MILL profile:

Riverwood International

Macon, Ga.

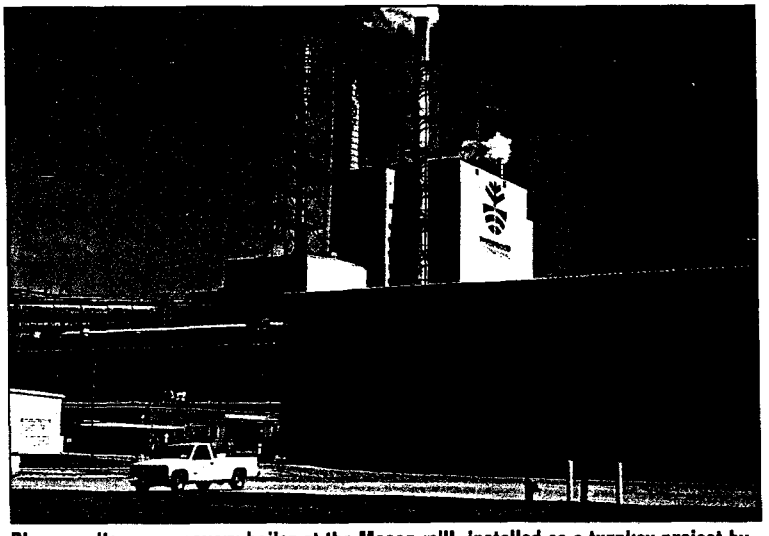
Conversion to coated paperboard, new recovery boiler and evaporator system highlight changes at former Macon Kraft mill

BY KELLY H. FERGUSON, *Deputy Editor*

Riverwood Re-Lifes Macon Mill with $250-Million Modernization

Editor's Note: This article is the first of a two-part series on Riverwood's modernization of the Macon, Ga., mill. The second part, to appear in a fall issue of P&P, *will profile the completed coated board machine, as well as environmental improvements made by the modernization.*

RIVERWOOD INTERNATIONAL CORP.'S 1992 PURchase of the former Georgia Kraft mill in Macon, Ga., was a strategic move for the company, but it has meant much more for the mill, its employees, and the community. The mill, originally built in 1948, is in the midst of a $250-million paper machine conversion and modernization project that will equip the mill to produce specialty coated board product and yield environmental improvements, product quality improvements, and better community relations. This $250 million, added to Riverwood's $220-million purchase price, means Riverwood will have nearly $500 million invested in Macon as the capital project concludes this month.



Riverwood's new recovery boiler at the Macon mill, installed as a turnkey project by Ahlstrom, is a low-odor unit burning 3.5 million lb of black liquor solids/day (staff photo by Kelly Ferguson).

The modernization project consists of a major conversion of the mill's No. 1 machine; an overhauled recovery area, including a much-needed new low-odor recovery boiler; and changes in the stock preparation area and whitewater system. However, the changes on the machine—converting production from its traditional linerboard to Riverwood's AquaKote coated carrier board—and the training of employees at Macon are what has made the purchase strategic.

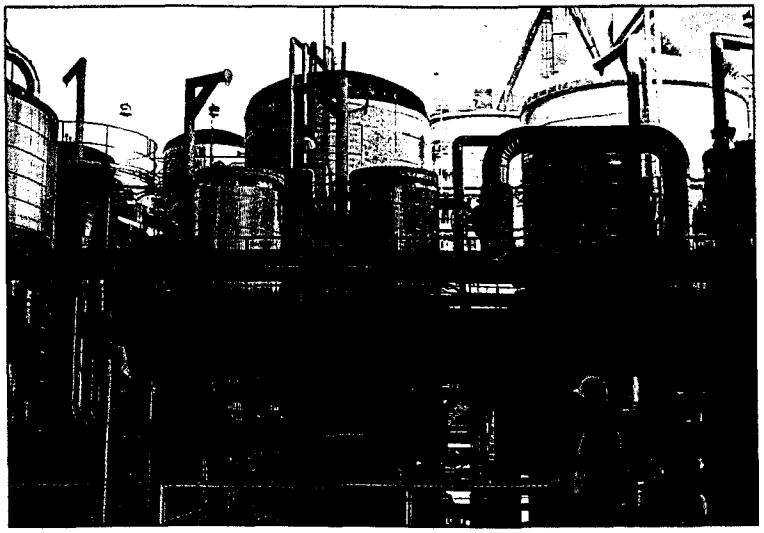
According to Thomas H. Johnson, president and CEO of Riverwood, "One of the key reasons we acquired the Macon mill is its long history of papermaking expertise and the employees' work ethic. However, we recognized there would be a cultural change with a new owner and shifting from a commodity product (linerboard) to a high-value coated boxboard. We put a significant effort into training."

