

SUMMER 2011

GRAVURE



**New Energy-Related Revenue Streams
for the Paper Industry**

Migration Issues Challenge Food Packaging Market

Will Producing and Selling Renewable Bioenergy Transform the U.S. Paper Industry?

Verso Says Yes and is Leading the Way

By Kathi Rowzie

As the U.S. paper industry continues to evolve over the next decade, the companies that thrive will be those that transform their business models to adapt to changing market realities. A mature domestic market, rising input costs, increasing electronic communications and low-cost global competition will challenge U.S. papermakers to innovate beyond their traditional boundaries. Believing that the production of renewable bioenergy will be the transformational lever that keeps U.S. paper

competitive, Verso Paper Corp. is leading the way to a more energy-focused future that is both economically and environmentally sustainable.

“Verso’s overall business strategy is pretty straightforward,” says Verso Vice President for Energy and Technology Mark Daniel. “We’re a paper company that’s committed to enhancing lightweight coated products for our core magazine, catalog and commercial printing customers. But as the world changes around us, we know we have to broaden our thinking, operate more efficiently and cut costs to be able to keep that commitment for the long term.”

To help them do it, Verso is developing new, non-traditional products and implementing a green energy strategy that will not only reduce the company’s energy consumption, costs and carbon footprint, but also create new energy-related revenue streams that will contribute to its future economic success.

About a year and half ago, Verso was recognized as an “energy management champion” when company president and CEO Mike Jackson signed the U.S. Department of Energy’s (DOE) Save Energy Now (SEN) LEADER pledge to cut energy intensity—the amount of energy used per ton of product manufactured—by 25 percent over the next 10 years. Reduced energy intensity and the resulting decrease in greenhouse gas emissions is the core of Verso’s energy philosophy and the foundation for its long-term energy strategy. It is estimated that if the entire U.S. paper industry implemented the SEN



Verso CEO Mike Jackson (left) with DOE Assistant Secretary Cathy Zoi and DOE Industrial Partnership Technologies Program Supervisor Jeffrey Walker at the Save Energy Now LEADER pledge signing ceremony in Washington, D.C.

pledge, the reduced energy intensity would be equivalent to 1.8 billion gallons of gas per year.

Verso's Strategic Energy Initiative

In 2010, Verso introduced the first phase of its energy strategy, a multi-year initiative that will allow the company to reduce fossil fuel use, increase renewable biomass use and further leverage the high-efficiency combined heat and power (CHP) technology at its paper mills. With an estimated 71 percent return on investment (after government incentives), Verso's strategic energy initiative includes four focus areas.

DOE Grant

By the end of 2011, the company will have completed 12 projects under a \$9.3 million DOE grant that was awarded in 2009. Under the terms of the grant, Verso invested an additional \$13 million in matching funds to develop technologies aimed at more efficiently recovering and reusing water and steam in the pulp and paper-making operations at its Androscoggin Mill and Bucksport Mill in Maine and its Sartell Mill in Minnesota. When complete, the projects will provide an estimated annual energy savings of 1.27 trillion Btus and reduce annual carbon dioxide-equivalent emissions an estimated 56,000 metric tons.

Quinnesec Mill Renewable Energy Project

In the third quarter of 2010, the company began construction on a \$45 million project that will enable its Quinnesec Mill in Michigan to use renewable biomass for more than 95 percent of its on-site electricity generation. With expected start-up by December 2011, the project includes upgrades to the mill's existing boiler, a new biomass handling system and a new turbine generator. In addition to displacing fossil fuel with renewable biomass that will

further reduce the mill's carbon footprint, the completed project will reduce annual mill energy costs an estimated \$7 million. It will also create a new revenue stream through the sale of renewable energy credits.

