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Commissioners of the Review Board

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PUCO

The book sheets and covers should
proof that logging is called harvesting.

This is why we are allowed to buy
farm tags. We are agricultural.
We are exempt in all other ways.
Except when it comes to hauling our
product and agricultural equipment
down the road.

We are harvesting our timber,
(crops) from the farm land. Just the
same as corn, wheat, beans etc. from
the farm land and it's exempt.

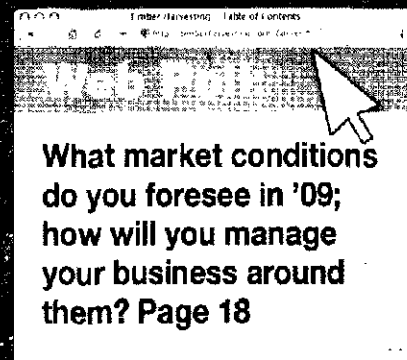
The God Lord gave us trees to
harvest as the same he gave us
crops, (corn, wheat, beans) to harvest.

Thank You.

Tim Shoffner

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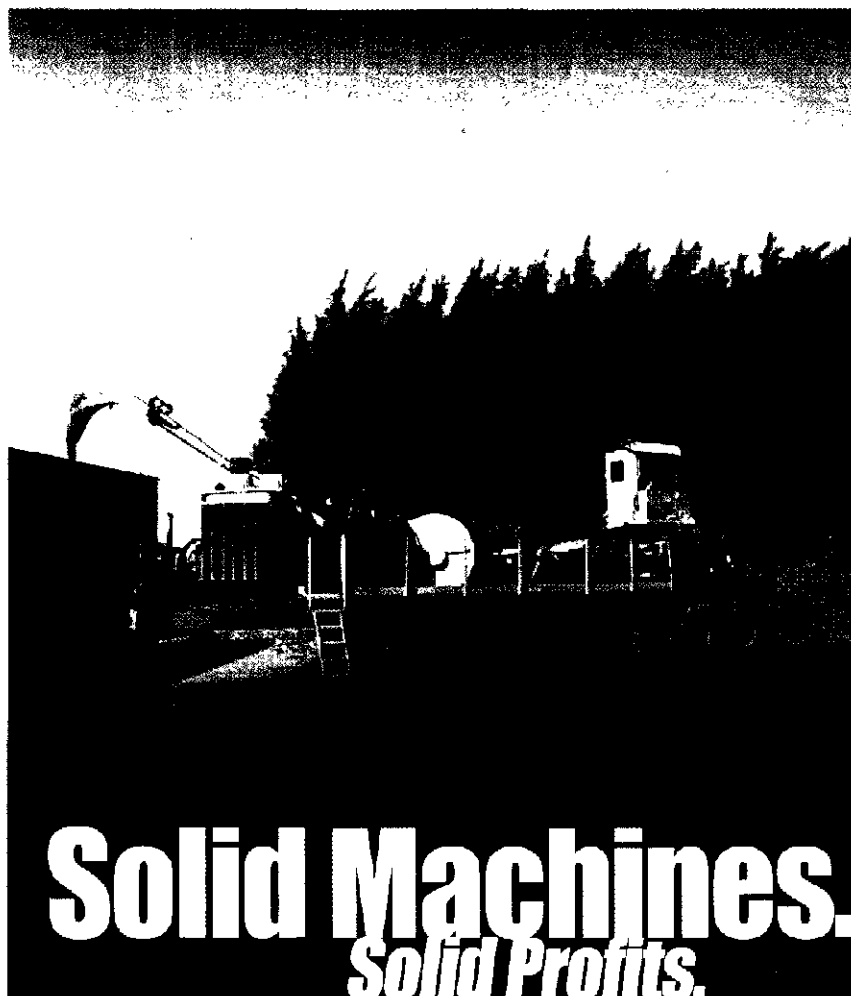
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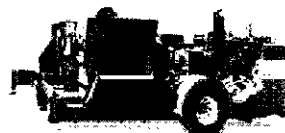
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Voice of the American Logger ★ Nov./Dec. 2008

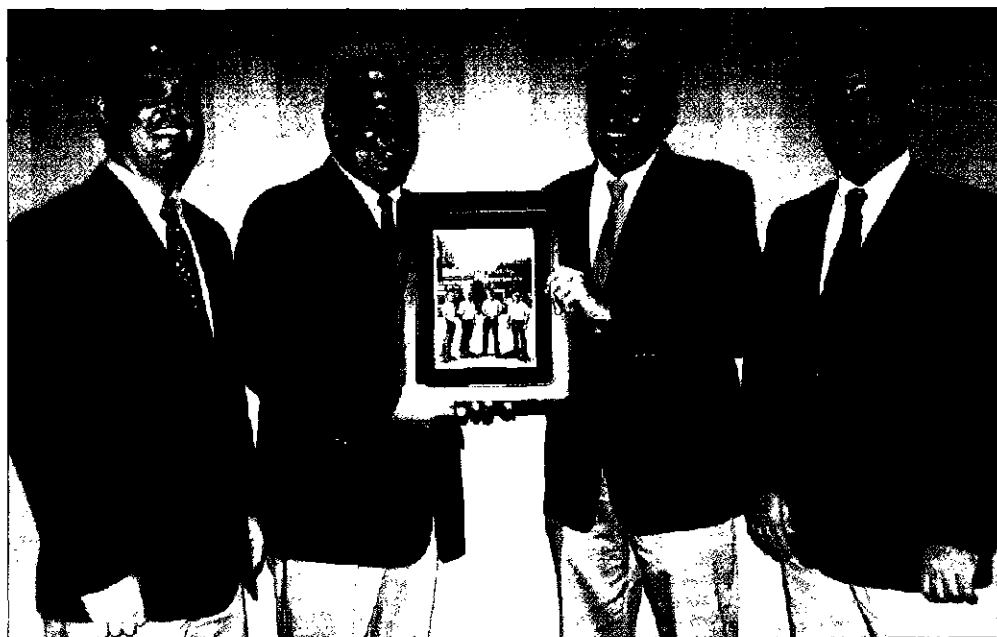
American Loggers Council Meets In Alabama

American Loggers Council President Ezell Castleberry and the Alabama Loggers Council hosted the American Loggers Council 14th Annual Meeting in Montgomery, Alabama on September 25-27. The conference drew a large attendance of approximately 250 professional timber harvesters and representatives from the industry that supports the council from across the nation.

Events opened up with a welcome reception sponsored by Bituminous Insurance and Hatton-Brown Publishers on Thursday, September 25th at the offices of Hatton-Brown Publishers in Montgomery. Randy Hervey from Bituminous' headquarters in Rock Island, Illinois and DK Knight of Hatton-Brown Publishers jointly welcomed the group.

On Friday, loggers and their spouses enjoyed an early morning "logger breakfast" before leaving the hotel for the day. The Friday breakfast was sponsored by Alabama River Woodlands of Perdue Hill, Alabama and Hawkins, Rawlinson and Lanier, Inc. of Auburn, Alabama.