A majority of the project has been completed. The new recovery boiler and related equipment are already in operation. The mill has produced more than 20,000 tons of coated board in the first two months since startup of the online coater, with additional capacity slated to come online in the fall with Phase 2 of the expansion.

THE STRATEGY AT MACON. The Macon facility was one of the first mills built by Georgia Kraft, a joint venture of Mead Corp. and Inland Container Corp. (later Temple-Inland Inc.). The other original Georgia Kraft mills were at Rome, Ga., and Mahrt, Ala.

Construction of the Macon mill began in 1947, and the No. 1 Beloit linerboard machine was started up in 1948. In 1972, the mill converted to high-yield pulping and installed additional refiners, bringing pulp mill production up to about 850 tpd from an original production rate of 600 tpd.

The first major expansion for the mill was in 1980, with the addition of the No. 2 linerboard machine, two recycled-fiber lines producing a to-



Derek Hutchison, Riverwood's director of manufacturing, views the new evaporator system, a turnkey HPD system with two crystallizers and five-effect evaporators capable of producing 1,800 gpm of black liquor with approximately 75% solids going to the recovery boiler (staff photo by Kelly Ferguson).

Utility operators Carl Dixon (foreground) and Jackson Davis control the recovery boiler, bark boilers, and power boiler from an almost space-age control room, with controls provided through a Honeywell TDC 3000 touch-screen DCS.

tal of 600 tpd, a second bark boiler, and a No. 4 turbine generator.

In 1988, the joint venture was dissolved. The arrangement between the two partners was that Mead would take the Mahrt mill, Temple-Inland would take the Rome mill, and the Macon mill would be sold to the Australia-based Pratt Group.

In 1989, Pratt underwent a modernization program at Macon, adding a 1,000-tpd Black Clawson Chemi Washer, a third recycled-fiber line to increase production to 800 tpd, and a top-wire former on the No. 2 machine.

In 1992, Pratt announced it was searching for a buyer for the Macon facility. At about that same time, Riverwood management was analyzing the market for the best way to expand the company's capacity.

"Our coated board business falls into three different operating groups: a division that designs, manufactures, and installs packaging machinery; a network of carton plants around the world that convert our coated board; and the mill system that produces that board," Johnson says. "Our strategy has been to increase production based on what we see as healthy growth rates for machinery-based packaging. However, we were at maximum capacity at West Monroe almost three years ago.

"We've always held a strong position domestically, but we've been weaker offshore. The approach we've taken has been to secure the downstream market first, acquiring a number of packaging machinery companies and converting plants in the last four or five years. With some portfolio changes and by divesting some of our holdings, we've redeployed our assets, especially going after the European and Far East markets by purchasing some converting plants."

All these efforts led Riverwood management to analyze the most cost-effective method for increasing capacity in solid unbleached sulfate (SUS) board. A number of alternatives were considered:

- Converting one of the linerboard machines at Riverwood's Otacilio Costa mill in Brazil
- Adding a new, large No. 8 machine at West Monroe, La.
- Building a greenfield mill
- Developing joint ventures with other U.S. companies
- Acquiring existing mill properties.

According to Johnson, the Macon mill was a good fit. "As a linerboard mill, it is somewhat small, especially when comparing machine size to those in world-class linerboard mills today," he says. "But as a specialty boxboard mill, it is very large. The machines are comparable in size to our Nos. 6 and 7 machines at West Monroe."

"From a financial standpoint, our reasons for purchasing the Macon mill had three dimensions," Johnson says. "The first was that our analysis showed Macon would be a very low-cost producer in terms of capital cost/ton of capacity. We will bring Macon in as a coated board operation at less than $380,000/daily ton, compared with many coated boxboard mills that range from $500,000 to $600,000/daily ton. The combination of a good purchase price and the capital required to convert the mill was the right way to go.

