What do we do Now?

A personal view by an old sawmiller

Peter Ross

What Do We Do Now?

The British sawmill industry has undergone massive and dramatic changes in the last forty years.

The traditional family run businesses working from a local base, serving farmers and other nearby consumers, perhaps with contracts to supply timber to the National Coal Board and British Rail, the vast majority of which are now just a nostalgic memory, are now in the past.

The survivors have in the main had to "tool up" with new technology, new conversion methods, slimmed down staffing requirements and be ready to meet the demands of a "just in time" consumer society who demand immediate delivery, best quality, lowest price.

The expression, "what do we do now?" must certainly have been uttered many times these past forty years.

This short article is my personal contribution to the endless debate. Volume or Value? Sales or production priority? How can we do both?

Mosstodloch Sawmill early 60's

Part 1.

Having spent over forty five years in the sawmilling industry, I wish to offer my simple opinion, without prejudice and without criticism of those who also have procured a living from this industry.

My introduction to the hard life of sawmilling began at Aberlour Gardens Sawmill near Aberlour. This was a typical Riddoch foresian double slabber mill, operated on contract by Jimmy Smith, my boss at the time. I go past sometimes when I am up north, it is now a caravan park. I remember those days as if they were yesterday. The winter of 1962 was the coldest winter in Scotland since 1879. The snow started in mid December and lasted until April 1963. In Braemar, the temperature dropped to – 22 Celcius (-7.6 F.) Believe me, that is cold!

It is a very long time since (1961) when I pushed a barrow through the mud to hand build the "crowns & splits" onto a stack in the stock yard, ready for hand loading onto a lorry. No fork lift trucks in those days, just human effort and energy.

7 am to 5:15 pm with half an hour for a sandwich at mid day. Every 2nd. Saturday morning was also a work day. Paid fortnightly in arrears and living in an old wooden bothy, life was hard, but I survived.

Looking back, it doesn't seem so long ago, just the other day it seems I was playing hide & seek with my brothers & sisters. They have all retired now.

I digress sometimes, so let's get back to the story.

The experience gained in the small double bench sawmill of Riddochs at Aberlour, run by Jimmy Smith has been truly treasured by me over the many changing years since then.

In those days, we had, believe it or not, a Scan & Set sawmilling system. (and you thought this was a new invention – read on to see how it worked)

Jimmy taught the rudiments of timber conversion by showing me how to hand roll a log from the wooden skids onto the rolling saw bench, (actually, he grabbed one end & I held the other and tried to keep up and not get my fingers nipped too often) He would then "scan" it, (with his eyes) position it to the best advantage, ("set system") wedge it to prevent it from rolling over when it entered the saw, then with the friction feed pass it through the saw. The three pass solution produced a "loaf of bread" section which was then passed to the second sawyer to "run off" the finished pieces.

Generally, the product was mining timber. 8"x 4" or 7"x 3.5", 6"x 3" or 4"x 2" down to 2" x 2". As he was paid by the cube, it was important to squeeze the maximum volume from the log.

Remarkably, one of the best paying products was a lower value item called "splits", "You get paid for fresh air" was Jimmy's claim, and he was right. You could have a round log which was 5" (12.5 cm) in diameter at the small end and 6'0" (1.8 m) long. You simply split this up the middle and you have two 6'0' x 5" x 2.5" pieces (125mm x 63mm).

They were of course not square and hence the only parts that made the measure were the sawn face which would be five inches wide and the highest part from the face to the radius of the sawn log, two and a half inches. Still, these two pieces together added up to the magical "cube". You were allowed to calculate the piece as if it were truly rectangular in shape. Splits had to be peeled though, but this was also solved. If you didn't saw the log along the whole length, leaving about 1" on the top at the end not sawn, the two pieces stayed together and could be peeled on the mobile "cundy peeler" like a pit prop. Care had to be taken not to peel the small end as this would tend to reduce the size and lower it's cube value. Once peeled, the timber was thrown onto the heap where it split in two separate pieces. Sixpence earned. Do the calculation, one per minute, thirty shillings an hour. (you had to pay

your lads out of that of course. Jimmy Smith paid me two shillings an hour in 1962). You could make a fortune self employed or so it seemed.

In those days volume was king.

At piece time (coffee break) there was time for a quick sandwich then the saws had to be sharpened ready for the next stint. Sitting on the saw bench and using a flat file, you would sharpen the circular saw filing tops and faces of every second tooth, then you would go round the back of the saw and do the same to the other teeth. (I sometimes digress and here is one such time). Sometimes the logs were not too good and you struggled to make your wages. We were paid 6d or 2.5 pence per cubic foot on piece work, you needed something to supplement your income. Riddochs had a generous scheme in place which covered the cost of flat files. If you hit a nail or a stone, it would damage the saw blade. You would have to stop and re-sharpen the blade of course. For such an incident, you could claim the price of a file 7/6p or 75p. It was not unknown that on a bad weeks production, it was remarkable how many "nails" and files you went through)

It was hard work but if you took the time to learn, you could have a reasonably good living. I had my own sawmill, employing two guys, contracted to Riddochs at the age of sixteen. I was provided with a Fordson L4 and a single bench foresian mill, a forest clearing was selected to set up the mill for the next few months sawing the logs from that forest until the thinning was completed.

