Kieffer recycled fiber mill produces engineered pulps

SUSAN M. CLITES

Through an unusual partnership, Kieffer Paper Mills, Ahlstrom, Kamyr, and Kamtech benefit from constructing a 100% recycled fiber pulp mill.

It's not unusual these days for companies to forge partnerships to address common interests. What's rare is a symbiotic relationship that works so well that it may influence how other companies work together. Kieffer Paper Mills and Ahlstrom Kamyr have such a relationship.

Known for more than 80 years as a producer of brown and grey packaging grades, Kieffer decided to expand its offerings in the mid-1980s to include 100% recycled fiber newsprint. Kieffer's relationship with Kamyr began in early 1989 when Kieffer sought to improve the quality of its recycled grades.

At that time, recalled Kieran Devery, Kieffer's president, Ahlstrom was in the process of buying controlling interest in Kamyr. "So Kamyr had certain technology in-house, and when the two companies came together, they had a total package that could be offered to the market."

What transpired between Kieffer and Ahlstrom Kamyr was the result of being in the right place at the right time. Kieffer, with US$ 20 million in annual sales from its mill headquarters in Brownstown, IN, and two converting facilities in Livingston, AL, and Hudson, NC, couldn't justify the capital expense of constructing a commercial size pulp mill. But the company turned the situation into an opportunity. In the fall of 1990, Kieffer's size became its advantage.

"We, as a very small company, were able to move pretty darn quickly," said Devery. "We literally made our decision in a period of just a few months as opposed to months and months of study and months of decision making."

Kieffer decided to build a smaller pulp mill.

"In the process of going with something smaller, we saw an opportunity to design in such a way that we could become players in a commodity market by developing the systems and equipment to manufacture what we're calling *engineered* pulps," said Devery. "At the same time, Kamyr wanted a location where they could demonstrate their equipment and its versatility."

Shortly after the decision to build the mill was made, construction began. The mill was designed by Kamyr and constructed by Kamtech, its subsidiary. Kamtech's engineering, procurement, and construction approach to the project provided what Devery termed one-stop-shopping, by incorporating equipment from Ahlstrom and Kamyr with Ahlstrom's Alcon distributed control system (DCS).

The result was a pulp mill startup in May 1992. With the addition of the pulp mill to the Brownstown site, Kieffer can produce 40,000 tpa of deinked, bleached market pulp.

More than pulp

Pulp is but one of the mill's assets.

"We built in a lot of redundancy and flexibility which you probably wouldn't ordinarily find in what I call a commodity mill," said Devery. "We have far more control, far more check points than I think a normal pulp mill may have. It would remind you more of walking into someone's pilot plant."

By changing the valving for the piping and flow of the process, the function and sequence of the machines can be manipulated.

"We could literally reverse the sequence," said Devery, "or we could go back and forth [between] various segments or repeat the flow through a piece of equipment.

