
ORIENTED-STRAND BOARD

The Wave of the Future — For the Building Trade

by Linda Ashton

Move over, plywood. Oriented-strand board is here.

It's less expensive. It's as durable. It has as many uses. And it is the wave of the future.

"Oriented-strand board is a direct substitute for plywood," said Jerry Buckner, plant manager for the Martco oriented-strand board plant in Lemoyen.

OSB, as it is commonly called, is a structural panel made of reconstituted wood. Wood products authorities have hailed OSB — a waferboard — as one of the major advancements in wood utilization technology this decade. It will take its place in the wood products market alongside plywood, which gained widespread acceptance about 20 years ago.

But the product is not the only trend-setting aspect of the plant, located about 15 miles south of Bunkie. The plant itself could serve as a prototype for other plants in the South, Buckner said.

The Martco plant uses hardwood exclusively — 28 to 30 different species found on the firm's 140,000-acre holdings near Lemoyen. "We have over one million cords of hardwood pulpwood on our forestlands down here. And they are virtually low-quality or low-value hardwoods," Buckner said.

The use for low-quality hardwood was once limited to pulp chips. But Peter Koch, then at the U.S. Forest Service Southern Experiment Station in Pineville, worked to resolve that prob-

lem. Koch and his research team devised a method to use the low-quality hardwoods. And the Martco Partnership, based in Alexandria, was interested.

"We did several feasibility studies and it looked like a good idea. It was a means of using these hardwoods and making them into a resalable product," Buckner said.

The raw product, made of wood such as sweetgum, ash, pecan and hackberry, is sliced into half-inch by three-inch strands, bound with phenolic resins and pressed into boards.

The OSB process begins with the delivery of hardwood logs, which are put into storage. "We try to use them on a first in, first out basis," Buckner said.

After the logs are cut into 8-9 foot blocks, they are fed into the drum debarker where they are jostled around until the bark is removed and used for the hot oil system which heats the press, Buckner said. The blocks then go to the waferizer decks. Eight foot blocks are cut into three short pieces for the disk waferizers.

Nine foot blocks go to the crosstie processing machine where they are run through a shaper-lathe removing the strands for OSB production and leaving a prescribed size of crosstie at the center.

The shaper-lathe was developed by Koch in his hardwood utilization lab. "This is the first commercial machine based on his patent," said Johnny Mar-

tin, vice president of manufacturing for Roy O. Martin Lumber Co. and part of the Martco Partnership.

Crossties are taken to the Martin creosoting plant in Alexandria. After the strands from the waferizers and the shaper-lathe are transferred to one of four green storage bins, they are metered into one of three rotary dryers where the moisture content is reduced to about 4 percent from almost 100 percent, Buckner said.

Once out of the dryers, the strands are rotary screened with the finest materials removed to fuel the dryers. From the screens, they are metered into one of four dry storage bins. Four resin blenders apply about 5 percent resin solids and 1 percent wax. "The resin binds the strands together and the wax gives it protection from moisture picked up should the board get wet," Buckner said.

The strands then journey to the Schenk former. Four layers — a face, a back and two cores — formed here. The top and bottom faces are oriented in machine direction and the core layers are oriented in the cross direction. Orientation is a mechanical process. Face panel strands are forced through a grid aligning them in machine direction. Special rolls rotate strands from the core pockets, forcing them to lie perpendicular to face-panel strands.

From the formers, the mat is run over a weigh scale that automatically main-

Linda Ashton is a staff reporter with the Alexandria Daily Town Talk.

tains the proper weight so that the pressed board will be the proper density, Buckner said. Overweight and underweight boards are rejected and returned to the core.

The mats are trimmed and separated. They come through the former as a continuous layer of material on individual screens. The mat trim saw cuts out a swath that allows one screen to take off onto the loader before the next mat is conveyed forward.

The 8-foot by 16-foot mats are loaded 16 at a time and charged into the pressure per square inch on the mats. Press platens are heated to about 400 degrees Fahrenheit.

A 7/16ths mat is pressed for about 6-1/2 minutes. The loader then discharges one board at a time to another trim saw which cuts the board into two 4-foot by 16-foot lengths. A crosscut saw trims them to four 4-foot by 8-foot boards.