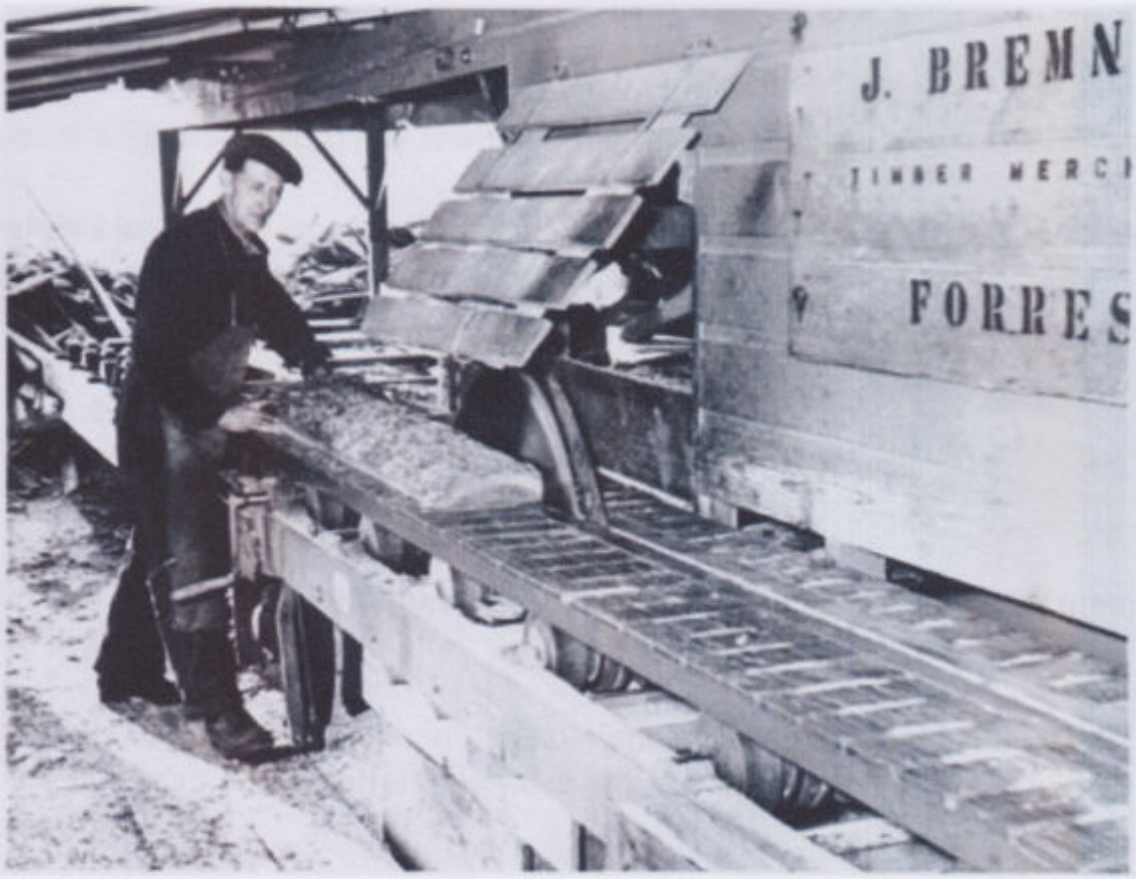
Imagine being your own boss while still just a boy.

This introduction to sawing and conversion techniques was truly remarkable for me and I have continued to study sawing patterns and conversion methods ever since.

While I never thought of it as learning a trade, the rudiments learned at that time have proved invaluable throughout my working life.

They say that sawdust gets into your blood, I don't know about that but for me, I would not choose a different career.

Look at the guy in the picture on the following page, fresh air, no ear defenders, no safety glasses, no security fences, probably a finger or two missing, but, hey he looks happy doesn't he.



Note the anti-kick back device behind the saw. This was very important especially when cutting larch. The compression wood would create tension in the side pieces making them close in on the saw blade. If care was not taken, the saw would grab the log and catapult it and the sawbench back out of the building, log and all. Often on particularly tight larch, I would stand behind the saw and insert a wedge into the cut as it cleared the back of the blade, hammer in the wedge to keep the cut open. This was a very dangerous operation. If the wedge dropped onto the saw, it would be shot back at the sawyer at alarming speed. I had to grab the wedge before the sawn piece was cut off or it would drop on to the sawblade with the same result.

The footpedal to operate the friction feed was a step forward. Just a driven shaft with a pinion on it to engage in the rack to propel it forwards. You had to pull the bench back though.

With larch, we tended to use the handle to crank the bench slowly forward, ever alert to "feel" the log jamming on the saw. The handle was engaged by sliding it inwards to make contact with the rack, if the log was grabbed by the saw and thrown back, you had to be very quick to pull out the handle or you would get a severe smack on the back of the hand or a broken wrist.

Note too the size lines scratched on the bench. Generally they were scratched on at 1" spaces.

Part 2.

Perhaps the highest cost to any sawmill is the regular supply of raw material, Logs.

The returns from this resource can be maximized in a variety of ways. The saw-miller must decide what exactly he wants to achieve.

1. Is the best price his target?
2. Is the highest yield volume his target?
3. Is quality his target?
4. Is repetition of supply his target?

Whatever his target, he needs to know it and then set in motion the best method to achieve his target.

It never fails to amaze me that some experienced sawmill people still fall victim to the slick salesman who proffers his wares to the unsuspecting client with a jazzy presentation.

His wonderful new equipment can transform the prospective clients business to new heights of performance that he never dreamed possible.

3D scanning, Auto-rotation, Scan n' Set, Skew Profiling etc. etc.

STOP!

Remember, most of these guys have never sawn timber for money in their entire life and here they are, telling you just how to do it. You know them, they arrive at the sawmill in a flashy car, they tell you how wonderful the smell of wood and how envious they are of you and your calloused hands and sawdust impregnated hair while all the time they are desperate to get back in the air-conditioned comfort of their car and listen to the latest CD on the car stereo' system or get back to the warmth of their office and latest game on the computer.

You must grab back the initiative and re-claim the ground. You must tell him what you want to achieve and then analyze exactly what it is that he proposes to meet YOUR requirements. Of course, you must know what it is that you want to do. Watch the salesman's face break into a large smile when you say, "I have this problem and need help to find the answer." "No problem, he says" in reply as the dollar, pound or euro signs flash past his eyes.

There is absolutely no doubt that the new technology available has transformed the industry. As I said at the outset and sorry for repeating myself, when I started sawmilling, it was on a "double bench" Foresian mill. This meant that it had two separate circular saws.

Logs were transported to the sawmill by four wheel lorries, carrying perhaps10 tonnes of pre-cross-cut sawlogs.