Friday brought the opportunity to tour Cat Forest Products' manufacturing operations at LaGrange, Georgia and then return to a site near Auburn,



The Parnell family, Joseph, Jimmy, James and Jeff, were recognized as the Timber Harvesting 2008 Logging Business of the Year.

Alabama for a barbeque lunch and a demonstration which showcased several pieces of Caterpillar forestry equipment. Caterpillar Forest Products sponsored the plant tour and the lunch and demo and Cat Forest Products President John Carpenter, and a host of Cat representatives were on hand to answer questions and visit with the group.

The ALC ladies traveled to Birmingham, Alabama on Friday to tour the Children's Miracle Network Hospital CHIPS unit, with a special

luncheon hosted by Forestry Mutual Insurance at Rucker Place. Members of the Alabama Loggers Council have been instrumental over the years through the Log-A-Load for Kids program to help raise funds for the CHIPS unit. The ladies were treated to gifts and later a shopping opportunity at Homewood, all arranged by the hard working women of the Alabama Loggers Council, including Janet Ison and Sheila Potts.

See "Annual Meeting" page 3

ALC Eagle

Number 9 - Nov./Dec. 2008

A special section of
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& WOOD FIBER OPERATIONS**

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AS I SEE IT: American Loggers Council President Allen Ribelin Flagstaff, Arizona



A full day of traveling to return to Arizona from the 2008 annual conference gave me some time to reflect on this year's meeting and to look toward the coming year and what it might bring. It was reassuring that many members are doing well and that some mills are being fair, adjusting weekly for ever increasing fuel prices and giving allowances to accredited contractors for their efforts at improving their professionalism. The situation is not quite so rosy for others; many have made the difficult decision to cease operating...many continue to struggle day-to-day just trying to stay afloat...while others are sitting on large volumes of log inventory (well we are anyway)



New opportunities—slash bundles and logs

with no markets...most certainly interesting times.

I would like to personally thank our associate members for supporting the American Loggers Council; specifically thanking those that also step up and additionally support the annual meeting. Without your support we could not function. We realize that in this current economic crisis your budgets are also getting tighter and that you need to realize a return on these sponsorship investments. We are additionally thankful that many of you also participate in our meetings and events; we find that the relationships that are built as a result of this participation are of great value; we hope that you

deem this a two-way street and you find your association with us as valuable. I commit to you that we will more fully participate in activities that through much planning and effort on your part are prepared for the logger attendee's benefit. Let us march forward together, making this a better organization.

I would also like to thank our logger members for their attendance and participation at the annual meeting, for without your participation the council would be ineffective. I am truly grateful for the relationships that I have forged over the many years I have participated with the American Loggers Council and count many of you among my dearest friends. This year

we lost one of our most steadfast supporters with the passing of Texas logger Gene Borders. I appreciate Christene Borders' and Christy Borders Mills' attendance at the meeting this year, continuing the legacy of support from this successful Texas contractor. Gene, you will be missed.

Allen Ribelin is the 2009 President of the American Loggers Council, which represents over 50,000 logging professionals in 28 states. Allen's family's operation, High Desert Investment Company is headquartered in Flagstaff, Arizona. For more information please contact the American Loggers Council office at 409-625-0206 or e-mail at americanlogger@aol.com





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DEERE PLANS MORE INVESTMENT IN RUSSIA

Deere & Company plans to establish a manufacturing and parts center near Moscow, Russia. The site is expected to have the capability to manufacture a range of John Deere products, including construction and forestry products. At the same time, Deere will consolidate several depots into one site to improve parts and after-sales service to customers.

Samuel Allen, Deere President and CEO, says this is the first step to achieve the vision for Russia that Deere announced in July 2009 at the US-Russia Business Summit. This project complements Deere's planned investment in a national operations and training center in the Kaluga region and its existing seeding equipment manufacturing facility in Orenburg.

BIOMASS POWER PLANT ANNOUNCED

Biogreen Sustainable Energy is constructing a biomass power plant in La Pine (Deschutes County), Ore. The plant will produce almost 20 megawatts of electricity using biomass fuels, such as slash piles, forest undergrowth and wood construction materials. Upon completion in 18 months, the facility will employ 20.

PELLET PLANT PLANNED FOR NY PLANT SITE

New England Wood Pellet LLC (NEWP) is buying Norbord's Deposit NY land and property and will commence construction of a wood pellet manufacturing facility.

Norbord's intentions are to continue manufacturing medium density fiberboard at the facility until before the closing. NEWP will then begin significant site modifications and construction of a 100,000 ton per year pellet manufacturing plant once all state and local permits are secured.

NEWP expects to ship pellet fuel from the Deposit facility both in bags for residential use, and in bulk for central heating of homes, commercial buildings and for industrial process heat.

DIXIE PELLETS IDLED; FUTURE QUESTIONABLE



The nation's second largest wood pellet plant, Dixie Pellets LLC at Selma, Ala., suddenly ceased operations on September 1. Informing the plant's 70 employees of the development, plant manager Bruce Gornito was quoted by a local newspaper as saying: "We had an unusual and an unforeseen financial issue that arose yesterday that left no choice but to cease operations. We no longer have the funds to continue to operate." Some speculate the company will file for bankruptcy, if it hasn't done so already.

What Gornito referred to may have been a decision by one of Dixie Pellet's customers in Europe. A raw material supplier for Dixie Pellets told *Timber Harvesting* that he understood the Italian customer had inspected a \$2 million shipment of pellets on August 31 and refused to pay for them, citing quality concerns. Furthermore, the supplier said the customer canceled Dixie's contract for "failure to deliver contract volume and failure to meet contract quality standards."

As of September 1, at least some of the plant's chip suppliers reportedly had not been paid for their previous two weeks of deliveries.

Although designed with an annual capacity of 520,000 metric tons, the facility, which opened in 2008, never hit that level and thus never consumed the projected raw material tonnage—upwards of 900,000 tons—that capacity production would have required. Nevertheless, some 20 chip suppliers have been impacted by the development.

Quality and capacity issues were the latest setbacks Dixie Pellets has encountered. Located along the Alabama River, the company originally intended to load pellets into barges and float them to Mobile Bay for reloading into freighters. But the severe drought of 2007 challenged this plan, even though the plant was not in full production. Even after the drought subsided, barging pellets downriver proved to be unreliable, according to reports. So the company switched to more costly truck transportation.

Also, the company was sold before it became fully operational. Harbert Power LLC, which specializes in power generation and related assets, became the majority investor in Dixie Pellets in the spring of 2007.

New Gas Concepts of Birmingham originally owned Dixie Pellets and got the project started. That company has since announced that it would build another similar pellet plant at Jackson, Ala. but that project has been stalled due to the financial crisis. Some observers doubt that it will be built.

NEWP owns manufacturing plants in Jaffrey NH, the site of its corporate headquarters, and in Schuylar NY. NEWP also owns and operates a rail-based packaging and reload facility in Palmer, Mass. The company will ship an estimated 155,000 tons in 2009.