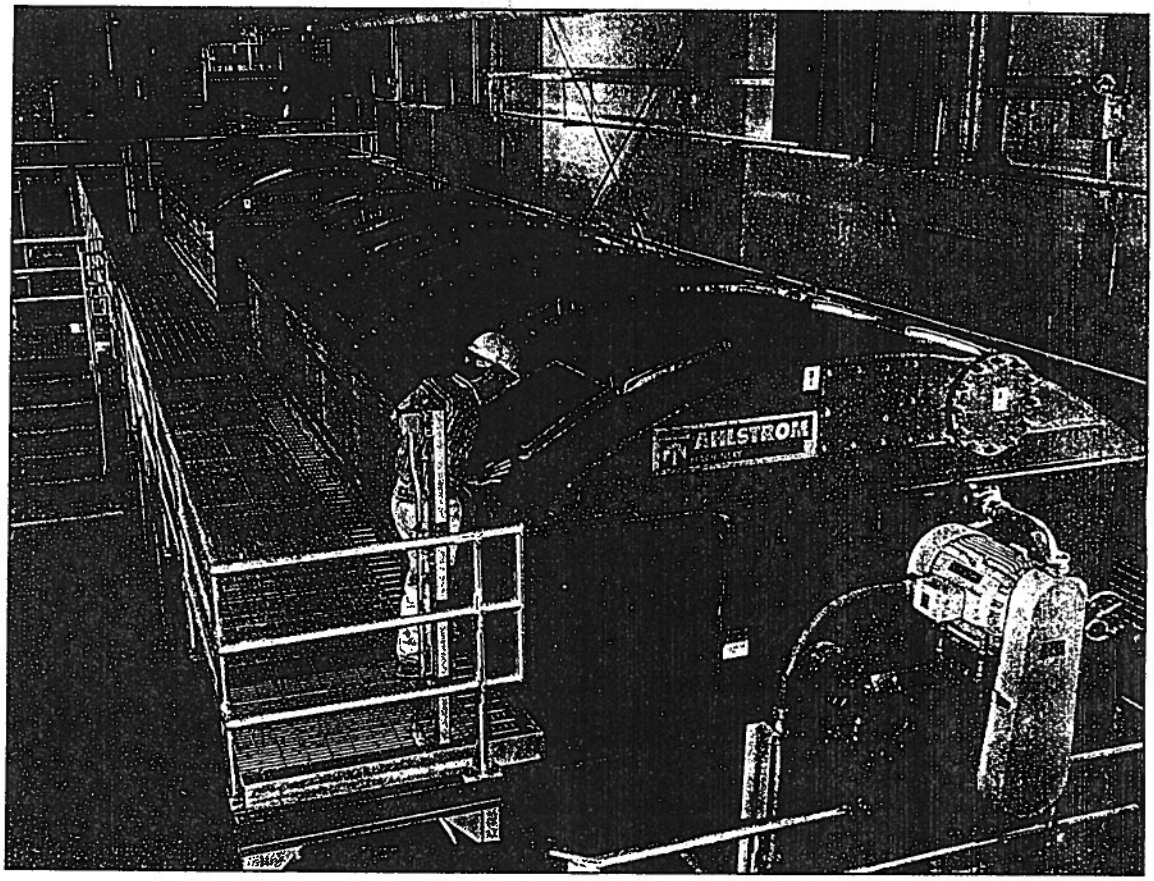
"What we're trying to do first off is understand the process capabilities as they exist." Kieffer made a conscious decision to have the equipment configured to achieve the flexibility.

The mill also has some very new technology, Devery noted: "It is the most modern and up-to-date technology that is available from Kamyr and Ahlstrom."

Kieffer's mill provided "the first opportunity for Kamyr and Ahlstrom to marry their individual corporate equipment and know-how in one location. Kieffer represented the first full commercial utilization of that technology in a deinking facility," said Devery.

"We envision that as we go forward, we want to be in a position to very carefully understand customers' specific needs," he continued. That vision includes a facility that would enable Kieffer to design and engineer the pulp with characteristics that each specific customer needs.

Top photo: Kamyr engineer, Ken Daniels, inspects the operation of the gravity drum filter. **Bottom photo:** Kieffer mill technician Lonnie Hoevner makes adjustment to the first commercially installed gas-sparged cyclone system.



Controlling the process

To design and engineer pulp, Kieffer realized that controlling every aspect of the pulp manufacturing process would be central to its success. That control began well before the mill came on stream, with the waste stream.

