Veneer producers can cope with cost-price squeeze

by HENRY SPELTER and PETER INCE

A 'Horn of Plenty' awaits veneer producers who attack problems with the right strategies. Reduce wood costs, upgrade products

Products have life cycles. They are developed and refined, they grow, they capture markets and they reach maturity. And, if competing technologies come to life, they decline. To avoid this fate, products must be reinvigorated to meet old needs better or redesigned to meet new needs. Veneered panels are getting this sort of reappraisal now.

The plywood industry has successfully evolved with changing circumstances before. From its origins as a supplier of door skins, plywood spread into construction sheathing markets when gluing advances made it possible. The industry coped with shrinking supplies of large-diameter Douglas fir by adapting technology to peel small southern pine. Today, fighting competition from cheaper oriented strand board, the plywood industry must defend its sheathing markets or replace them. Reducing manufacturing costs and diversifying product mixes are steps to meet this goal.

Many of plywood's manufacturing costs are higher than OSB's, but no cost is more important than that of the raw material itself. Wood is the costliest component because the plywood process is not very tolerant of small and defective logs. As mills turned to smaller logs, they needed equipment to peel them faster because small block sizes hurt lathe productivity. Several measures have enabled mills to peel more small stems: faster block charging to reduce inactive lathe time; more accurate block positioning to reduce waste; higher recovery by reducing spindle size; and faster lathes to raise output.

Smaller logs contain less clear wood and more juvenile wood, which reduces product options.

Far-sighted veneer producers could design long-term strategies around agroforestry, based on fast-growing species such as hybrid poplar. The forest industry has begun to move this way: in 1996, companies planted 120,000 acres (48,000 hectares) of poplar, mainly for pulpwood. But some poplar clones can grow to peeler and sawlog sizes within 13-17 years. This relatively short rotation means that intensive forest management-cultivating, fertilizing, pruning and irrigating-can be done in hopes of recovering these costs before interest costs become prohibitive.

Poplars are ideally suited to farming because this pioneer species is genetically programmed to outcompete brush that sprouts on a vacant site. Intensive cultivation can enhance this tendency, producing stems of large girth and height in an exceptionally short time by forestry standards. And many poplars reproduce vegetatively, giving them a further head start. Pruning lower branches ensures that a large part of the log volume will be clear, straight-grained and more cylindrical.

Typically, by the end of the 13th year of a 200-stem-per-acre plantation, average usable wood volume/stem ranges between 26 27 cubic feet (0.74-0.77 cubic meter). If 90% of the trees survive, they produce more than 360 cubic feet (10.2 cubic meters)/acre annually. This is six times the average net growth on industrial timberland in the United States, and more than twice as much as in intensively managed pine plantations. The expected wood volume is 30% peelers, 40% chip-n-saw logs and 30% pulpwood.

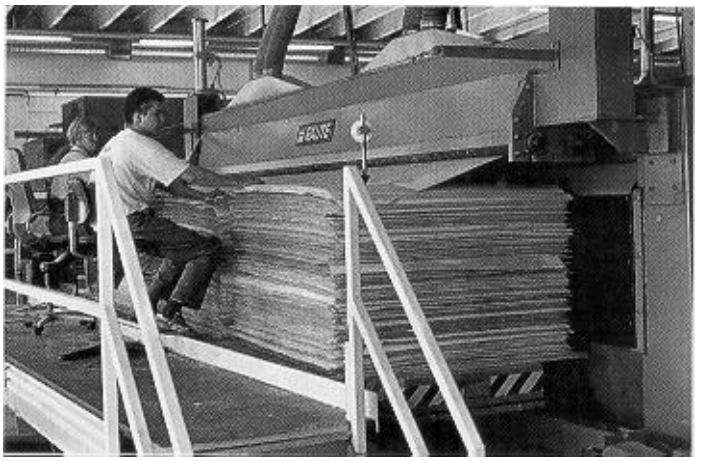
We simulated the expected economics of such a poplar planting as if it had been established in 1985 and harvested in 1998. Final yield at harvest was projected at 376 cubic feet (10.4 cubic meters)/acre/year, or an average wood cost of $1/cubic foot ($35/cubit meter). In the US South, the average delivered cost of pine logs in the same grades and proportions ranged from $1.20 to $1.70/cubic foot ($42 to $60/cubic meter) in 1998.