The new operation is expected to commence production in fourth quarter 2010 and reach production capacity in the first half of 2011. NEWP expects to use certain buildings, wood yard equipment and other elements of the existing Norbord facility.



HARVESTING FOR ENERGY

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While the U.S. lags behind the rest of the world in harvesting and utilizing wood biomass, significant progress is being made. For now, economics is still the driving factor in most parts of the country and few government assistance programs are available. All this may be about to change, however, as Democrats set new agendas in motion in Washington.

Future plants that could convert wood biomass to ethanol and other products may be on the horizon, but in the short-term, burning the material for heat and power production and making fuel pellets are the front runners.

Using biomass to power boilers is not a new wrinkle. Many forest products plants have utilized wood refuse, bark, and sawdust for energy produc-

tion for decades.

Despite such opposition, and the downfall of high crude oil prices, this new industry is growing and loggers need to be ready to take advantage of the opportunity. While loggers might not get rich with this type of harvesting, it certainly could provide new markets and enhance the bottom line of your business. Loggers in the East have found that a "clean site" can provide market opportunities from land clearing operations. In the West total harvesting can offset slash reduction costs in certain contracts.

■ TWO OPTIONS

There are basically two options for collecting leftovers on a logging job—get it while you're there or come back

and get it later. Each option has advantages and disadvantages.

If you have the luxury of a large landing and are fortunate enough to have steady product demand, it may be more efficient to collect and process biomass as part of the logging routine. With this option a logger can rely on the same employees and add only a chipper and vans. Support equipment and moving expense are built in with the logging crew. Separating biomass from logs and pulp at the stump or landing can help keep debris and contaminants from entering the chipper.

Processing biomass after a tract is logged has inherent advantages and disadvantages. Using a dedicated crew that specializes in this type of harvesting can lead to greater efficiency. If a logger

was to be paid on a BTU or dry ton basis, it could be more profitable to let the product dry for a while anyway. Boiler fuel biomass has varying moisture content requirements, depending on the end process. Many believe a price structure based on BTU, which is widely used in Europe, is a more appropriate arrangement. Will it catch on in the states? It's possible, but it likely will take a long time.

While the material might be drier, there is also a greater chance for



Typical biomass harvesting setup in the South: loader, mid-size chipper, chip van

ground up by another contractor. Lawson is interested in possibly expanding the logging company to offer other services, but not until regional biomass markets become much more stable, he says. As it stands now, Lawson Logging is getting paid extra to fell and skid the small material.

Additional equipment includes four Kenworth trucks pulling General trailers and fitted with Williams scales. The

logging company also keeps a Cat D7G dozer and Cat road grader. "We don't do any major roadbuilding jobs any more," Lawson says. "But we do just enough roadwork on our tracts that we still have to have the dozer and grader."

Major equipment dealerships Lawson Logging uses are Papé Equipment and Peterson Machinery, both more than 140 miles away in Klamath Falls.

Lawson notes that his company has worked with the Papé dealership since the 1950s.

Operators are responsible for preventive maintenance on woods equipment, and oil and fluid changes are performed around 100 hours sooner than manufacturer recommendations due to the region's adverse operating condi-

tions, Lawson says.

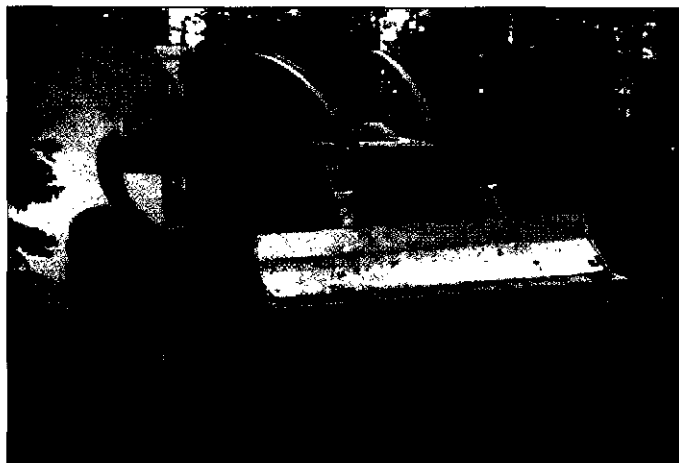
"The operators are good about keeping up with oil and fluid changes, and we don't do any transmission or motor work. For any major service jobs we have a dealer technician handle them," Lawson says.

Lawson's wife, Dixie, and their daughter, Jennifer, work full-time in the business, handling paperwork and other duties. "They take care of that end of the business, which seems to be a bigger and bigger part of it nowadays," Lawson says.


Bookkeeping is handled on Hewlett-Packard computer, running basic spreadsheet and accounting software. Company production figures and other data are kept on computer. Payroll is sent out and handled by a local accountant.

Adding to the family impact on the logging company are Lawson's nephews, David (siderod) and Randy, who both operate equipment. Other employees include Ron Frank, who's been with Lawson 15 years, Gabe Lindsey and Derry Welch.

TH



Cat skidders were supplied by Peterson Machinery.