The logs were manually offloaded onto the skids. From there, they were rolled one by one onto the saw table. Manually aligned by the sawyer, he would remove the first slab. This was then passed across to the other junior sawyer who edged the slab, then produced the side board/s if there were any. This would have meant that the slab was passed at least four times through the saw. He had four slabs to process in this way.

The main sawyer would have "blocked the sawlog into a three sided cant. The dimension of the opposing sawn faces would be the end dimension of the product. He would have calculated by eye, what he could yield from the log. The slabs and the three sided cant would all be passed to the junior sawyer for final processing.

This primary breakdown was crucial to the volume of the end product. The idea was to skin the log with as little slabs as possible to create a "face", an experienced man could produce 2 pieces 5" x 2.5" whereas another less experienced man, frightened he would saw off a finger or two, would settle for 2 pieces 4' x 2", (27% less volume.)

This happened to every single log. An extremely slow process but most of the big players today started with this type of log conversion. Jones, Brownlee or BSW as it is now known.

I remember, Jimmy, the man who trained me saying, "Stick to this trade son, they will always need you and me because they can never replace our eyes to set the log."

I believed him, the rest they say is history.

On the various elements of recovery, I have met many who have become enslaved to recovery, recovery recovery. They talk about yielding 60 – 65% sawn timber from the log. From this, they assume that it must mean they are making more money as they are converting more of the actual raw material into a sawn product.

Often forgotten is the cost of this conversion both in manpower and machines.

Many sawmills spend a higher proportion of their money and effort converting the lowest value products simply to achieve yield. Of course yield is extremely important but not the total solution. Many high yielding mills I have been associated with proudly produce statistics proving their efficiency. Then you go out in the yard and find five or six men, sawing up tiny pieces of lumber on expensive machinery.

When you analyse the value of the product being yielded and the fact that the yard is already stacked with this high yielded product in packs going back for five or six years. Count the cost of the labour associated with this production and the numbers simply don't add up.

I suggested to one saw-miller that I could save him a fortune with a very simple solution. He responded eagerly until I told him to pay off all the guys doing this recovery job, sell the machinery, buy five gallons of petrol and burn the timber they are handling. "It will cost you less" I said to the bemused, unbelieving man. I kid you not, I honestly believe that this solution would have truly saved him money and streamlined his production. Of course instead of burning the stuff, he could put it through the chipper and earn some real money.

While helping another company to set up a new sawmill, they said they were going to install to largest drop sorter in Europe. One hundred and sixty bins. They needed that for all the different sizes they cut. I suggested that instead of doing that they should invest in a log grader and batch run logs through the sawmill, then they could get along with say forty or fifty bins. The owner looked at me and said "you don't seem to understand son, we cut all sizes of logs and yield dozens of different products, that is why we need so many bins to hold them all." I said that I understood that but each log diameter only has a few products in it, so that if we graded our logs and batch run those logs, we would only produce from that run a specific number of products, this way he could predict with a level of certainty how long it would take him to produce a specific order and thereby keep his customer happy. I pointed out that every time he changed log diameter, he would know what was in that log so be able to select the logs required for each order. He looked at me very seriously and again said "you don't understand, we cut all the logs together, we produce every product all the time so we need all the bins to hold.....ZZZZZZZZzzzzzzzz..."

(the 160 bins cost twice the cost of a simple log grader and took up twice the working area. Customers could never know exactly when their order would be ready. "A week or two he would predict.)

Wait a minute though, they have their one hundred and sixty bins, they still boast a yield of 65%+, they are still in business and I no longer work for them. So who is right?

Make your own mind up. (see second paragraph section 2)

Part 3

In truth, all of the four points made at the start of section 2 are important. We do want to get the best price, we do want to yield the highest cost effective volumes. We do want to produce a quality product and we certainly want to sustain the supply chain of timber.

What then is the solution?

Here is my tuppence worth.

Buying logs is no different from buying a jacket from a shop. It is a commodity or product that must be useable by you the purchaser.

Example. If you went to buy a jacket and the price was a bit higher than you intended to pay, you would rightly ask the salesman why you should pay the extra.

"Did you note that this jacket has three sleeves, you get an extra sleeve for the price of two, that is why it is a little more expensive. You have more material!" says the salesman.

"The hat you have selected is also a bargain. You only need a 7" hat but this one is 8" for the same price, this is your lucky day!"

What use is an extra sleeve on a jacket or a hat that falls down over your eyes and ears? If you cannot use it, it is no use to you.

Sorry for digressing but I want to make what I believe is a very important point.

Every log you buy must be of "merchantable" quality. I don't care if they call it a "green" log, a "red" log, a pink, purple or yellow log. If it is not "merchantable" or useable in your process, don't buy it!

It seems that many of the log suppliers think that because trees are a "natural" product, that gives them a license to fell trees in a stand and sell them on to you as a mixed bag of straight, slightly bent, very bent and even twisted logs.

If you cannot process the logs, they are no use to you. Don't buy them. How many times have I seen the timber buyer come into the office rubbing his hands in glee saying, "I got a fantastic bargain, the logs are a bit twisted but I got £5 a tonne off the price."

Wait a minute, when you go to process them, they cause no end of problems with jam ups and very poor yields. The "powers that be" conveniently forget that the logs were cheap and expect the same production rates and volume whatever the log quality. It may cost a little more for logs you actually want but the supplier will soon realize what is acceptable and what is not. To them you are a pest but you will make money.

Digressing a little. I remember a very wealthy farmer in the North East of Scotland. His name was MacKay of Pitairlie (this is a true story hence the identification, anyway he is dead now even though he was rich) It was at the potato harvesting time. The old scatter machine was being used. This was a machine which was dragged behind a tractor. It had a vicious spinning disc with ten or a dozen tines attached to it. It simply sliced through the tattie drill scattering the tatties to the side. The tattie howkers had to pick the wares from the surrounding area quickly before the digger came back around.