Fast-grown poplar has lower physical properties than traditional peeler species. Its wood is less dense than pine or fir, and a large part of the wood has juvenile characteristics. A study of 17-year-old hybrid poplar showed its properties and characteristics to be similar to aspen and cottonwood. Pruning these species produces more straight-grained and knot-free wood than found in unpruned pine.

To compensate for poplar's weakness, make panels slightly thicker. Midwestern mills already sell aspen plywood, panels with a uniform, cream-colored appearance with faint grain lines and generally small knots. Sheathing and underlayment grades as well as those used in cabinetry and other sanded applications are sold.

Agroforestry can be part of a long-term strategy, but meanwhile plywood producers must deal with OSB competition in

Fighting competition from cheaper oriented strand board, the plywood industry must defend its sheathing markets or replace them.



sheathing markets. Most mills have tried to diversify into other product lines. One strategy has been to upgrade veneers and make more panels for high-end specialty markets. Another is to peel hardwoods and abandon commodity softwood markets. These strategies can result in oversupplied specialty markets, pushing down prices toward sheathing levels.

As a second alternative, engineered-wood markets offer higher values for veneer. This development is based, ironically, on wood's traditional weakness, its inconsistency. Manufacturers of engineered products use more-accurate sorting to lessen the variability within grades.

The veneer industry traditionally has sorted sheets according to visual criteria centered chiefly around the size, frequency, condition and placement of knots. Within visual grades, however, a large degree of residual variability remains.

Other ways of evaluating veneer including timing sonic waves over a known distance on the veneer surface and inferring wood density by measuring x-ray penetration of the veneer. These techniques make it possible to refine grading of visually sorted veneers and identify those with superior stiffness and strength. These sheets can be diverted to make high-value structural products such as beams, girders and joists, which were traditionally made from sawn lumber.

These evaluation techniques require plywood people to change how they perceive wood. Traditional thinking classed wood species into four groups with prescriptive codes dictating how panels assembled from each group could be rated. This ignored variability within groups, which can upgrade or downgrade performance levels.

More-accurate identification of each sheet's properties allows some share of lower visual grades to be used for high-value products. This enlarges the potential pool of usable wood to species that had been deemed unsuitable for more-exacting applications. More than 180 stress-wave veneer graders are now operating in North America, indicating that a great share of the veneer supply is being graded in this manner.

Fully exploiting this opportunity poses complicating challenges to a traditional plywood operation. Visual and other grading classes multiply the number of veneer sorts to be separated and tracked. Since the way a billet is laid up affects its final properties, layup requires more management effort. The location and amount of weak veneer permitted in a layup is a variable that depends on the load a product is designed for and on whether the load is applied in a flat or edgewise direction.

Existing plywood presses are ill-suited to making the thicker, longer billets required for structural members. But the effort to make them is rewarding because the end product produces a much higher return than sheathing. Mill people should review and evaluate their raw material supply to determine if there is enough good-quality wood to justify full engagement in the engineered wood market, or just enough to become a satellite supplier to an engineered wood plant. Some small-diameter trees have been found to yield surprisingly large shares of high-strength veneer suitable for manufacturing laminated veneer lumber.

Ultimately, obtaining a higher-value output mix in a veneer operation depends on the ability to identify overlooked value in wood. Lower-cost OSB technology will dictate commodity sheathing prices. A plywood plant that relies on sheathing output will be at a disadvantage. If a plant can produce more higher-valued products and relegate sheathing to a secondary product, sheathing can play an important role as a source of demand for veneers that cannot be used in structural or visual grades. WT

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