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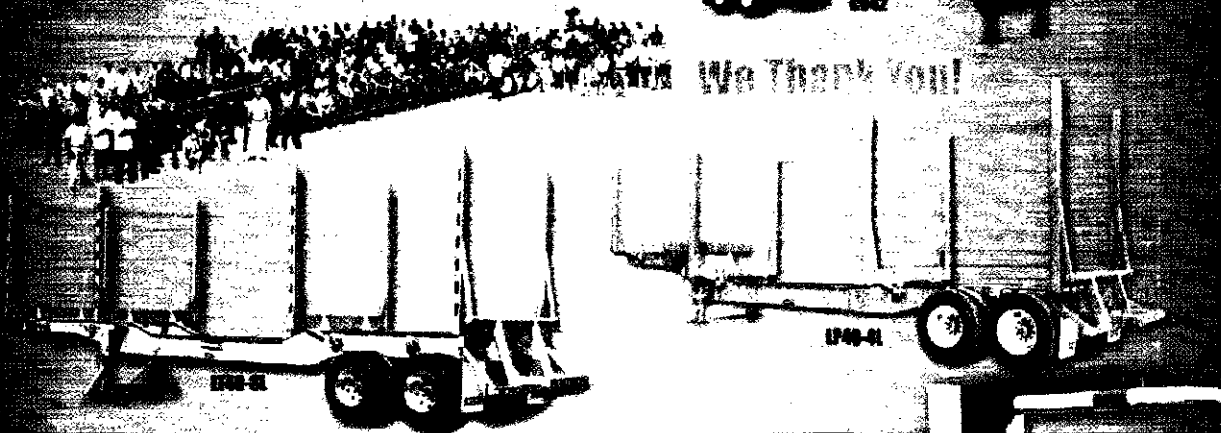
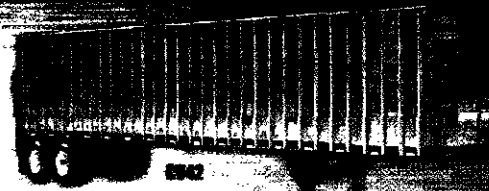
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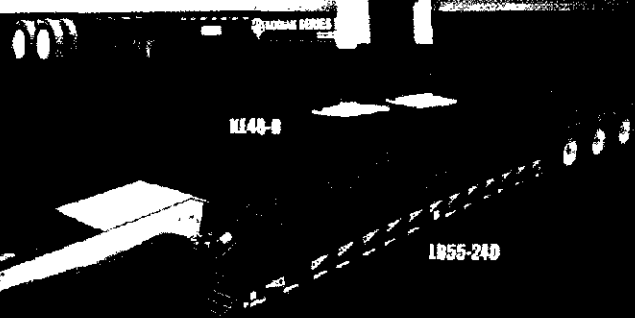
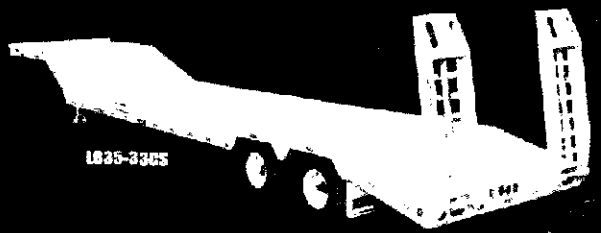
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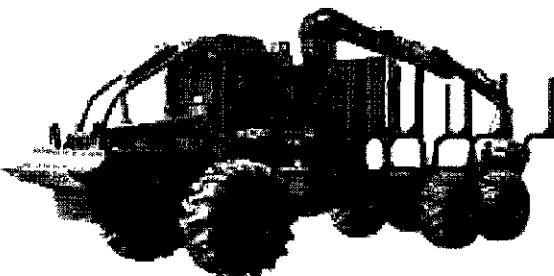
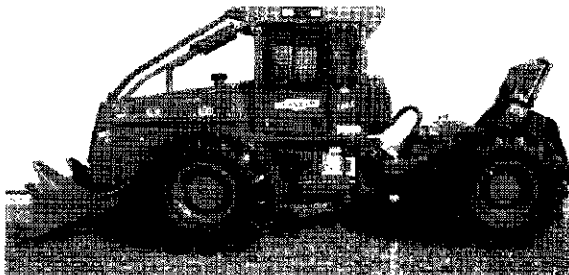


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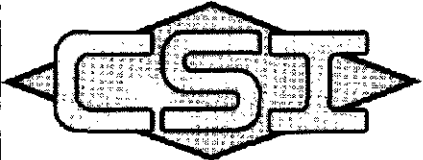
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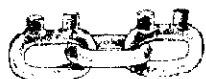
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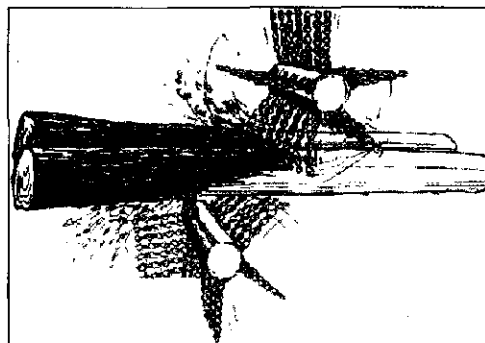
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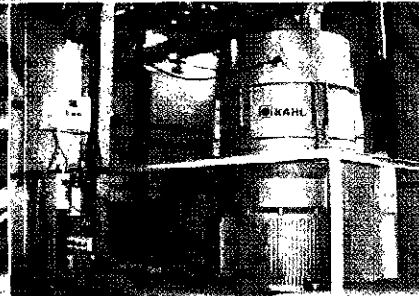
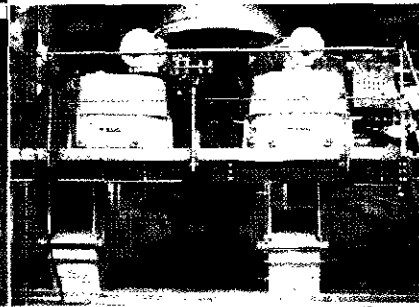
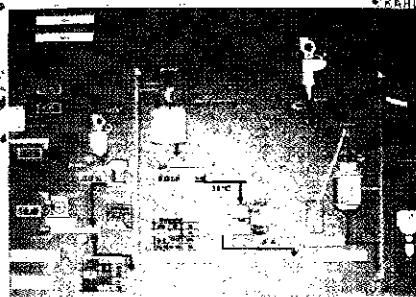
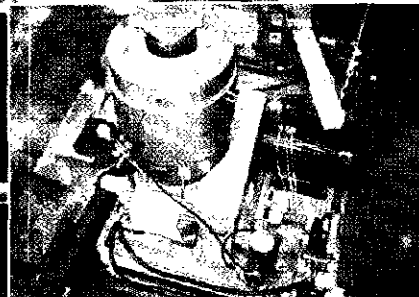
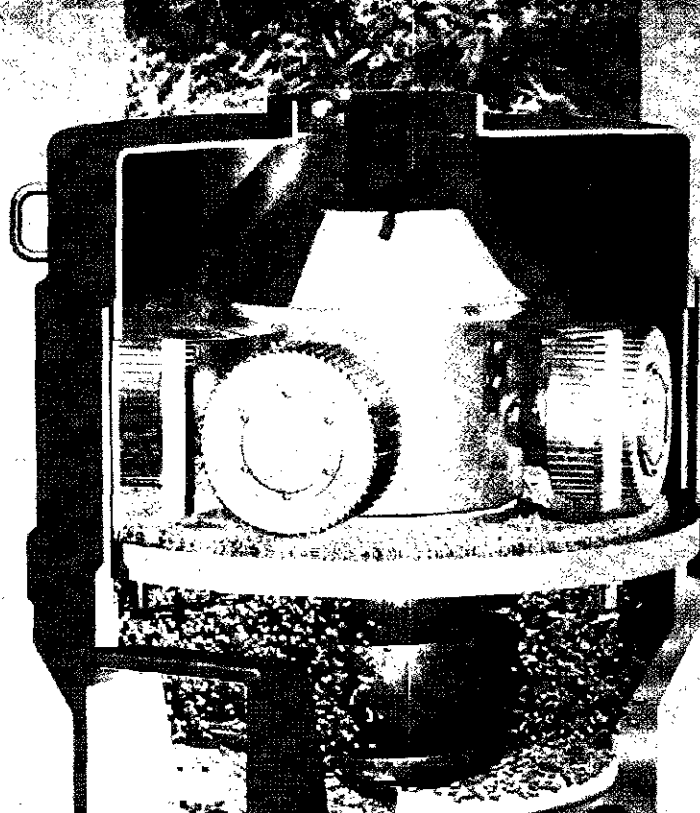
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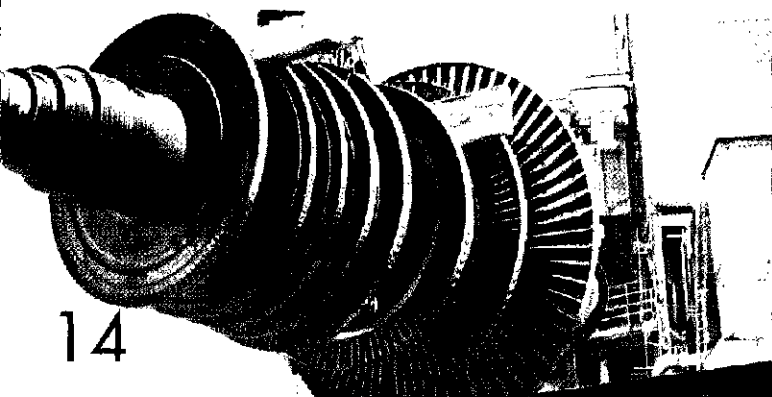