The panels are graded and stacked in bins. From the bins the 7/16ths panels are sent to a unit turner where the boards are turned to the rough side. "When we are running 7/16ths, we want the rough surface (caused by mat-

forming screens) to be on top," Buckner said. Seven-sixteenth inch boards are used for roofing and the rough surface helps prevent carpenters and roofers from sliding off the boards, Buckner said.

"We have the option of turning or not turning. Quarter-inch we do not. Seven-sixteenths we do."

The boards are moved to the warehouse for shipping — 95 percent by truck and 5 percent by rail. Ninety percent of the OSB is sold as Weldbord by Champion International and the other 10 percent is sold by Martin distributors as Tuff-Strand.

The market area for the product is the South, from Texas to Florida with parts of Oklahoma and Arkansas thrown in, Buckner said. "We have a freight advantage (on product price) over plants in the north. How far up North we go determines how much our advantage is," he said.

The plant has the capability of producing board thicknesses that range from one-quarter inch to three-quarter inch, he said, but the plant only manufactures one-quarter and 7/16ths thicknesses right now.

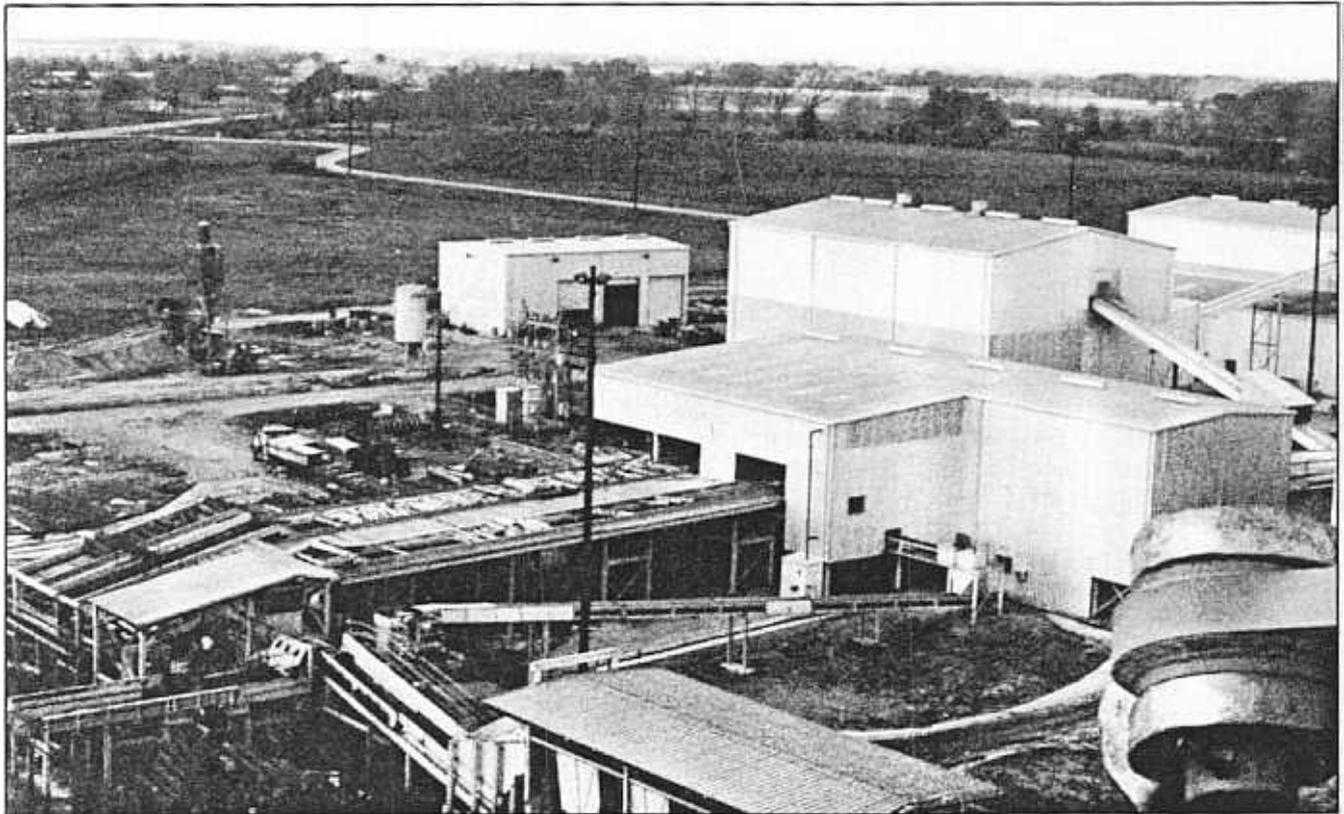
"We built the plant to run basically 400,000 feet a day," Buckner said. Production currently is about 325,000 square feet a day, on a 3/8ths inch basis. "In other words, we take boards 12 inches by 12 inches, 3/8ths inches thick and we make 325,000 of those per day," he said. At full production the plant will use about 38 truckloads of 10-inch diameter pulpwood per day.