"The second was our unique situation of having only one mill site in the U.S. We firmly believe that with environmental permitting issues and skyrocketing capital costs, there will be very few new mill sites. Thus, we believed that to continue growth, we must acquire another mill site. We will, of course, continue investment at West Monroe, but the Macon mill provided an opportunity to acquire a fully permitted site that would be conducive to conversion to our product line.

"The third was the speed of bringing capacity online. We compared greenfield construction with conversion and at the same time realized that our markets were growing and we were out of capacity. Choosing the conversion route has proven to be a good decision. Not quite two years from the date of acquisition of Macon, we shipped product to our integrated packaging plants."

The redesign of the No. 1 machine is being done to produce Riverwood's AquaKote product for the beverage market and PearlKote product for the folding carton industry. The No. 2 machine

will remain dedicated to linerboard (36- to 69-lb range), with production at about 250,000 tpy.

However, Riverwood will also continue to make linerboard on the No. 1 machine until it is sold-out on coated product, estimated by Johnson at about three years. In 1994, the mill expects to make about 50,000 to 70,000 tons of coated board. By project completion, linerboard capacity at the mill will drop by 275,000 tpy and be replaced gradually with 300,000 tpy of coated board.

Johnson indicates that sales of Macon's coated board production will be split evenly between domestic and foreign markets. Linerboard production will remain about 90% domestic sales, mostly serving the independent corrugated markets.

CHANGING THE CULTURE. When Riverwood bought the Macon mill, its first mission was to educate the employees on what the purchase would mean. "We spent three or four months just meeting with employees, at shift changes and at night, explaining what we planned for the entire operation," says Robert Hart, senior vice president–paperboard. "We told them our philosophy—safety, housekeeping, quality, production, costs; in that order. In addition, strong communications between mill operations, project management, key West Monroe employees, and the sales groups developed the base for teamwork, leading to the success of the acquisition and conversion."

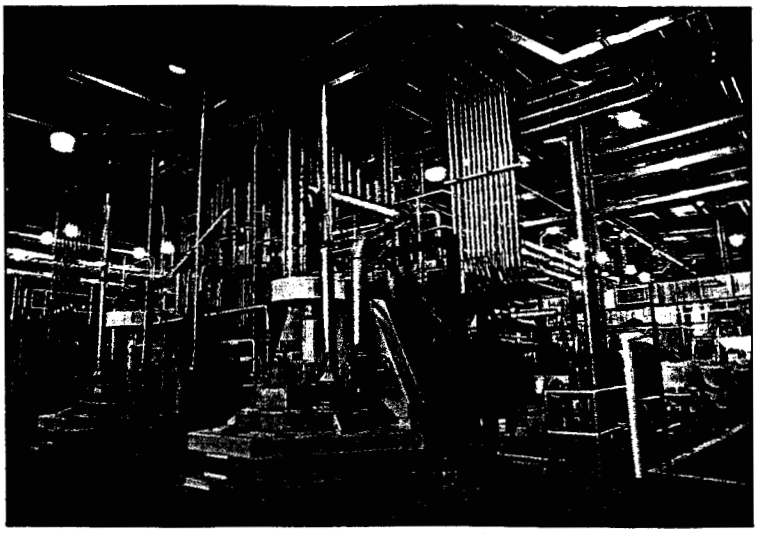
According to Bill Brabston, Macon's new vice president and resident manager, "The key that Riverwood tried to relay to employees was that it would be fair. For example, we put in place a good incentive plan so employees can make more than just their base salaries."

Training—classroom, on-the-job, and offsite—was also a key in communicating Riverwood's goals. "We made the commitment up front to do the training and get the culture and quality right before we started making the product," Johnson says.