At the end of the day, the field was bare, but now came the harrowing. The tractor would drag the harrow up and down the field, exposing buried tatties allowing them to be gathered up. Most farmers did this once over, occasionally, twice. MacKay on the other hand always harrowed three times. One frustrated tattie picker confronted old man McKay and said "You are the greediest farmer I have ever know, even the wee farmers don't harrow more than twice!" Without breaking stride up the field, MacKay replied "I ken that weel loon, and that is why they will aye be wee fairmers!" (excuse the Doric. Translation: I know that very well son, and that is why they will always be small farmers.)

Earning money is not a sin nor is it a crime. Seeking to get the best deal is also not a sin or crime. You may not be popular but you will make some money.

What Do We Do Now then?

First, buy only logs you can use.

The second must be which of the predominant methods of conversion should you employ.

SCAN & SET: For many, this is the "new" method, but in reality, it is the very same method used by us old guys 40 – 50 years ago. The logs were ungraded, the scanner was you eyes, (remember Jimmy Smiths comment to me) this 3D view of the log allowed you to assess the log shape and quality and to then set it on the saw bench to achieve the best sawing solution.

Scan and set systems to day have certain advantages and disadvantages. What are they?

The key advantage is that you don't have to invest in expensive log grading equipment, you just require reasonable log storage and a method of transporting the logs to the in-feed of the sawmill.

The process allows logs of a wide variety of diameter dimensions to be processed one after the other. A 3D scanner assesses the dimension and attempts to fit a cutting pattern to suit the sawing requirements. Example: You wish to saw, 100 X 47mm. The scanner will determine a pattern which will produce either two pieces from a 14cm diameter log or many pieces from a 40cm diameter log.

Disadvantages: This may be fine if the size selection is 100 x 47, but if the orders required 200 x 47, you still have to process the logs as they arrive in the sawline. This will inevitably mean that you will be producing sizes that you don't actually

require. I can recall many times in the past going round the timber heap marking out specific logs to be extricated with a crane to suit the order run. The crane driver may have to move tones of logs to get to the one selected only to find it was short or bent. Another disadvantage is the machinery configuration you will now need. Off line edgers and extra handling equipment to break down the larger log. The log gap has to be increased also to allow for each machinery group to re-set for every size, this reduces the log count. The excessive machinery movements creates premature wear on the machines lowering the life cycle of the equipment. This I believe is the major downfall of Scan n' set. The next is the size of the sorting line required to hold the volume of material that will be produced which is not required at that time. (remember the guy with the 160 bin sorting line.)

Every size requires a bin to hold it. If the product being produced is not actually what you want to cut, it can use up several bins for many days until a pack is produced. It is not uncommon to see two drop sorters with 60 bins each to cope with the variety of products.

Sorted Logs & profiling line

The second real option is processing sorted logs. This will require the investment of a log sorting line.

In my opinion, this is the key investment, it has to be a log grading line where you can grade logs to the specification you need for your sawmill. You will require 40 to 60 bins for ultimate grading.

True shape scanners are now available which can detect length, sweep, ovality, twist etc. You decide the parameters which are acceptable and use this to buy your logs.

I spent nearly two years setting up the correct log grading equipment at Howies. It took a year to convince the Forestry Service that I would only buy logs over my scanner. Up to now, we had the usual palaver of measured loads. F.E. would arrange a load of logs at the roadside, number every log, measure the length and top diameter of each log. Load the timber on a truck, weigh it, subtract the tare of the truck, do a volume to weight calculation giving a conversion factor which would then be used for the next ten loads. The sawmill was then supposed to lay out the load and check the measurement against the supply sheet. Then you start again.

We were taking in ninety loads of timber a day!!

Trying to convince the forestry service that this was lunacy plus the fact that once the logs were graded, many were out of specification but there was little you could

do except negotiate a reduced price. (remember the jacket with the three sleeves, if you can't use it. No price is the correct price). Remember the log buyer who boasted of getting the price reduced. The seller is laughing all the way to the bank as he doesn't have the problem of handling and trying to convert rubbish logs through a sawmill. It takes three or four times as long to handle badly shaped logs with very little return, but somehow the buyer thinks that he got a bargain if he got the price reduced by £5 a cubic meter.

Our true shape scanner simply tells it as it is. It has no Monday morning blues or hangovers. It hasn't fought with the wife and is not in a grumpy mood because his team lost on Saturday. It just runs.

The final test which did the trick with the F.E. delegation was simple. I suggested a blind test. We would lay out fifty logs on the ground. Each man would then grade each log, write his opinion on a sheet of paper. This would then be held in secret until the end of the test.

Eight guys from the forest service came armed with tapes and calipers, log turners and anything else they deemed appropriate. For **two hours** they looked, stared, looked up to the heavens for inspiration, climbed over the logs. Measuring, turning, re-measuring and generally hesitating to write their opinion in case they got it wrong. In the end they had all competed the results, eight sheets of paper, which remember took two hours to complete for fifty logs. (I wonder what that would have cost commercially). I then took the logs in strict number order and passed them through our "true shape" scanner. It printed a very detailed report on every log. Length, top diameter middle diameter, sweep, conicity, butt diameter, ovality, actual volume, true useable volume, *who planted it, what he was having for his dinner...* (the last two points are a joke)

With sweaty palms, they all waited for the verdict.

To their amazement, the scanner rejected fewer logs than any of the skilled graders had. It accepted more passes than any of them. **And it had graded the fifty logs in under two minutes flat.**

They were convinced and we agreed that from now on, we buy logs over the grader.

What are the benefits? The parameters set in the log grader are such that it classifies "green" logs and calculates the volume and the value at green log price. It calculates the "red" logs and calculates the prices. It then adds those volumes and prices and automatically advises the F.E. of the volume bought, the value, which consignment note it was, who delivered it. It sends a detail of every single log for

every single load to the supplier to allow him to check it. It then sends us a bill for the load. **But most importantly, any logs which do not meet our purchasing agreement are rejected at that point and are not billed to us. We only buy what we can use!**

This is key step number one.

Part 4

So now we have neatly stacked rows of timber graded according to length, straightness and diameter.

