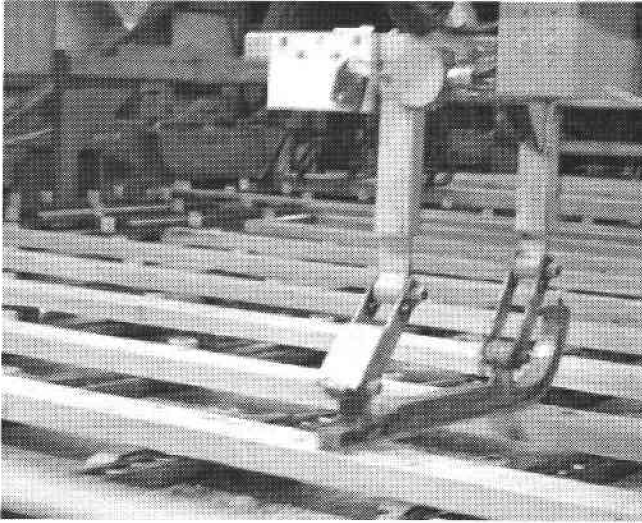
Edger Outfeed Laser Mounting - Right Side



Edger Outfeed Laser Mounting - Left Side

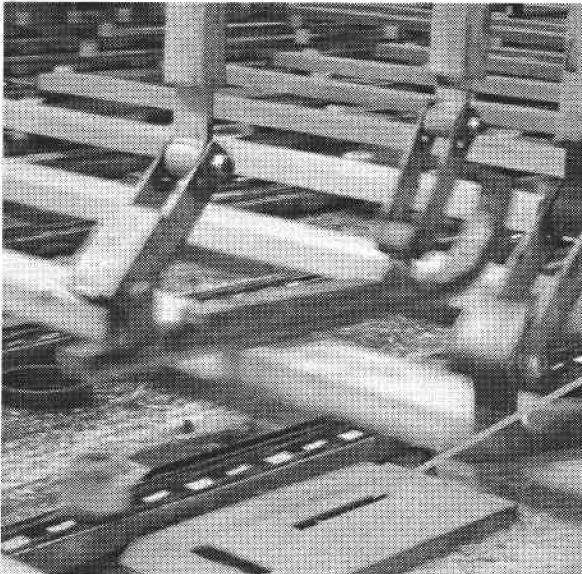


Scanner at Pre-Sort Area - Top



Top  
Laser

Pre-Sort Area - Bottom



Bottom  
Laser  
Viewing  
Slot



## Results

Both the canter quad machine operators watch the SiCam RealTime system monitor in the operator's booth. Bill Leschuk, a veteran canter quad machine operator states that: the system is deadly accurate and it shows us whenever there is a problem on the machine. Sometimes the saws need changing and we know right away. Other times it is just a stick in a guide so we get by with a quick stop and cleaning and we are back running in a minute. The savings in increased uptime could not be calculated, not to mention the better on-size wood we are now producing.

Phil Vetra, 2<sup>nd</sup> Headsawfiler, at the mills claims they get a lot more information from SiCam than they ever dreamed. They used to blow up saws like crazy, sometimes two on one shift, about 30 in one year, but now they don't break saws anymore. With SiCam problems are seen before they get out of control and there are many production and quality gains. Feedback from the kilns is that the boards are more consistent making it easier to dry properly and delivering better grade out turn. There are less slivers and the planer which is a big production and safety benefit.

Supervisor Mark Buckley says that the SiCam System is so accurate that at the pre-sorter scanner they picked up a Gang sawline with the different sized guide. It was out by .030" and when the sawfiler saw the report he couldn't believe the system actually picked it up.

Mill Manager Dave Sebellin says that the New Westminster business unit is performing better on recovery, grade and production indicators and although a number of projects have contributed to this improvement, however, the SiCam RealTime system has definitely been a big hitter.

The SiCam RealTime System works well because of the efforts of all the people involved says Todd Buchanan, especially Dan Bowes who had the vision and will to make the project happen and get the players on side. It starts with the mill manager and filters to the supervisors, sawfilers, machine operators, and the quality control team. The people believe in the system. Furthermore, they are willing to execute the disciplines, day-in and day-out, that get at maximizing the impact of the technology. These people have an understanding how to use the system and they have the will to use it. They have achieved substantial impact. There is always more that can be done and I'm sure they will do it. That's the kind of people they are, they are among the best sawmillers in the world.