

## Comments on Saw-Dry-Rip (SRD) by sawmilling expert Dainis Dauksta

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Cutting patterns can profoundly influence drying distortion of timber. Across much of Europe from France to the Baltic region, sawmills have traditionally relied on sawing hardwoods 'en boule' or 'through and through'. Logs are broken down by making parallel cuts across the transverse end face and down the length of the log. For drying, stickers are then placed between the resulting full width double waney-edged boards to give the appearance of a 'reassembled' log. This method of drying is still standard practice for hardwoods across the world, but the technique can also be used for softwoods. Relatively large sawmills in southern Germany sometimes air dry some of their softwoods en boule and it may be one practical solution to the problem of drying British conifer timbers with their widely varying radial properties. Figure 1 shows Welsh-grown Douglas fir logs which have been sawn, stacked en boule and successfully air dried.



*Figure 1: High grade Welsh grown Douglas fir cut 'through & through' then successfully air dried*

Although the three centre Douglas fir boards in Figure 1 contain both juvenile and mature zones, the juvenile core is bound within mature zones along both edges thus balancing drying stresses and reducing distortion.

The SDR or en boule methods are unlikely to be taken up by high volume softwood sawmills in Britain for producing joinery or other high-grade timber but the techniques may appeal to smaller processors who wish to differentiate their products and sell high grade softwoods into niche markets. Bespoke sawmills may have some advantage over volume producers; they often use horizontal bandsaws which by their design allow through and through cutting. Traditional en boule drying of softwoods may offer relatively easy value adding opportunities for small sawmills seeking specialist markets.

When building drying stacks there may be scope to select out centre boards which include pith and much of the juvenile heartwood; these are the boards that are most likely to twist and induce distortion within stacks. Large drying stacks of softwood do not necessarily need to be assembled en boule; randomly distributed double waney-edged boards may dry more successfully within a stack which is randomly distributing drying stresses; this is one area that needs more study. **The most important factor is that boards are not resawn whilst 'green'** in a cutting pattern which encourages distortion when different wood types interact asymmetrically such as when juvenile corewood is included on only one side of a board. Figure 2 shows a stack of 30mm thick larch sawn 'through and through' and kiln dried (under restraint) en boule, this timber has remained straight and is ready for edging and dimensioning.

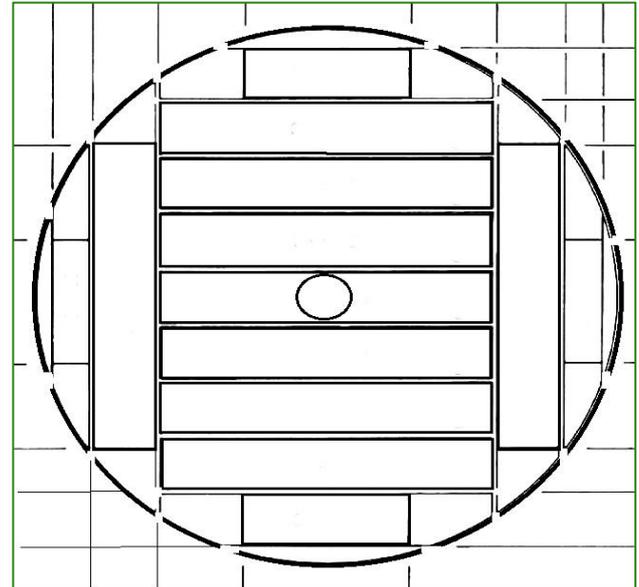
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*Figure 2. 30mm thick larch sawn 'through and through' and then kiln dried under restraint.*

However, there is at least one medium sized Welsh sawmill using the 'MEM Teletwin' saw which because of its between centres design is ideal for sawing full width boards from either side of the juvenile core. This topic is worthy of more study especially as softwood sawmilling becomes more polarised between high volume and bespoke processors. Figure 3 below shows a pre-edged, centred-cant sawing pattern which also produces boards with roughly symmetrical properties which have the best chance of drying with low degrade. The MEM Teletwin can use this cutting pattern. More information about the MEM Teletwin here; <https://www.memwood.com/gb/teletwin.html>.



*Figure 3. Centred cant sawing pattern for SDR method, centre circle indicates juvenile zone*

In Douglas fir spiral grain does not dominate behaviour of the juvenile core therefore centreboards may be left within drying stacks. However, spiral grain is significant in larch juvenile wood and to reduce risk to the whole stack from distorted centreboards, it is better to remove them from stacks destined for high quality products. Double waney-edged boards can be processed through double band resaws or multirip saws for final dimensioning by taking off both waney edges simultaneously. This optimises width of each board and mature heartwood either side of juvenile material constrains the behaviour of the corewood. This traditional method has been studied in some depth and modified by American and Asian researchers with a view to obtaining better conversion yields from difficult hardwoods and fast grown softwoods; it is called Saw-Dry-Rip or SDR.