In this day and age of "just in time" solutions where the customer is no longer prepared to hold large stocks of sawn timber, the requirement for a fast response time to customers requests is essential.

Without log grading, if you get an order for 10,000 150x47 C16 material and the customer asks when his order will be ready, you don't really have a clue in truth. You will likely say about a week, then you proceed to gather this produce while at the same time merrily cutting up valuable logs into other products you don't really

need or want just to achieve a high yield. Even then you may not get enough and you then begin to butcher bigger logs to meet the delivery dead line. How much better it is in my opinion to be able to look at a log stock sheet and see 5,000 230mm diameter logs in stock and be able to say to the customer "will 1st. thing tomorrow morning be alright or do you need them late this afternoon?"

That is the type of sawmill I believe will achieve the best results for you and your customers. One that is flexible and fast to changeover and that produces essentially only what you have already sold rather than hope to sell. (Ask Laura Smith, our sales director if her customers will wait until you "collect" enough material in a couple of weeks or so....)

My typical ideal mill would comprise of the following combinations.

Log in-feed deck with the capability to hold at least sixty tones. This would be followed by log orientation system before going straight through the saw line. The log gap should be targeted at 15 to 20 cm apart. If the logs cannot be de-barked at the log grading process, then a high speed de-barker with two or three debarking rings should be used. The de-barker should ideally have an air seal tool system to allow the line to stop while a log is still in the de-barking equipment. This is essential if it is a straight through saw-line.

With a line running at 160 meters per minute. It is likely that a single de-barker will be insufficient, in that case the log deck should be able to feed two side by side de-barkers which then bring logs back together before entering the sawmill. In this scenario, no air seal de-barkers are required, in fact pretty ordinary 100 meter per minute machines will suffice.

The true shape scanning in the sawmill must duplicate the one on the log grading line, this will give a better match between the log grade and the sawmill breakdown patterns.

My preference in the sawmill is canter profilers with a final circular gang saw at the end. Some manufacturers have the ability to have canter, canter profiler, multi rip, profiler, final gang.

The question of yield will now again come to the fore. "Why use circular saw and not band saws?" I hear you ask. Often in this discussion, people focus on the saw kerf of the circular saw which can be as much as 4.5mm. This number is often fired as an objection to the system. Often forgotten is the fact that the **band saw also has a kerf of some 3.1mm** so the difference is only **1.4mm.** So if you are ripping with six saws, the difference is 8.4mm. Admittedly this could have yielded a bigger

sideboard, say instead of 16mm times two, you could have produced 20mm boards. In reality this is only the case when the log diameter is at the top end of the graded dimension and you have the timber spare on the side. When you consider that you can run this log through a circular saw at up to 180 meters per minute with little or no deviation, I personally believe that there is little difference in yield.

In a recent sawline design I carried out, we were yielding average 57% with little effort and running the line at 150 meters per minute. Here is where the equation comes in. There is a balance between yield and efficiency. If yield is prime for you and remember that this extra yield will usually only be in the lowest value sideboard product, then you may disagree with my scenario, but if accuracy of sawing, volume per man per hour and ability to respond to short time demands, then my way is absolutely the best. (we can discuss.)

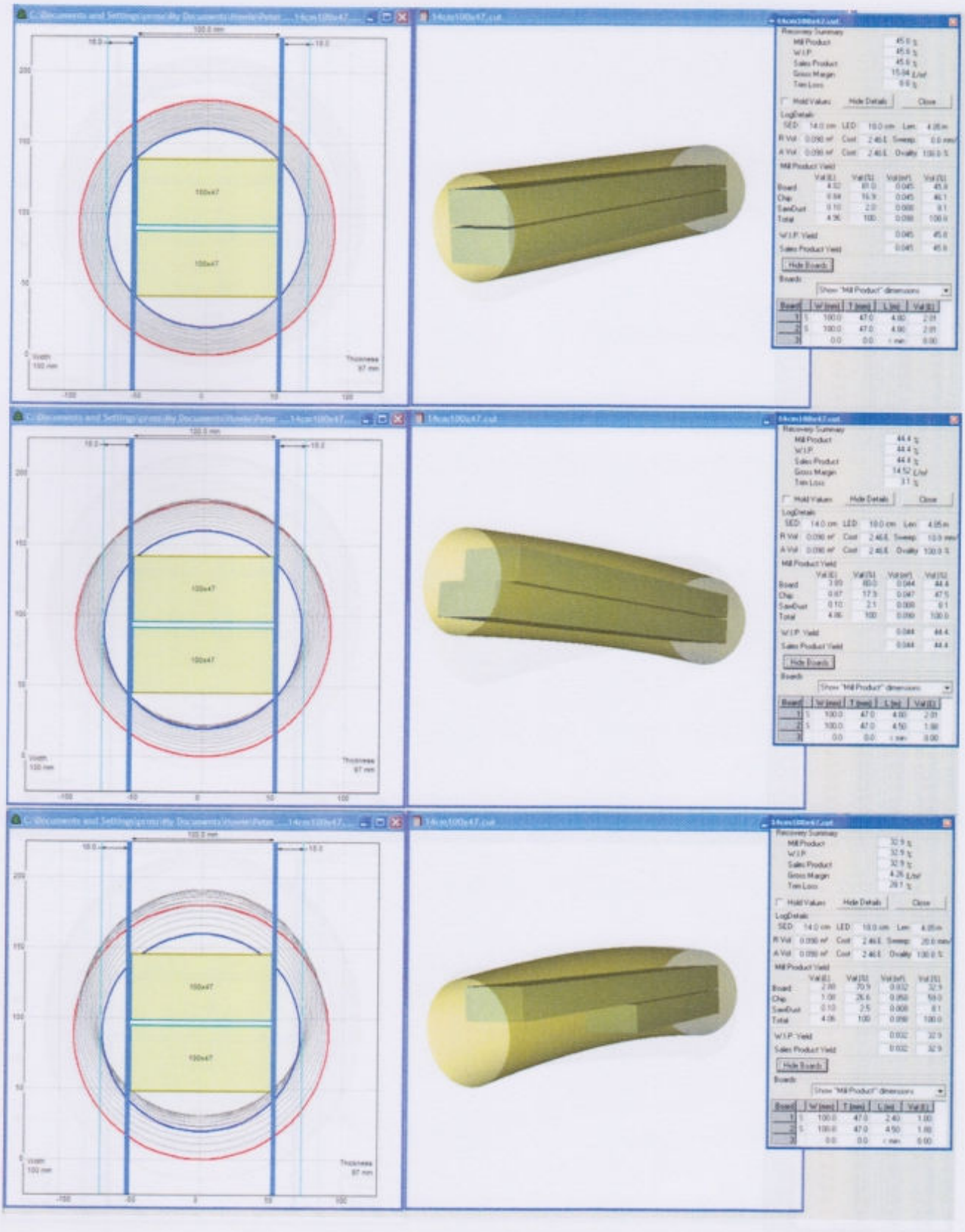
The quality of log availability is also now crucial. In Scotland, the logs tend to have a sweep over the length of the log. (this caused by the higher winds and sloping ground conditions generally found in the area. (The same reason why Haggis have long legs on one side and short legs on the other, to allow them to run upright around the hills, (the old ones are still the best))