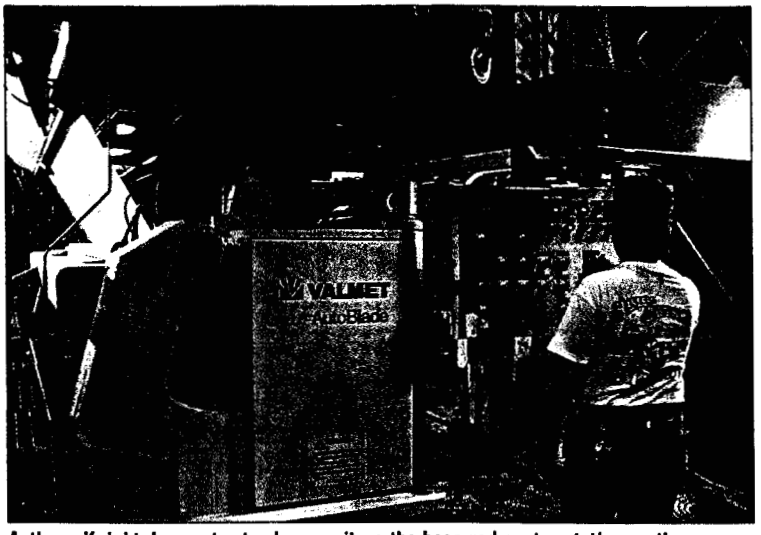
Riverwood spent about 52,000 people hours of training in 1993 and has spent about 23,000 through May 1994. TSI, a training consulting group from Wilmington, N.C., helped develop much of the training for the mill. Another part of the training was a five-week trip for around 100 employees to work onsite with employees at West Monroe, spending time on the floor to become familiar with coated board production techniques.

Brabston and vice president–engineering Don Tatum praise the mill employees for their dedication. "The people here have been terrific about the training," Tatum says. "They put in extra hours and some gave up vacation and days off to attend training sessions. They were always enthusiastic about what they were doing."

ISO certification for Macon will be a major step, according to Brabston. Macon's ISO facilitator, Terry Jump, has spent time at West Monroe to learn some of their methods. (The West Monroe mill was the first in the U.S. to achieve ISO 9001.) Certification of the entire Macon facility is expected during the first quarter of 1995.



An advanced automated coating and additives preparation facility, manufactured by Jylharaisio, feeds coating to the paper machine through a batch makedown system.



Anthony Knight Jr., coater tender, monitors the base rod coater station on the converted No. 1 machine.

"Our employees are enthusiastic about ISO certification," Brabston says. "They see the need for it. If we drive our quality on the ISO procedures, we are going to have a more consistent, uniform quality product."

Community relations has also been a key part of Riverwood's purchase of the Macon mill. "One of our corporate philosophies is active community involvement," Johnson says. "Even prior to the acquisition, we spent time with local government and business leaders, describing our plans for the mill. We worked closely with the state environmental agency to explain our strategy at Macon.

"We also wanted to demonstrate our commitment to the project. With a more than $500-million investment, we feel that we have re-lifed that mill. As such, we are inextricably linked to the Macon community and to its development and improvement."

PHASE 1 EXPANSION. The first project underway after the Riverwood purchase was the reactivation of a new recovery boiler installation and related

equipment. A $90-million environmental compliance project had been initiated by Pratt in 1990 to meet a Georgia law requiring total reduced sulfur (TRS) to be 5 ppm for new equipment and 20 ppm for old equipment by September 1992. In April 1991, however, the mill postponed the project, and the state granted an extension for compliance.

"Even prior to finalization of the acquisition, we requested that Ahlstrom begin preliminary work on the recovery boiler," says Tatum. "Because of the state environmental issues, the recovery boiler was a very important component of the purchase. The state had issued a consent order that mandated meeting compliance regulations by Sept. 28, 1994. With the boiler already running and many of the performance and compliance tests done, we are very confident we can make the deadline without any major problems."

The boiler was a turnkey project by Ahlstrom for a low-odor unit burning 3.5 million lb of black liquor solids/day. The boiler features an almost space-age control room, with controls provided by a Honeywell TDC 3000 touch-screen system. Boiler control room operators operate the recovery unit, bark boilers, and power boilers from that center and had previously only used pneumatic controls on the existing equipment.

The recovery boiler was first fired on Feb. 28, 1994. Ahlstrom also provided a lime mud drying system and precoat mud filters in the lime kiln area to reduce emissions and increase capacity.