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KL Energy (Dan Shell)



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CW Mill Equipment	48	800.743.3491
Dynamic Manufacturing	43	989.644.8109
Evergreen Engineering	53	541.484.4771
Flamex	33	336.299.2933
Geoenergy Div Of Lundberg	35	425.283.5070
Grecon	50	503.641.7731
Hunt Guillot & Assoc	53	866.255.6825
Hurst Boiler & Welding	27	229.346.3545
Jackson Lumber Harvester	51	715.926.3816
Jansen Combustion & Boiler	49	425.952.2825
Kice Industries	10	316.744.7151
Laidig Systems	55	574.256.0204
LMI-Tennessee	42	800.467.0944
M E C Company	13	620.325.2673
Roy O Martin	44	800.299.5174
Morbark	17	800.831.0042
Peterson Corp.	56	800.269.6520
Polytechnik	47	+43.2672.890.0
Price Companies	25	870.367.9751
Primary Packaging	53	800.774.2247
Process And Storage Solutions	47	866.354.7277
Process Barron	41	205.663.5330
Reithceif Packaging	18	866.298.1876
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Ruf US	44	440.779.2747
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More Coverage Growing Opportunity

The use of wood as a renewable resource for energy products of all kinds, from steam to electricity to cellulosic-based ethanol and more, is obviously on a major growth spurt these days. Companies and institutions are responding to and taking advantage of wood-based energy opportunities—or challenges, as some may view them—resulting from initiatives to develop renewable energy sources, technologies and their accompanying infrastructures to deliver energy products that are more sustainable at less environmental cost.

While a large-scale move toward more renewable and sustainable energy sources will undoubtedly encompass a variety of technologies including solar, wind, wave and other sources, there's also no doubt that wood-based energy sources will prove to be a large part of the renewable, low-carbon energy solution sought by individuals, companies and governments around the world.

As wood-based energy technology and products grow and expand, look for *Wood Bioenergy* as your first source for news and technical information, beginning with our own expansion to four issues in 2010. Starting in the first quarter, *Wood Bioenergy* will deliver even more of the latest news and technology developments as the timber and energy industries merge to create a sustainable energy infrastructure that brings a promise of good jobs and economic development while providing environmental benefits.

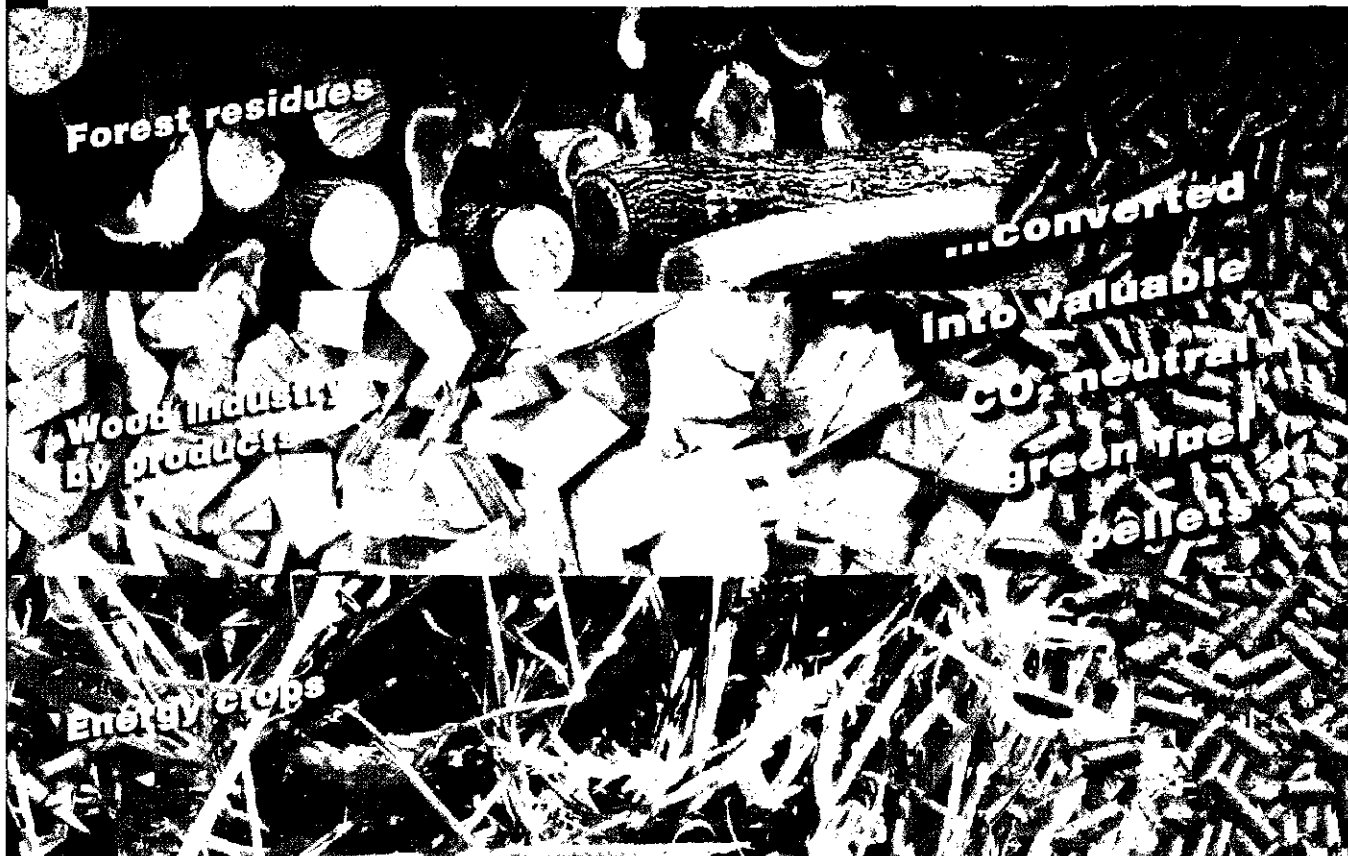
The issue in your hand clearly reflects the growth and ramping up of the wood-based energy industry: Florida's Multitrade

Telogia Power, a longtime producer, has re-committed to its wood-based power output; British Columbia's Pine Star Logging is diversifying into biomass production as a key pellet mill supplier; and KL Energy in South Dakota, finding success at its demonstration ethanol plant, is preparing to announce its first commercial operation. Multiple news items on project and product announcements also portray an industry on the grow.