In the past, this has meant that the harvesting operation has had to limit the maximum lengths of mill logs to eliminate this sweep to acceptable limits. Generally it was the case that sawmill cut in straight lines (some sawmills didn't, but that is a different story) now, with curve or sweep sawing, it is possible to "cut round the corner", this has big advantages. It means that you can accept longer lengths with a greater sweep than before. I have proved that with curve sawing, we can yield an extra 2% volume from the same log. Again there are limits as the curve sawn timber has to be handled. We found that even though the saws could saw a greater curve, we could not then convey the timber down the line easily.

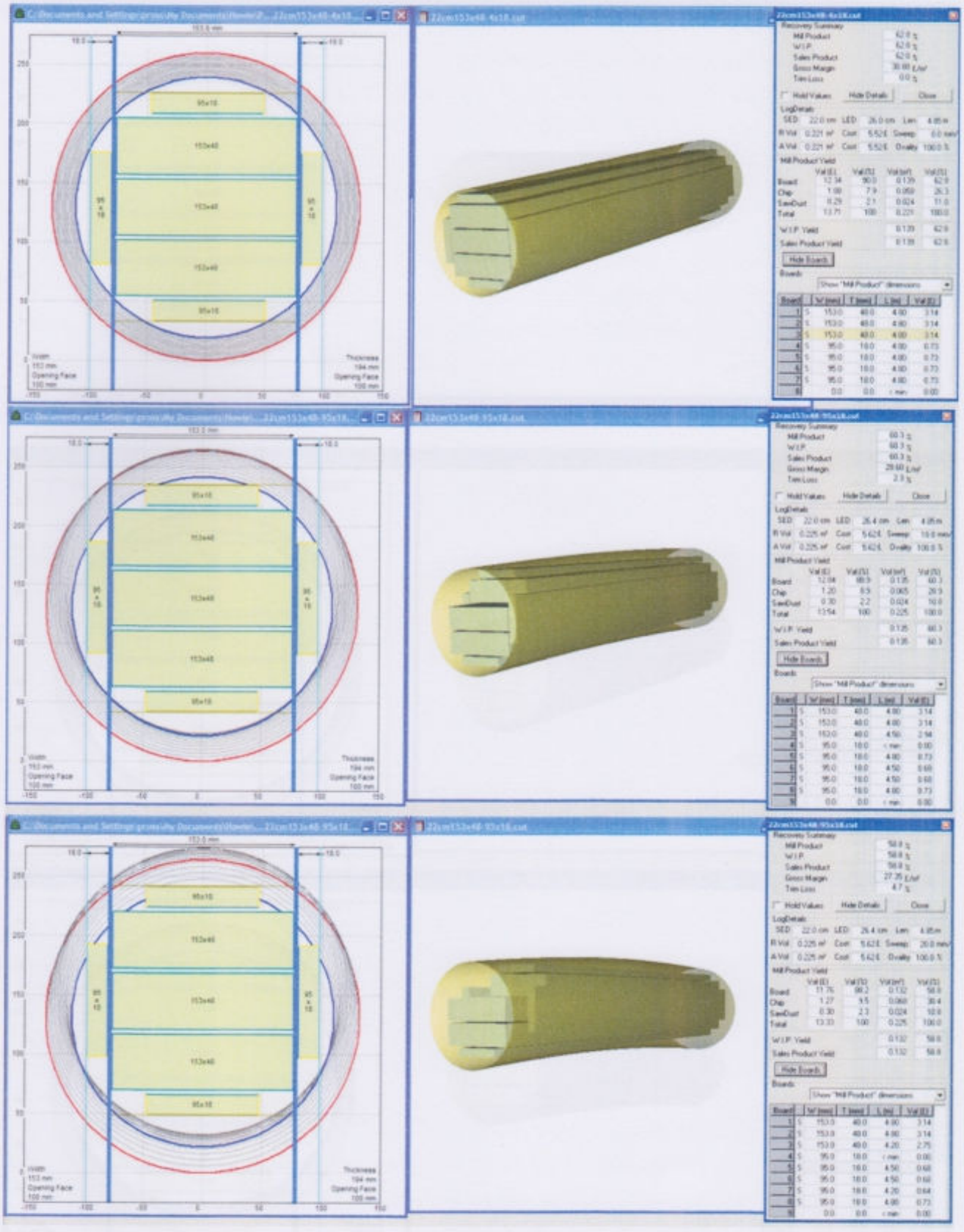
Look at the next series of pictures to illustrate the loss in recovery if we do not have sweep or crook sawing when dealing with non-straight logs. In the scenario, if you can only cut in straight lines, the loss in yield is substantial.

For the illustration, I have used 3 popular sawn products and fitted the patterns into the normal log small end diameters which I would normally use for the centre product. In these illustrations, it is the centre product which is my key product, the side-board is selected to yield maximum volume.