The evaporator system, also a turnkey project, was provided by HPD. It is a state-of-the-art system with two crystallizers and five-effect evaporators capable of producing 1,800 gpm of black liquor with approximately 75% solids going to the recovery boiler. It was started up in mid-January 1994. A Modo-Chemetics NCG system was installed to capture and combust foul odors from the evaporators, pulp blowtanks, turpentine tank, and steam stripper. Riverwood also performed a major revamp of the power supply and distribution system at Macon.

According to the mill, environmental improvements as a result of the new recovery boiler and evaporator system include reductions in sulfur dioxide, carbon monoxide, and TRS compounds. The TRS compounds are the pollutants that the recovery boiler was mandated to reduce by regulation.

Project engineering for all phases of the coated board conversion was provided by Rust Engineering, and the general construction contractor was Brown & Root. The boiler and evaporator installations were turnkey projects provided by Ahlstrom and HPD, respectively. Phase 1 also included the conversion project to begin producing coated board on the No. 1 machine. Brabston credits the project management team—including Tatum; Derek Hutchison, director of manufacturing at Macon; and Herb Graham, director of technology at West Monroe—for the smooth transition of all the projects. This phased approach allowed the mill to continue producing linerboard even as tremendous amounts of construction were ongoing.

According to Tatum, the conversion involved making major and minor changes throughout the mill. "We had numerous communication sessions with Macon and West Monroe employees to determine needs and solutions. With our coated board knowledge and their knowledge of the mill, we came up with a successful conversion project that will be completed probably by the end of August."

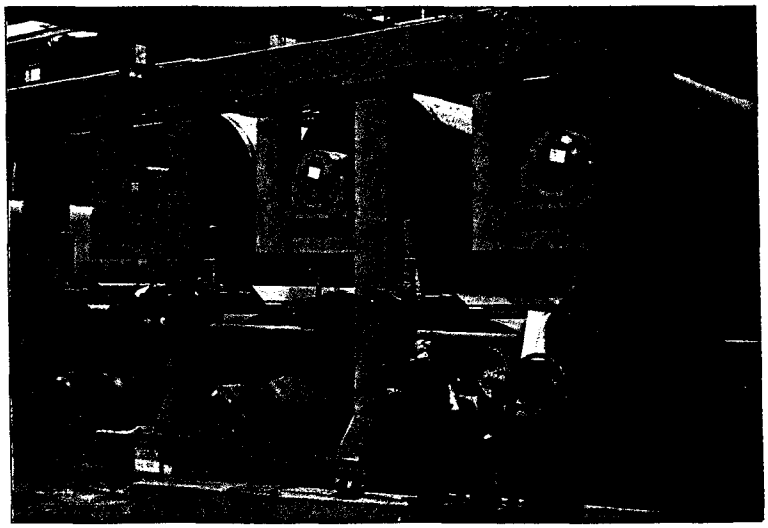
Brabston adds, "We had great cooperation from West Monroe on this project—from R&D test trials to engineering to day-to-day operational support. This project shows the breadth and depth of Riverwood's papermaking expertise."

Riverwood installed an advanced automated coating and additives preparation facility that feeds coating to the paper machine through a batch makedown system. The system, which was manufactured by Jylharaisio, has its own Honeywell DCS tied in to the paper machine control system.

Minor modifications, such as additional cleaners, were made to the recycled-fiber system, with more planned by project completion. The mill is currently processing old corrugated containers (OCC) and plans to add old newspapers (ONP) to its mix. Recycled content is currently used only in the mill's linerboard. Furnish varies by customer, but typically is a 65% softwood/35% OCC mix.

The first part of the machine conversion includes new fiber chests and a separation of the whitewater system for both machines so they will have their own individual support systems. Two Valmet rod coaters and one Jagenberg knife coater have been installed to apply clay coating to the basesheet. A new Valmet winder Model KL 1000, with speed capability of 7,500 fpm, was also installed.

Phase 2 of the project will be a replacement of the No. 1 machine's wet end with a three-ply fourdrinier, as well as some additional projects in other areas of the mill. When the three-ply unit is complete, the mill will add recycled content to the center ply to continue development of specialty coated board product. ■



Brown & Root employees continue work on converting Macon's No. 1 machine. Phase 2 of the conversion will include replacement of the wet end with a three-ply fourdrinier.