With expanded industry coverage by offering four issues in 2010, *Wood Bioenergy* will be there every step of the way as the wood-based energy industry flexes its muscle in feedstock, power and fuel markets, reporting on new plants and new technologies. Together, both *Wood Bioenergy* and the wood-based energy industry are a growing opportunity. ■



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BCAP Program Gains Momentum

The federal government's Biomass Crop Assistance Program (BCAP) is expanding and being implemented across the country, as the list of cogeneration, wood fuel pellet, pulp and paper and other biomass-consuming operations certified by the U.S. Farm Service Agency (FSA) as eligible Biomass Conversion Facilities (BCF) now includes more than 80 locations.

California leads all states with 18 operations certified as BCFs under the program, followed by Maine, which has 12.

As part of the 2008 federal Farm Bill, the BCAP aims to support and develop biomass crop production for bioenergy by assisting agricultural and forestland owners and operators in the collection, harvesting, storage and transportation (CHST) of biomass with matching payments up to \$45/ton for the sale and delivery of eligible material to BCF operations certified under the program.

Launched in summer 2009, the program is initially scheduled to last two years, and was funded with \$25 million for this year.

The BCAP process begins with a facility qualifying as a certified BCF by using eligible biomass material to produce heat, power or advanced bio-fuels on-site, or creating bio-based energy products that may be sold or transferred to other operations.

First move is for a facility to apply with its county FSA office, a process that must ultimately be approved at the FSA national level. Requirements include the BCF must be an entirely separate legal entity from eligible material owners, conduct purchases using arms-length transactions, and purchase only on a dollar per dry ton weight equivalent basis. A qualifying BCF must also agree to provide the eligible material owner a signed scale ticket clearly indicating total tonnage delivered and total dry weight tonnage equivalent purchased, along with the BCF's authorized representative signature.

Forestland owners and biomass producers such as loggers and others

who harvest and haul biomass to certified BCFs must also apply and be approved for the program before any qualifying shipments or sales or matching payments can be made. Operators must provide documentation such as sales contracts, purchase commitments and letters of intent to sell or deliver to a qualified BCF.

Timber industry consultants Forest2Market recently followed up a newsletter report on BCAP with the suggestion for producers to ensure all supply contracts with BCFs specify a price per dry ton to avoid any confusion or errors in converting green ton prices to dry tons. In addition, contracts should specify a price per ton based on moisture level, and the moisture measuring method should be agreed upon by both parties.

American Loggers Council Executive Director Danny Dructor believes the BCAP program offers opportunity to develop alternative fuel resources, but hopes mills won't use the matching payments as an excuse to reduce delivered biomass prices.

"If the program is allowed to work as designed, both the landowners and the loggers who are growing and producing the biomass could have the opportunity for a greater return on their investments in forest management and timber harvesting businesses by participating in the program," Dructor says. "If the net result of the program is a severe reduction in delivered prices for the eligible biomass, then there will be no additional benefit to forest landowners or logging contractors."

Extensive information about BCAP is available on-line through the U.S. Dept. of Agriculture's FSA web site at: <http://www.fsa.usda.gov>.

Trends, Challenges Addressed In Study

Norbridge Inc. predicts biomass will grow quickly as a green fuel in the power generation industry. The firm has released a study of "trends and challenges" in the solid biomass market for power generation. Sixteen utilities/power generators operating in 27 states and 17 state agencies geo-

graphically diverse, both with and without RPS legislation and/or potential biomass supply, participated in the study. Specific issues covered included current biomass usage, plans for future biomass usage, preparation required for future biomass use, and issues with supply chain.

Currently, biomass is the fourth largest source of energy, following behind the more traditional coal, oil and natural gas. Biomass is considered carbon-neutral by the Intergovernmental Panel on Climate Change and is considered a green fuel. This green status is an important aspect of current and future biomass use, as 24 states and the District of Columbia have Renewable Energy Portfolio Standards (RPS). Five others have renewable energy goals, and 13 more are considering RPS legislation. Congress is also considering federal RPS. Similarly, cap-and-trade legislation is also an important influence.

The study found that although 75% of the utilities/power generators interviewed use renewable fuels, only 25% are using biomass. The reason appears to be simple—traditional fuels are more cost effective at this time.

However, 69% are interested in increasing biomass use. The study lists government mandates (such as RPS and court rulings), government incentives (such as tax credits and cap-and-trade), the scarcity of other renewable alternatives, and fuel diversification as driving forces. One interviewee commented, "Our state RPS mandates use of renewables. Because our local wind and solar resources are weak, we are now studying use of the most attractive renewable option for us, biomass."

Utilities and power generators interested in increasing biomass usage are trying to figure out the logistics for potential biomass conversions at their power plants. Norbridge reports that while most plants will have capacity of less than 100 MW, some of those planned will have capacity of 300 MW or more. One utility even expects 5-10 million tons of biomass consumption annually by 2015.

According to Norbridge, "most utilities are in a 'holding pattern' until

federal or state legislation clarifies economics and/or mandates to act." Currently, the utilities and power generators interviewed are considering many potential sources of biomass. Most frequently considered are pelletized and non-pelletized woody biomass. During the 16 interviews, wood-based biomass was mentioned eight times. While the BTU content of pelletized fuel can be double that of low-energy-content biomass, this type of fuel can be much more expensive than its non-pelletized competitors. The study lists wood vs. agricultural sources, virgin vs. unmerchantable wood, re-growth time frame, and marginal vs. productive land as major sustainable forestry and land use issues that are factoring into decision-making.

Interested utilities and power generators face even more challenges, including potentially scarce supply of biomass and its high cost. Access to biomass supply was mentioned 10 times as an overall biomass challenge. One interviewee commented, "We are looking into biomass options now because we expect competition among utilities for biomass resources to heat up soon."

Other challenges to biomass conversion are transportation and logistics. The study found that utilities and power generators are facing "significant impacts on transportation, handling and storage requirements."

The study also interviewed 17 state agencies and found that more than 70% are very interested in biomass. There are various biomass initiatives being promoted by some states. State tax credits, subsidies and other assistance were mentioned 11 times as initiatives; supply and feasibility assessment were mentioned eight times; biomass task force was mentioned five times.

The study found that 18 biomass projects are either planned or under way. Fourteen of these projects are less than 60 MW, but three are in the 81-100 MW range and one is above 100 MW. Norbridge lists using reclaimed land from coal mines for energy crops, switching tobacco farms to energy crops, and using 20 mil-

lion tons of biomass annually by 2025 as plans under consideration by various states.