The plant is producing about 78 percent of what Martco would like, he said. "We think by February (1984) we will be over 100 percent of our desired quota."

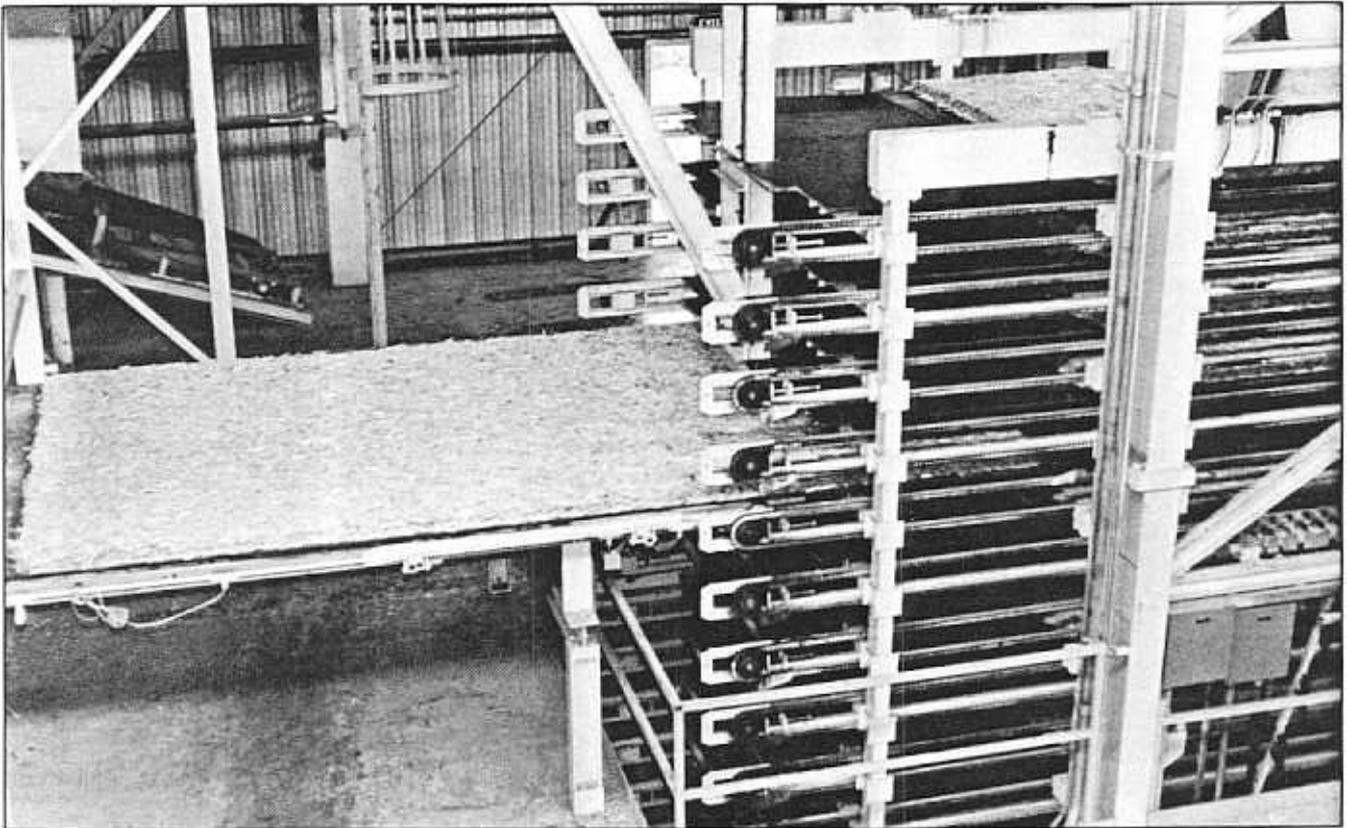
By press time, Buckner said he expected the plant to be running four full shifts, seven days a week, bringing the number of people employed at Martco in Lemoyen to about 180. On a yearly basis, the plant alone generates about a \$6 million payroll, he said.