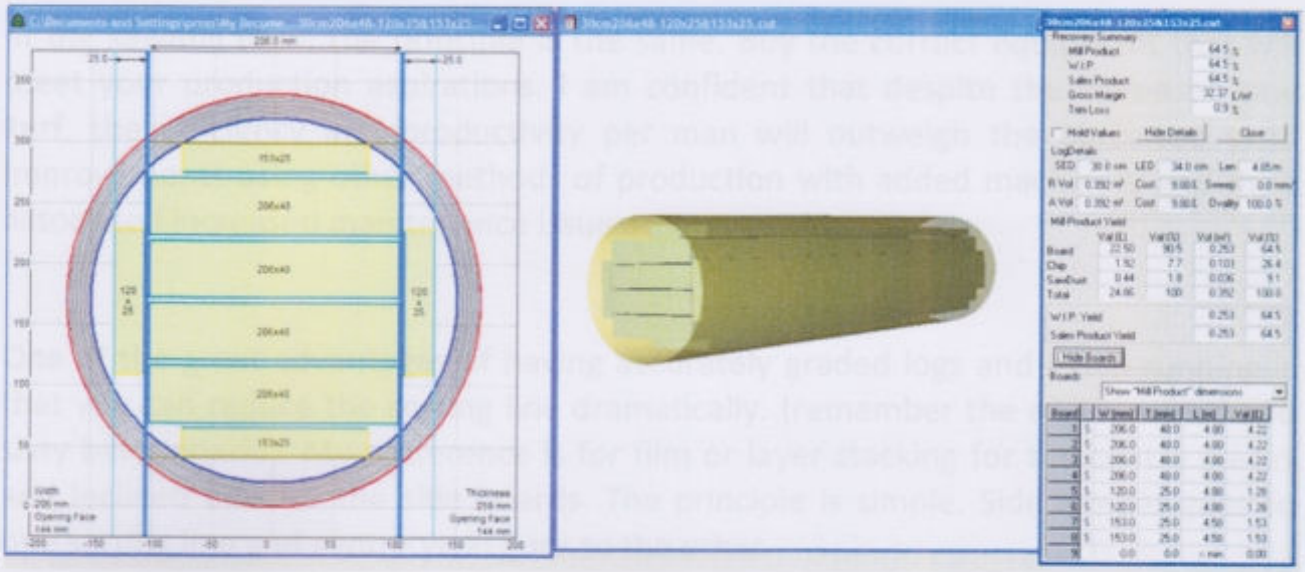
In each series, I start with a straight log, then increase the sweep in 1 centimeter increments. (please remember, this is for illustration only.