Norbridge Inc. is an independent consulting firm, which works in transportation, logistics, energy, mining and pharmaceuticals. Visit norbridge-inc.com.

World's Largest Pellet Plant Goes Under

Dixie Pellets, Selma, Ala., at one time touted as the world's largest pellet mill, has ceased operation and filed for Chapter 11 bankruptcy protection, citing more than \$100 million in debts.

The plant is reportedly 86% owned by a unit of Harbert Power Fund III, an affiliate of Birmingham's Harbert Management Corp., whose companies invest in stocks, real estate, power plants and other assets.

The plant, built adjacent the Alabama River, was designed to produce 520,000 metric tons per year of wood pellets, primarily for markets in Europe. The cost to build the facility was reported as \$75 million. The plant early on reportedly experienced issues with the dry recycled fiber it brought in, causing production setbacks and mechanical issues. Quality issues allegedly caused a European customer to refuse a recent shipment.

The plant, which ran two green lines and a dry line, reported it was running 70% of capacity this spring. The plant started up in January 2008. Harbert purchased it in spring 2007. The original owner was New Gas Concepts.

Pacific BioEnergy Eyes Pellet Mill

Prince George-based Pacific BioEnergy purchased the Kitwanga Lumber Company, including a closed sawmill, and says it will not only restart the sawmill but also build a pellet plant in the region to use the wood waste from the mill.

Pacific BioEnergy points to large quantities of decadent hemlock suitable only for pellet production and the fact that there is not a large pulp in-

dustry to compete with for mill residues. The company is seeking financing and a location for the new pellet plant. The sawmill location isn't suitable because it doesn't have rail access, according to the company.

Record Turnout At PFI Conference

A record-breaking crowd of pellet fuel industry insiders met at the Sawgrass Marriott Golf Resort & Spa in Ponte Vedra Beach, Fla. for the Pellet Fuels Institute (PFI) Annual Conference on July 26-28.

"Our industry is in the exciting position of providing consumers with an efficient, renewable energy source, and this conference is key to bringing the industry together to discuss ways in which we can bring our products and our positive message to public," says Jeff Thiessen, president of PFI.

This year's conference included a 35% increase in exhibitor displays and a strong educational program that was attended by 325 industry professionals. Overall, 173 companies were represented.

Henry Spelter, USDA Forest Products Laboratory Economist, reviewed data on the status of the industry and Bill Holmberg of the American Council on Renewable Energy (ACORE) spoke to bolstering awareness of sustainable, renewable biomass.

Firm Sees Two-Thirds Of Projects Failing

Wood Bioenergy South from Forisk Consulting estimates actual expected new wood demand from bioenergy in the U.S. South at 13.1 million tons annually by 2020, implying that 68% of the 100 currently announced projects will fail to become fully operational. Visit foriskstore.com.

Pellet Plants Part Of Investment Fund

Governor Edward Rendell announced that Pennsylvania has approved nearly \$18.4 million for 31 projects throughout the state as part of the \$650 million Alternative En-

ergy Investment Fund.

In Carbon County, Keystone Pellet Inc. will receive a \$770,000 loan and \$220,000 grant for new equipment and to construct a wood pellet manufacturing operation in Palmerton, Lower Towamensing Township. Keystone Pellet expects to manufacture 35,000 tons per year of hardwood pellets for use in home heating. The company anticipates creating 22 jobs. The capital invested will generate 35,000 tons of alternative fuel that will replace 4 million gallons of heating oil per year and prevent more than 33 million pounds of carbon dioxide emissions, according to the government. Keystone Pellet will invest \$2.5 million in matching funds for the \$4.9 million project.

In Fayette County, Tri State Biofuels LLC will receive a \$716,500 loan and \$360,000 grant to construct a factory to produce wood pellets on a 140-acre brownfield site in North Union

Township. This facility will produce 65,000 to 78,000 tons of wood pellets per year. The funds will be used to purchase and install equipment and for site preparation. The total cost of the clean energy project is \$2.5 million. Tri State Biofuels will provide \$1.2 million in matching funds.

Biomass Plant Planned At Domtar Rothschild

We Energies plans to construct a \$250 million 50 MW biomass-fueled power plant at Domtar Corp.'s Rothschild, Wis. paper mill. The project will be funded by We Energies.

Under Wisconsin law, utilities statewide must use renewable energy to meet 10% of the electricity needs of retail customers by the year 2015.

The project is expected to create 400 construction jobs and 150 permanent jobs in the surrounding community, including independent wood

suppliers and haulers from northern and central Wisconsin who will secure waste wood for the project.

We Energies will file an application for a Certificate of Authority with the Public Service Commission of Wisconsin in early 2010, requesting approval for the biomass plant. If approved, the plant is expected to be completed in the first half of 2013. Visit we-energies.com.

Renewable Energy Project Digs In

Phoenix Renewable Energy has broken ground on a \$100 million renewable energy project in Camden, Ark. The venture is located on 44 acres at Camden's Energy and Renewable Resources Park on the former site of an International Paper plant.

The Phoenix project includes:

- a 20.3 MW biomass Combined

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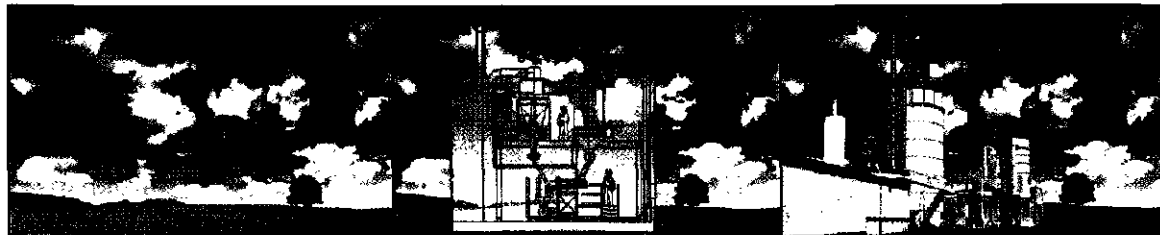


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Heat and Power (CHP) plant that will produce excess electricity for the grid, steam for its second facility, and excess steam available for another renewable energy company.

- a wood pellet mill producing 180,000 tons of pellets annually to be shipped from the Port of Camden.

- a wood processing yard with two cranes, a debarker, chipper and conveyors to the power plant and pellet mill.

Biofuels Projects Grants Announced

Auburn University of Auburn, Alabama, is the recipient of a grant worth up to \$4.9 million from the U.S. Dept. of Energy. Auburn University will design and demonstrate a high productivity system to harvest, process and transport woody biomass from southern pine plantations. Specific project objectives are to develop

design improvements in treelength harvesting machines for energy plantations, configure and assemble a high-productivity, lowest-cost harvesting and transportation system for biomass, and demonstrate at full industrial scale and document performance of the systems.

Show Stirs Interest, Exhibitors Signing Up

Providers of equipment, systems, supplies and services are increasingly showing interest in Timber & Biomass Expo Southeast and more than a dozen have booked space in the live event. Exhibitors have a choice of live, static or tent locations.