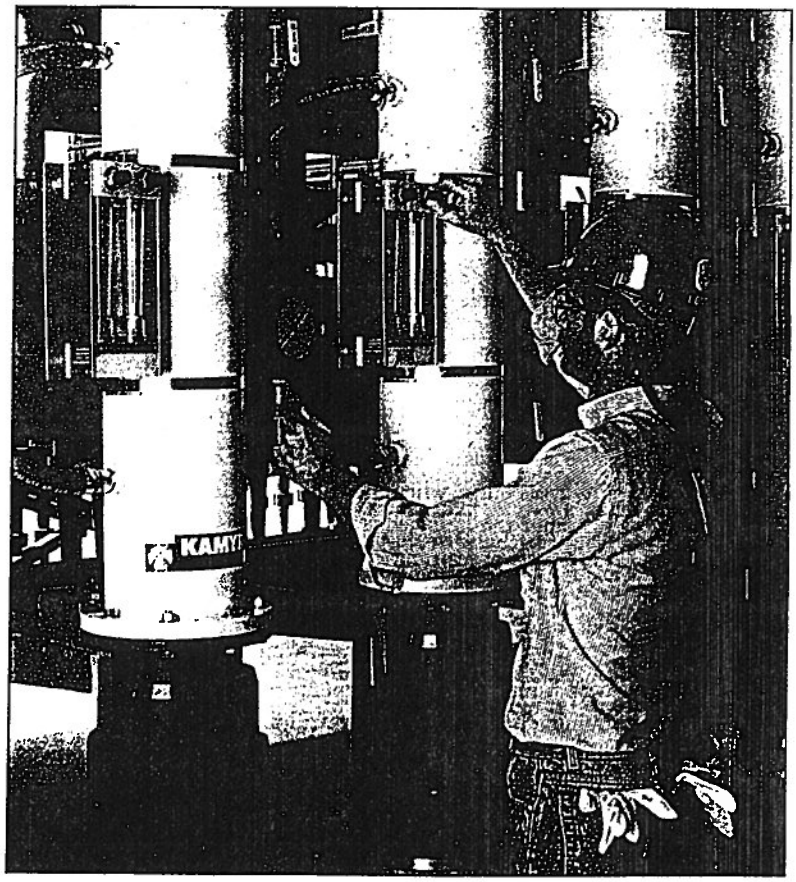
The mill produces 100% deinked pulp with a minimum of 50% postconsumer waste; its goal is to have all of its furnish be postconsumer waste. This material, primarily office waste, comes from Louisville, KY; Cincinnati and Dayton, OH; and Indianapolis, Evansville, Bloomington, and Columbus, IN. Those who supply Kieffer with this material have been identified by Kieffer as qualified suppliers.

Kieffer's quality program starts with the purchase of the raw material.

"We keep very careful control over the receipt of raw material," Devery said. "We literally track every bale as it is received."

Every bale is marked with a bale number, grade, weight, supplier, and date received. The source is also included so that the bale can be traced to a specific office building, if necessary.

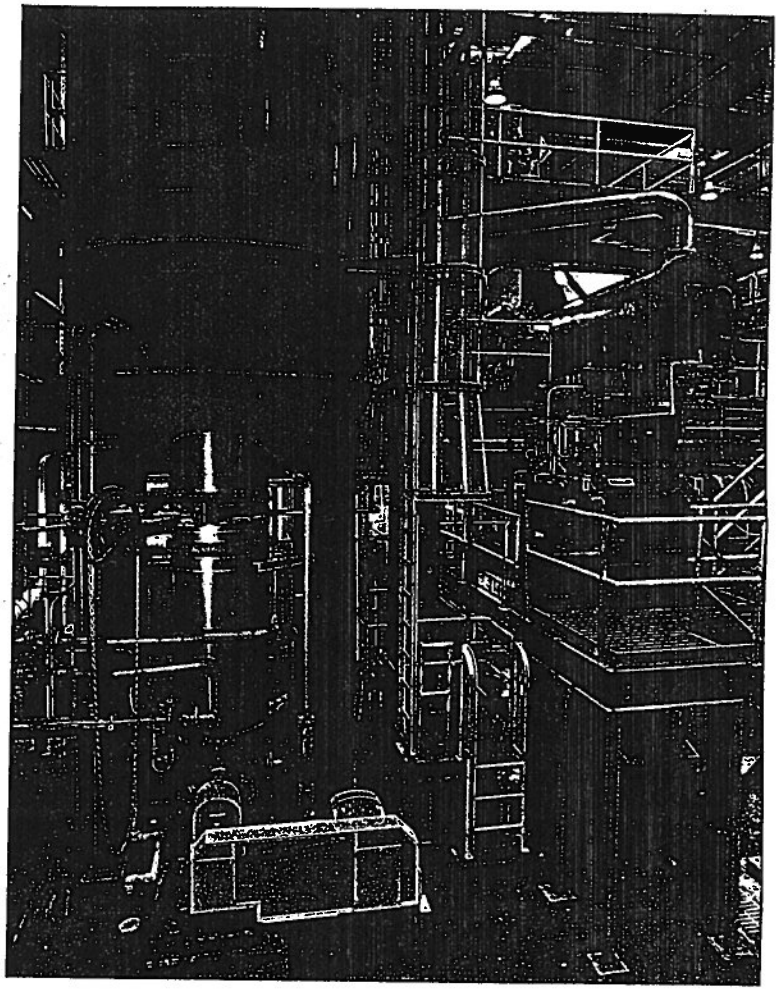
As the material moves through the pulp mill, chemical addition rates, process conditions, process upsets, and quality test readings through the process to the



finished bale of deinked pulp are all recorded as part of that pulp's profile.