Bucksport Mill Renewable Energy Project

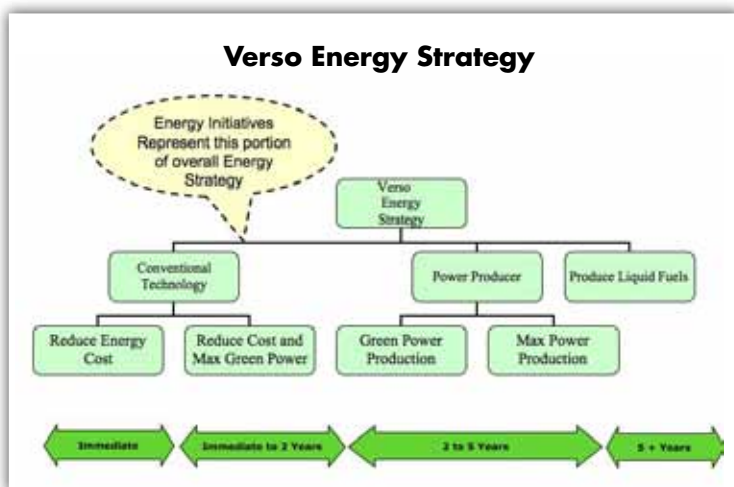
Verso is investing \$42 million to modify the No. 8 boiler at its Bucksport Mill, eliminating nearly all fossil fuel use for this equipment. Coal and tire-derived fuel burned in the boiler will be replaced with biomass, mostly wood waste, with just a small amount of natural gas used to ignite the boiler at start-up. Burning the wood waste will generate steam to power a new 25-megawatt turbine generator. When the modified boiler becomes operational in 2012, it will use about three times more renewable biomass than before. This will result in a 27 percent increase in total thermal energy production for the mill and a 110 percent increase in thermal energy from the modified boiler. In addition to Verso's investment, funding for this project includes a grant from Efficiency Maine, an independent trust that invests in alternative energy projects to reduce energy costs and improve Maine's business environment.

Realizable Gap Projects

Verso is investing \$6 million in a series of energy efficiency projects designed to close the gap between the company's current energy-related operational practices and what management believes to be achievable best practices.

Maximizing Energy Assets

Verso's \$100 million-plus energy initiative will set the stage for the company to maximize its assets for energy production and revenue. "We believe the capability to produce and sell wood-based bioenergy to the grid and ultimately to produce and market advanced biofuels and biochemicals will be a critical element in Verso's future success—and in the success of the entire U.S. paper industry," Daniel says. "We are uniquely posi-



tioned to play a key role in the nation's renewable energy future."

Verso and its U.S. paper industry peers have three important advantages that most other energy producers do not: cost-efficient logistics, high-efficiency CHP generation systems and decades of experience using a renewable resource. U.S. paper mills are strategically located near the nation's forest resources, making burdensome transportation costs or capital investment to build new infrastructure unnecessary. About 65 percent of U.S. pulp and paper mill energy is generated by biomass-fueled CHP systems, which the U.S. Environmental Protection Agency (EPA) calls one of the most efficient energy technologies available. CHP technology, sometimes called co-generation, combines electricity generation with the use of recycled waste steam to generate both power and thermal energy from one fuel source. According to the DOE, traditional fossil-fueled power plants are about 33 percent efficient, while CHP systems are up to 80 percent efficient. Standalone power plants that use biomass are only 20 percent efficient.

Perhaps the most significant advantage paper manufacturers bring to the table is the expertise gained by actually using a renewable resource—wood fiber from trees—and by engaging in and promoting sustainable forest management practices. "Supporters of alternative energy often use the terms renewable and sustainable interchangeably, but they are not synonymous," Daniel says. "Just because forests are renewable, does not mean they will be managed responsibly and renewed." A comparison of disappearing forests in the

BDC an Important Resource

To expand its window into the bioenergy field, Verso has become an active member of the Bioenergy Deployment Consortium (BDC), a non-profit network of companies interested in influencing the course of the emerging bio-economy in the United States. "Verso takes full advantage of BDC's wealth of resources," says Ben Thorp, one of the organization's three founding board members.