The first OSB production began in August, about two years after construction on the \$30 million plant began.

Martin credits the staff at the research station with the development and the research of hardwood use that made the plant a reality. "They worked on utilization of low-grade Southern hardwoods



The Lemoyen Martco plant is one of a kind in its total utilization of previously unmerchantable hardwoods.



Sheets of oriented strand board are compressed simultaneously, cooled, and trimmed.

to be manufactured into panels ... we were the first ones to utilize all the research they did."

But the new plant was not without its problems. Reports of frequent fires in the mill cast some doubts about this new-fangled process.

"We had some problems with fires," Buckner said. "We found that our dry bins had some metal wear strips which were causing friction. We were having a fire about every four days in one of the dry bins. About two months ago, we removed the metal wear strips and put in a plastic-type material. We have had no fires since," he said.

The staff is still working some of the remaining bugs out of the system. "The down time we are running is fairly low; our actual runtime is very satisfactory at this point," Buckner said.

Buckner believes the future for the plant looks good. Construction has begun on a sawmill adjacent to the OSB mill with the projected open date June or July 1984.

The most desirable species for the OSB plant is sweetgum, a very low value lumber for which the sawmill will

not compete. One of the least desirable species is oak which the sawmill will utilize. "You might say the balance of the two mills will be good for each other," he said.

For example, Buckner said, if a large ash pulpwood log that can be used for lumber arrives at the OSB plant, it will be kicked over to the sawmill. A log that is too small for the sawmill will be directed to the OSB plant. Cypress, which is one of the species on Martin land not used for waferboard, will be used at the lumber mill, he said.

Martin indicated that although the plant could run with pine if so desired, it will run exclusively on hardwood because pine is not grown in this area.

Buckner foresees a trend in the South for waferboard plants. Conversion to at least partial use of hardwoods for waferboard is coming, he said. A Texas plant is converting for production using Southern pine, Buckner said, but the raw material costs are greater than hardwood.

OSB production is quick. It takes a couple of hours to run through the entire process, and barring any holdups in

green or dry storage bins the process could be completed in about an hour, Buckner said.

Fewer people are required to run an OSB plant than a plywood plant—another factor that holds down cost. "The basic advantage we have over plywood is much lower wood cost and a lot fewer people. To make the same amount of plywood, it would take in the neighborhood of 250 to 300 people," Buckner said.

Although the market price is a little soft because of the time of year, Buckner said the product is moving well and receiving public acceptance.

"We have a little resistance from the guy who's been using plywood for 20 years. Why should he change?"

The main reason to change is the cheaper price, he said. The board passes the same certification and requirements that plywood does, and in some cases, provides a slight structural advantage. "You are not really taking a risk," Buckner said. Waferboard has a little better stiffness in both directions and can be used in a lot of places where

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plywood has to go strictly across the span. Waferboard can be used in either direction.

It can be used for roofing, pallets, crating and by do-it-yourselfers for projects like building a doghouse or lining a garage. Potential markets exist for paneling cores and siding, he said.

“There are still some manufacturers who believe you cannot use Southern hardwoods. But we have proven very satisfactorily you can make a good product out of these Southern hardwoods, Buckner said.

“We are very proud of our product and proud of our plant.”