Kieffer chose a hydrogen peroxide bleaching process over chlorine bleaching. Kamyr's high-consistency bleaching system is most efficient for hydrogen peroxide, Devery noted. The system "maximizes the brightness and efficiency and stays away from the chlorine," he said.

The mill's trade-named White River Pulp is being shipped throughout the United States to produce writing tablets, decorative tissue, coated two-sided premium cover and text materials, and uncoated writing papers.



Achieving independent ends together

The relationship between Kieffer and Ahlstrom Kamyr "is certainly a partnership in trying to consider how two independent companies can work together to achieve their own ends," said Devery. "You have to have an openness between the two companies where you realize the agenda openly becomes a common one.

"There was very little of the typical arms-length, supplier-customer relationship during this whole process," he recalled.

The partnership reaches beyond the construction and startup phases.

"We worked together on developing the process, the industrial engineering, the training. Kamyr participated with us, and observed, and took part in the process of our marketing work and the development of our administrative systems. It was a true open partnership," Devery said.

Though Kieffer owns the mill, for 17 days each year, Kamyr or Kamyr's customers can lease the mill from Kieffer to run their own tests on equipment, pulp, or whatever they decide. Kamyr's process engineers participate in Kieffer's employee training process and will remain on site until 1996.

"Kieffer pays for those people, but in effect, they substitute for the process engineers that Kieffer might have otherwise gone out into the market and brought into the company," Devery pointed out. "These Kamyr process engineers now understand more about day-to-day operations. They went through training on an everyday basis in the exact same fashion as all of our hourly people did. They are here every day, and, of course, when they ultimately leave, they will bring back to Kamyr the knowledge of operations. So they gain a benefit on the basis of learning operations. We gain the benefit of their background and knowledge in process issues.

"Kamyr also contributed one of their process engineers to participate in all of the training issues," Devery said. "I believe as they go forward with future sales of equipment, they will have a different view of training people to use their equipment."

Setting the stage for employee involvement

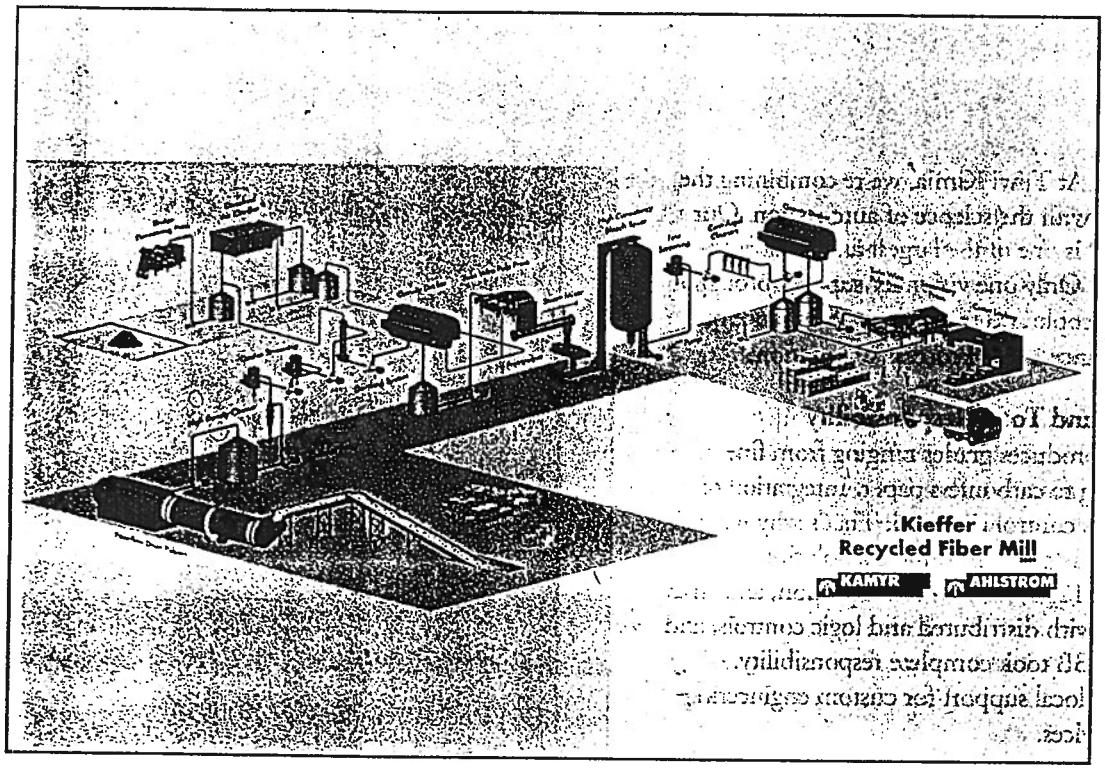
The mill not only gave Kieffer an opportunity to forge a strong alliance with its supplier, it provided a fresh playing field on which Kieffer could implement a new management vision with its people.

