Swing High, Swing Low

Arwyn Morgan compares and contrasts two popular mills, the Peterson and the Lucas.

Significant new methods have developed in sawmilling over the past few years. It wasn’t so long ago when circular rack benches with insert teeth were quite common. Then more and more mills transferred to bandracks, most of which were supplied by Stenner and Robinson’s. The larger mills generally had large bandmills capable of breaking down even the largest logs with ease. But things have changed. Many of the estate and large sawmills have closed and a new breed of sawmiller has developed. Very often the new breed uses mobile sawmills. These come in various forms, generally using either a wide or narrow bandsaw blade. Such mills are highly efficient and capable of quality work, but they do have their problems. For wide bandsaws, if your saw doctor isn’t very good, you will never get any production, while with narrow band blades, it is often very difficult to get good accurate production especially with knotty timber.

Yet for all their difficulties, bandsaws remain an efficient means of breaking down sawlogs. Yet although the smaller mobile sawmills tend to be able to cut a wide range of tree sizes, the more specialist industrial sawmills are increasingly only able to utilise a smaller and smaller sawlog.

Whilst here in Britain we’ve tended to mostly use bandsaws, the rest of the world regularly uses circular saws with one, two or three blades, which are able to cut logs, producing square edged boards in one pass. But perhaps the most radical development over the past few years is the swing blade mill.

There is quite a bit of controversy as to who first invented them, but this is not the time and place to enter that debate! One thing is for sure – more and more are being used throughout the UK, and potentially they will soon compete with industrial machines.

There are four main brands available; these are the Lucas, Peterson, Forestor and Brand X.

The Lucas originally comes from Australia, and its British dealer is Fuelwood. The Peterson originates from New Zealand and its local dealer is Loglogic. Forestor is quite similar to the Lucas, and Brand X is an American make, so far not seen in the UK. The major contenders are Lucas and Peterson, so we will mainly discuss their relative good points and their not so good aspects.

The Lucas range of saws is basically composed of one design in several different sizes, whereas the Peterson range is made up of several designs – the all terrain mill, winch production frame, Loglocust and the new automatic winch production frame. Therefore when comparing prices it is good to compare similar models.

The Lucas mills are similar to the Peterson all terrain mill. The Loglocust is a swing blade mill driven by a chainsaw engine. The winch production frame mill is a more sophisticated mill, whereas the recently developed Automatic WFP is a high production model.

The basic principle of a swing blade mill is that you use a tungsten tipped circular saw blade, and when this blade is horizontal you cut by going foreword through the log. Upon completing the cut, by switching a lever, the blade is swung to the vertical, cutting the log as you pull it back through the log. Thus in effect you are either cutting a fully square edged or partially edged board each time. The overall benefit of this is that less time is spent handling timber and resawing: rather dimensions can be accurately sawn straightaway. In the pictures I’m cutting up a largish (40+ diameter) grand fir log. Now, grandis is not the sawmillers’ favourite as it has the nasty habit of growing full of stress. Once these stresses are released during milling, all sorts of weird and wacky things happen. I’ve seen 4x4’s bend and snap in half, and even the machinery being brought to a standstill. Yet when cutting with a swing mill it is as if by doing the two cuts you seem to release the stress in an organised way. Hence the final sawn timber maintains its shape better than when I would cut on a bandsaw and resaw. The cut seems to be more uniform, and although many boards distort, upon being properly stacked and stickered, the distortion soon disappears.

The main problem with swing blades is that you do lose a lot of wood in the saw kerf, but as the cutting is very accurate, even in knotty timber (as long as you sharpen the blade regularly!) that wastage doesn’t seem to be so much, especially as, when cutting such timbers with a bandsaw, the thickness can...
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Large cant sown on the Peterson to remove defects from the heart area of a grandis log.

varies considerably.

Swing blade mills were originally conceived to operate in tough inhospitable places with limited facilities. To this end they have been successful, and basically will do everything that the manufacturers claim they can do, yet it should be remembered that the conditions under which manufacturers make their claims are very different to the conditions contractors would have in the real world.

All the manufacturers stress how easy it is to cut large logs with their mills, yet only Brand X stress their mill’s ability to easily handle smaller logs. Perhaps this is because they are the only company that really has put work into developing a good dogging system. Generally the sawyer is expected to place his savlogs upon notched bearers. Although satisfactory for larger logs, this is not totally successful as the logs can move, especially when nearing completion. Myself, I have adapted the dogging system originally developed for the Trekkasaw, as this provides very positive dogging of both large and small logs.