BDC was created to build private and public institutional readiness to participate in the U.S. bio-economy with a focus on deployment of developed technologies. In addition to being a reliable source for the latest verified news in the field, BDC provides companies with opportunities for frank interaction with leading bioenergy experts. Members also have the chance to tour pilot biorefineries to see real-world operations and talk with facility management and operators.

"This open discussion and up-close view of the industry helps our members separate fact from hype and unfounded hope," Thorp says. Verso Energy and Technology Vice President Mark Daniel agrees. "Our participation in BDC gives us a wider view of the bioenergy field, allows us to add detail to our strategic energy plan and helps us make sure we include all critical elements in our implementation strategy." For more information, visit the BDC website at <http://biorefinerydc.org>.

developing world with thriving U.S. forests illustrates his point.

According to the 2010 Forest Resources Assessment by the Food and Agriculture Organization of the United Nations, the two key causes of deforestation in the developing countries are expanding agriculture and unsustainable logging for wood-to-energy uses. Forests are declining in these regions because they are not responsibly managed. In the United States, however, forests have flourished despite extensive urban development over the last 100 years. During this period, the amount of forestland remained essentially the same at about 750 million acres while the volume of standing trees increased nearly 50 percent, according to the U.S. Forest Service and the Society of American Foresters. Much of this productivity can be attributed to the responsible forest management practices implemented by the paper and forest

products industry. “As we look to the forest to help meet society’s growing demand for renewable and sustainable energy in the United States and globally, sustainable forest management must top our list of priorities,” Daniel says.

The Value Chain of Wood

The increasing demand for forest resources also will make it critically important to maintain the value chain of wood, that is, to make sure society gets the most value out of every tree. Value is measured not only in terms of wood-based end products, but also by a cascade of economic contributions from equipment, other materials and jobs required to produce the products, tax revenues generated by those jobs and so on.

“All parts of a tree are not equally suited for energy production,” Daniel explains. “For example, the high-grade trunk wood that is required to manufacture lumber for housing, wood for furniture and pulp for paper could potentially be sent directly from the forest to be burned for energy. But doing so would eliminate the many direct and indirect jobs and other value accumulated throughout the manufacturing process. It makes far more sense to use the residual parts of the tree—treetops, limbs and bark—to produce energy since they have limited use in value-added manufacturing applications.”

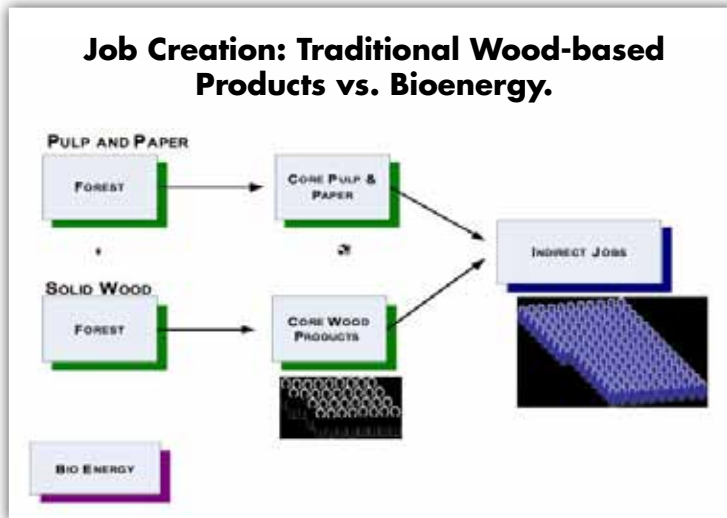
The value chain of wood should be an especially critical consideration in how the government creates wood-to-energy incentives. A general incentive to burn all grades of wood for fuel would likely create a damaging ripple effect. If, for example, high-grade wood otherwise well-suited to make paper is shifted to electricity production, the cost of manufacturing all types of paper products

would increase dramatically. Higher prices for paper products would reduce demand and increase less expensive imports. A reduction in demand would mean reduced production and lost jobs. Lost jobs would result in lower tax revenues, which would lead to increased debt. For the paper industry, which directly supports some 900,000 U.S. jobs, and for the country as a whole, the economic aftermath of such a shift would be potentially devastating.