"We wanted self-directed work teams," said Devery. "We wanted *pay for knowledge*. We wanted the total involvement of the people." Through pay for knowledge, he explained, "you earn more if you know more."

For Kieffer, this vision began with its individual employees.

"Speak to the people; listen to what their needs are," said Devery. "Their needs might start with something as simple and basic as basic math and reading understanding. If you start a training program and just assume that all the employees can understand the math and can read the product materials, you may shoot yourself in the foot because you are faced with a more basic problem."

While talking with the employees, Devery recalled stumbling across something unexpected: "We discovered that they had a vast wealth of knowledge and experience." One hourly employee had three year of college statistics. Another rebuilt antique automobiles as a hobby.



The pulp mill's steam mixer, MDR mixer, and high-consistency peroxide bleach tower (left). Kieffer's recycled fiber mill pulp mill (right).

"By talking to the employees and learning about them, not just looking at them as a vehicle to get the job done, we've gained and we think they've gained," said Devery.

To bring that total involvement vision to life, Kieffer sought outside help. By using experienced, talented consultants, Kieffer benefitted from their years of experience without incurring the fixed cost of bringing on permanent employees.

In the fall of 1990, Kieffer began working with QualPro, a quality improvement consultant firm founded in 1982. Kieffer looked to QualPro to implement the philosophy of its management vision. To complement the management skills, Kieffer brought in Turner and Sheets, consultants who trained the employees on process and operational management style.

The mill is a union facility. The mill manager and the first four hourly employees were transferred to the pulp mill from Kieffer's paper mill. The four hourly employees became the people who wrote the training manuals under the guidance of the Turner and Sheets consultants. "They then became the trainers when we went into full-fledged training back in late February," said Devery.

The four also did the hiring for the mill. "We gave them some training on interviewing techniques, worked with them to determine what the needs were, what they wanted to see, what the people wanted to see in terms of coworkers."

Though Kieffer requested volunteers from its paper mill to work in its pulp mill, "our hourly union people actually hired all the new employees," Devery said. The pulp mill is now staffed by 26 hourly employees.

"We have no supervisors," said Devery. "We have a couple of managers, but the people running the mill are, in fact, self-directed work teams."

Kieffer brought QualPro back to the mill to be sure that when startup occurred, all of the statistical process control programs meshed with the management philosophy of self-directed work teams. Kieffer also looked to QualPro to empower its employees by teaching them advanced experimental design methods. In addition to understanding how the equipment operates and how the pulp manufacturing process works, employees also learned that by introducing different raw materials or different process settings, they would obtain different finished results.

"We have a strong belief that this will help us dramatically in understanding our startup curve, and in achieving results at a much faster rate," said Devery.

A standard of excellence

Three years after it set out to build its pulp mill, Kieffer's sights are still high.

"It's clearly our goal that White River Pulp comes to be recognized as the standard of excellence in the industry," Devery said.

Perhaps unexpectedly, the partnership approach that Kieffer chose for working with its suppliers and its employees will cause it to be recognized for having a standard of excellence in more than pulp. ■

Susan Clites is associate editor for **Tappi Journal.**