Maintenance tends to be very minimal. As the blades are tungsten tipped they are generally sharpened a few times each day, and as this only takes a few minutes to do, it is no great burden. The sharpening merely requires a mini grinder driven by a 12 volt battery – very easy. Caution should be exercised so as not to overheat the blade, as if this is done they should be re-hammered by a saw doctor.

All of the mills offer the option of providing a large slabbing bar. Basically the circular saw blade is taken off, a chainsaw drive sprocket is installed with a chain and large guide bar. The resulting configuration can then cut very wide slabs – some up to 1.5 metres; this then offers the option of being able to cut valuable decorative wide boards. Unfortunately many of these slabbers are restricted as to how thick they can cut slabs, to generally what the circular saw can cut, but recently at certain shows in New Zealand Lucas were showing a slabber that could cut 14” thick slabs. Slabbers are generally available either as clip-on slabbers, to existing swing blade mills, or dedicated slabbers. Generally the dedicated slabbers run at a faster rpm, and therefore cut faster.

A general point about slabbers is that, compared to a large industrial bandmill, they are very slow, but they offer the capability where the need arises. Care needs to be given that the slabber is not forced too hard as this will result in a board of varying thickness. Also the chain should not run too tight otherwise the bar’s life will be seriously shortened.

At the end of the bar is an auxiliary oiler to provide extra lubrication. It seems that only Forestor have given this serious thought: instead of merely relying on gravity to feed the oil into the bar, they have fitted what can best be described as a small garden spray oiler, so, with several pumps, pressure is built up in the oil container. As the oil is under slight pressure it ensures better oiling of the bar and chain – essential considering that the bar is over 5 feet long! On a further note, many users of the slabber have mentioned that if a simple hand winch system was used to pull the saw through the log it would make life a lot easier. Perhaps manufacturers should take note!

The basic workmanship of both Lucas and Peterson is of a high quality, yet it seems improvements could be made. The materials used for the Lucas tend to stick and corrode, but the mill itself is very easy to work on, only requiring a 13mm spanner and an allen key. Indeed very little goes wrong. The Peterson is made of stainless steel and aluminium. It is highly durable, yet the manufacturers have used a combination of both metric and imperial fixtures in it, thus creating more difficulties in replacing certain parts in the future.

It seems that experienced users can move the saw for the next cut slightly quicker on the Lucas than the Peterson, yet if you want to cut a double width board, it is far easier to do so on the Peterson, as it merely involves removing a guard instead of having to turn the whole saw around as you would do with the Lucas.

Both systems can easily cut long lengths. In fact my own is set up to saw 45’ lengths. Due to the raise and fall system on the Peterson this can easily be done by one person, whereas on the Lucas for cutting such long lengths in practicality you need two people.

With the Lucas the water delivery system easily clogs up*, and with long term use in practical conditions the frame tends to become sloppy. With the Peterson you need to be especially careful with the rails, as they are all too easy to damage.

Resawing can easily be achieved by setting up the piece to be sawn in a partially sawn log; likewise extremely hard woods such as knoty yew are easily sawn with accuracy. When cutting, various options are open to the miller, as he can continually change the type of saw material produced: one minute he can quarter saw, the next he can cut a cant to remove defects. Just like this grandis log I’m cutting, having cut 1¼” x 8” boards, as the heart area contains juvenile wood and longitudinal shake, this was cut out as an 8” x 8” which will be treated and used as a post.

The swing blade-sawing concept is superbly simple in its idea. It is highly efficient and adaptable, yet many of the users can think of extra systems which could increase its role in the world of wood, such as a circular rip bench for splitting and pointing posts, a better system to deal with sawdust extraction and the winch to pull the slabber through large logs already mentioned. Other possibilities are deeper slabbing depths, ie 20", to quarter large logs to be resawn on a bandsaw, and an end dogging system to simplify the milling of smaller timber.

Already swing blade mills are used in their own right or used to complement existing sawmill equipment. It will be interesting to see the developments in this sawmilling system over the next few years.

*Fuelwood comment that this is down to the user: if clean water is used, and sawdust contamination of the water tank is prevented, they say there should be no major problems.

Fuelwood (Lucas) 01926 484673
Loglogic (Peterson) 01884 243699

Forward horizontal cut, and return vertical cut on the Peterson.