Verso Vice President for Energy and Technology Mark Daniel leads the company’s overall energy strategy and the strategic energy projects at each of Verso’s mills.

Job Creation: Traditional Wood-based Products vs. Bioenergy.



Partnerships are Vital

Good public policy related to the production and use of biofuels demands an unbiased approach that ensures both environmental sustainability and economic balance. “To ensure both, all stakeholders have to participate in the process,” Daniel says, “and Verso is encouraging involvement wherever we can.”

Non-traditional funding, mostly through public-private partnerships, is a requisite component of Verso’s strategic energy plan and will be necessary for the paper industry to become a successful commercial energy producer, according to Daniel. While some believe that a mature industry like papermaking should not

qualify for programs aimed at “new” alternative energy development, Verso makes a strong case to the contrary.

“Our country needs to move away from its dependence on fossil fuels sooner rather than later,” Daniel says. “By supporting initiatives like those in Verso’s strategic energy plan, federal dollars provide a significant boost that decidedly accelerates advancement and expansion of existing high-efficiency bioenergy capabilities like the CHP systems at our mills. We have a strong plan in place that will allow us to contribute to the nation’s energy independence goals, but we could not have come so far so quickly without the partnerships we’ve established with the U.S. DOE and Department of Agriculture,” he says.

An Optimistic Outlook

Verso has made great progress in implementing its own energy strategy and through its leadership is promoting green energy as a transformational force to keep the U.S. paper industry competitive in the global marketplace. While this progress is cause for optimism, Daniel admits there are some uncertainties.

“Commercialization of renewable energy is difficult in and of itself, especially in today’s tough economic envi-

ronment,” he says. “We’re extremely confident in Verso’s strategic energy plan and our ability to implement it, but successful business investment needs certainty and there are some things we simply can’t be sure of. Will we face ill-advised wood-to-energy incentives that disrupt the paper industry? Will cost-prohibitive environmental regulations or legislation halt our progress? Will access to money dry up if public interest in renewable energy wanes?” Verso believes this uncertainty can be significantly diminished if all paper stakeholders—paper manufacturers and their customers, suppliers and communities—get involved and make their voices heard.

“There are nearly a million people directly involved in the U.S. paper business and millions more who depend on the products we make,” Daniel says. “With this much influence, our industry can have a dynamic future making paper and delivering bioenergy solutions that help our country reduce its dependence on fossils fuels. Personally, I hope to one day work for Verso Paper and Energy Corp.,” he concludes.

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The Gravure Association of America (ww.GAA.org)

The recently revised website for The Gravure Association of America (ww.GAA.org) provides information about all the GAA activities at your fingertips, as well as updates on what is going on at the Gravure Education Foundation (GEF). Some of the highlights of this valuable resource include:

- **Gravure Magazine 2011 Buyers Guide**, which contains comprehensive information about companies in all segments of the gravure industry—including packaging, product and publication printers. Equipment and materials suppliers are also listed, as well as gravure training programs and educational institutions.
- Current and archived issues of **Gravure Magazine**, the only technical trade magazine that’s dedicated to the publication, packaging and product gravure process.
- A comprehensive search engine with the complete library of all GAA’s whitepapers, and other pertinent technical information
- An internal social networking feature that will enable you to connect with GAA members through forums, blogs and classified ads. You’ll be able to share ideas, ask and answer questions, and exchange information.



These new online services and GAA social networking capabilities are available only to members. You can obtain information about becoming a member on the website.