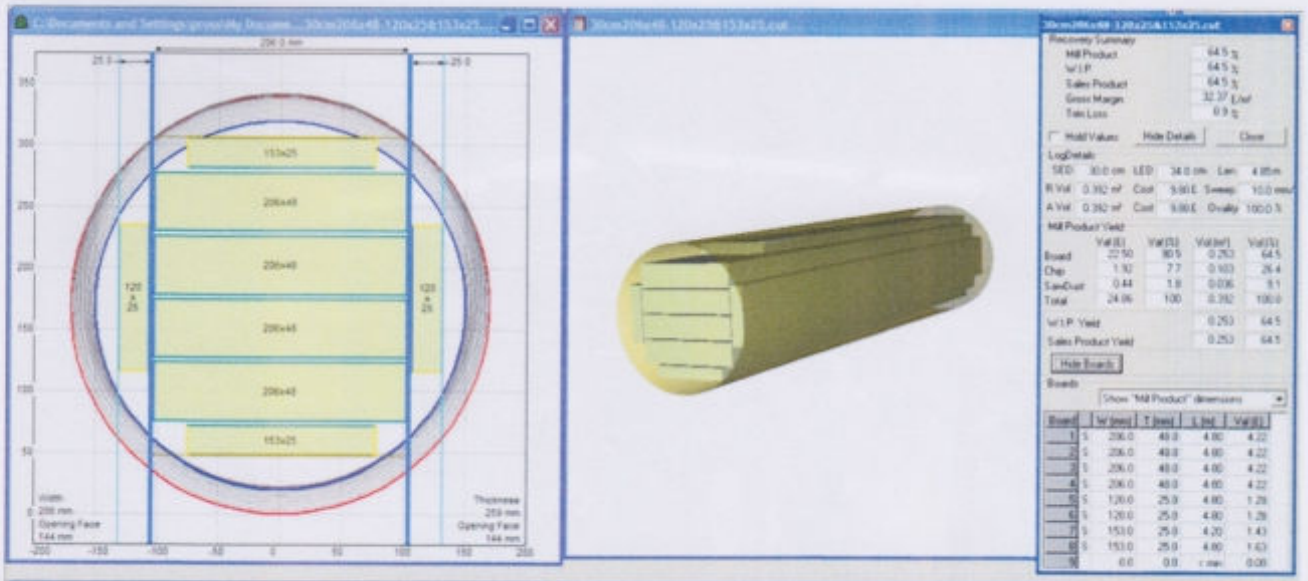


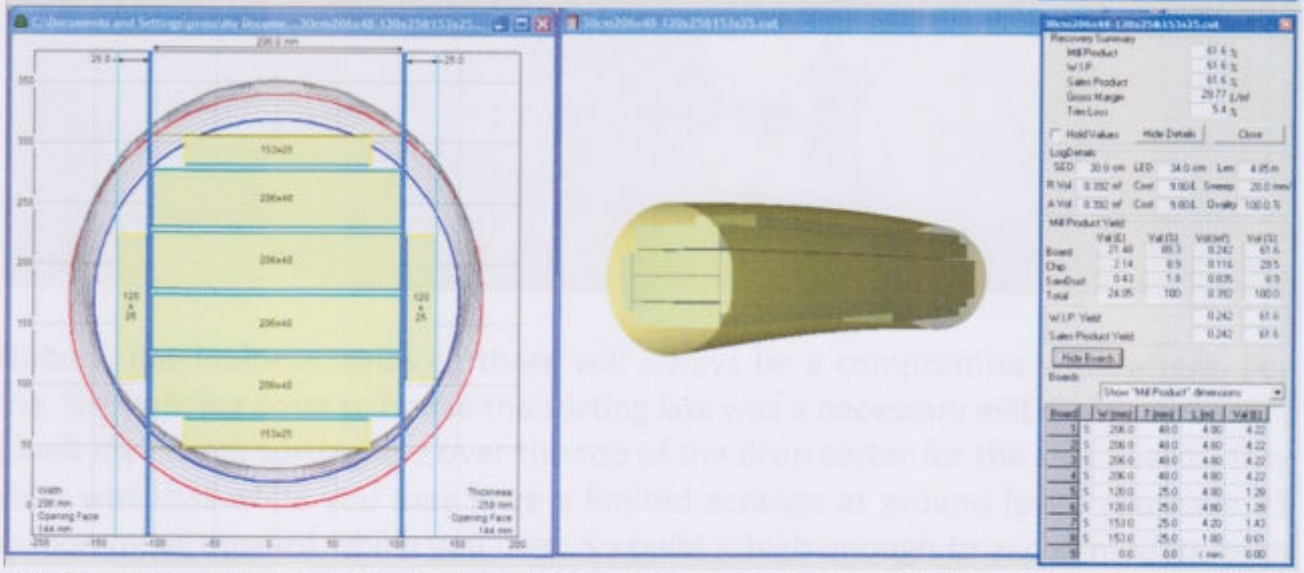
In the above scenario, the log diameter is shown as 14cm small end. In picture 1, both centre pieces reach 4.85meters length, in picture 2, one piece is 4.85 and the second piece is trimmed to 4.5meters. In picture 3, one piece is 4.5 meters and the second piece is now only 2.4meters. The yield drops by 12.9% with the same log diameter but with increasing sweep up to 2 centimeters.



In this picture sequence, the loss in yield with straight sawing is 4%. If we sweep saw, this yield would be recovered.







In this series, the larger log is less affected. The yield loss is 2.9% with no appreciable loss at 1 centimeter sweep.

In the sawmill then, the principle is the same. Buy the correct equipment that will meet your production aspirations. I am confident that despite the increased saw kerf, the efficiency and productivity per man will outweigh the perceived yield improvements using other methods of production with added machinery and their associated increased maintenance issues.

One of the great advantages of having accurately graded logs and batch running is that you can reduce the sorting line dramatically. (remember the one hundred and sixty bin scenario). My preference is for film or layer stacking for the centre pieces and inclined bins for the side boards. The principle is simple. Side lumber goes to one sorting line and centre yield goes to the other.

Nobody has limitless funds so there will always be a compromise somewhere. For me, the building costs to house the sorting line was a necessary evil. For that reason, I built my centre sorting line over the top of the drop sorter for the side boards. (My view was that while you may have a limited acreage at ground level, you have 93 million miles upward which you own. So build it high enough to accommodate both plants with the same ground footprint.

With careful log grading, I was able to predict that ninety five percent of centre yield products would produce wane free items, only a very small % would have wane on

one end. Unlike traditional sorting lines I have seen where the operator is placed at the bad end (waney end) of the production, I placed my guy at the good end. The reason was that at the good end, there was relatively few pieces he would have to intervene in. When the line is running at 200 pieces per minute, (over 3 pieces per second) the man simply doesn't have the time to handle many pieces. In my solution, he only sights the bad end and if there is some wane he pulls it to a mark along the side of the chain for it to be automatically dropped to the bin below. (see picture of grading marks)

The film sorter should have at least 6 films split into 4 sections. Again my idea is that once you have singulated the timber sections, keep them that way. Don't throw them into a pile and then unscramble them again. It is a needless operation and causes untold damage to the timber.

Key to success of the lumber sorting is to ensure that the stacking equipment can handle the volume in all types of production. This will inevitably require two high speed stackers. Again to keep the labour costs down, invest in automatic pin placement equipment. 5 guys loading the pin holders will cost you over £100K per year. That money is gone and you have to buy the labour again every year. Automatic pin handling will cost £2-300K but the payback is 3 years, a "no brainer" in my opinion.

Part 5

What then have I learned in my 40 years? Well for a start, Jimmy Smith was wrong when he said "they will never be able to replace our eyes," Modern scanning has certainly superseded that scenario. Selecting the best cutting pattern has not changed but with high speed lines it is even more critical that these patterns are selected carefully as a bad pattern can lose you a lot of money *fast!*

My idea is to keep it simple with a maximum of three patterns per log diameter. Stepping outside this ideal will cost yield, but of course again, what good is yield if you cannot sell it. Sales teams are more and more in control of the sawmilling process. Sizes we would have laughed at in the past are now the norm but everyone must understand the cost of it. Can you cut 181mm x 26.55mm? yes you can. It is the wrong question! Let me illustrate with a wee story my brother Robert used to tell.

"Can you punch a policeman on the nose?" ..... "Yes you can, you just make a fist, walk up to the policeman and swing your arm and you will have just punched the policeman on the nose!" ..... "It is of course the wrong question. The correct question is *"should you punch a policeman on the nose?"* ..... "NO! there will be a price to pay, you will likely go to court and be fined or jailed, there is always a cost for the action you take. So in any decision you have to make, count the cost first, this is informed decision making. If you want to pay the price then you can *punch a policeman on the nose."*

So again, can you cut 181mm x 26.55mm? yes you can. What is the cost? what are the benefits? Once you have the answer, make an informed choice.

What method of processing should you use? Let me illustrate with a wee story my brother Robert used to tell. "Can you punch.....?

So there you have it. What is it the correct solution? What is it the most effective solution? What is it the most profitable solution?

You have to decide.

So.

What will you do now?

Here is what I did....

For me, my time is nearly up in this sawmilling game, I have enjoyed it and met many interesting people. Thanks for reading my notes and I truly hope it has sparked some debate. Life would be intolerable if we all agreed on everything.

Peter Ross

April 7, 2010