As of late September, exhibitors included Bandit, John Deere, TigerCat, Vermeer Southeast and Yancey Brothers (Cat), Cutting Systems, GCR Tire Centers, Rayco Mfg., Cleanfix Reversible Fans, Great American, Ha-

glof, Hawkins & Rawlinson, Ritchie Brothers Auctioneers and Stihl. Hatton-Brown Publishers, sponsor of the exhibition, is the parent company of *Wood Bioenergy* and other magazines in the forest products industry.

The event will take place on a natural stand located nine miles south of Vidalia just west of the intersection of Georgia highway 15 and U.S. 1.

This is the first time the show name has included biomass in its title, but it is most fitting, given the rapidly emerging wood biomass markets in the region.

For more information, visit www.timberexpose.com or call Dianne Sullivan at 334-834-1170.

IP Considers Biomass Project At Riegelwood

International Paper is partnering with Sterling Planet Holdings Inc. to evaluate the feasibility of a combined

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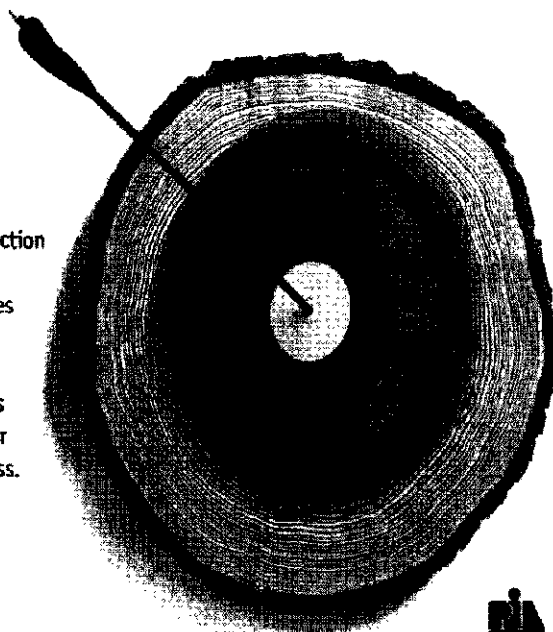
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heat and power (CHP) project at the company's Riegelwood, NC mill. If it's a go, Sterling Planet will build and own a boiler and turbine generator at the mill site that will produce electricity from biomass consistent with the North Carolina Renewable Energy and Energy Efficiency Portfolio Standard (REPS). IP will provide biomass and consume a portion of the steam generated by the process. Sterling Plant will sell the renewable electricity generated by the process to utilities in the region.

IP says it currently produces more than 70% of the power needed to run its U.S. mill system from carbon neutral bioenergy, and the company has reduced its purchased fossil fuel by about 35% since 2000.

The biomass would consist of wood materials such as branches, sawdust, bark and other wood fibers that are not typically used in pulp and paper production.

The project could be operational in 2013. In determining the project's feasibility, forest sustainability and wood supply in the region will be critical elements.

Railroad Support Firm Buys Energy Group

B.H.I.T. Inc., a railroad support services company in Boca Raton Fla., has acquired The Wood Energy Group Inc. in St. Louis for \$6.4 million.

Wood Energy reclaims railroad ties for railroads and then disposes of the ties to either energy cogeneration or landscape markets.

Castleberry Gets Nod From Magazine

Castleberry Logging, Inc. (CLI) of Castleberry, Ala., has been selected as the 2009 Logging Business of the Year by *Timber Harvesting & Wood*

Fiber Operations, an affiliate magazine of *Wood Bioenergy*. The award was presented to members of the Castleberry family September 29 at the annual meeting of the American Loggers Council in Flagstaff, Ariz. Ezell Castleberry, CLI president, served as president of the group in 2008.

Pellet Plant Planned For MDF Site

New England Wood Pellet LLC (NEWP) is buying Norbord's Deposit NY land and property and will commence construction of a wood pellet manufacturing facility.

Norbord's intentions are to continue manufacturing medium density fiberboard at the facility until before the closing. NEWP will then begin significant site modifications and construction of a 100,000 ton per year pellet manufacturing plant once all state and local permits are secured.

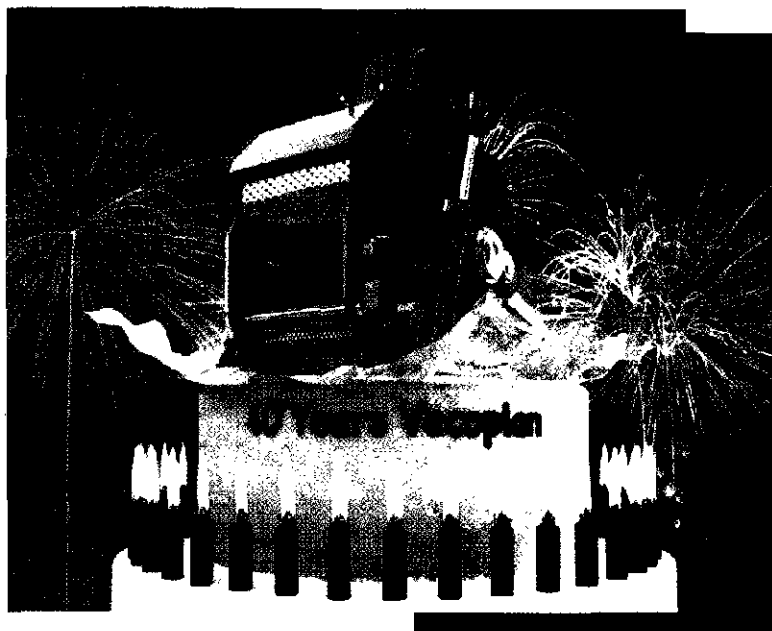
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shredding – conveying – screening – separating – storing – dosing

NEWP owns manufacturing plants in Jaffrey NH, the site of its corporate headquarters, and in Schuylers NY. NEWP also owns and operates a rail-based packaging and reload facility in Palmer, Mass.

The new operation is expected to commence production in fourth quarter 2010 and reach production capacity in the first half of 2011. NEWP expects to use certain buildings, wood yard equipment and other elements of the existing Norbord facility.

Biomass Group Launches Campaign

Biomass Power Assn. (BPA), composed of biomass power companies, launched a \$250,000 public relations, advocacy and advertising campaign to demonstrate the vital role that biomass power can play in reducing greenhouse gases and creating jobs across America, especially

in rural communities. The campaign, which focuses on Washington, DC, highlights the economic and environmental benefits of biomass power, as well as the importance of extending tax incentives essential to maintaining existing biomass power facilities and creating jobs.

BPA supports a strong renewable electricity standard of 25% by the year 2020.

East Texas Coop Plans Biomass Plant

East Texas Electric Cooperative (ETEC) finalized a contract with North American Procurement Company (NAPCO) to develop a wood-fueled biomass plant in Woodville. The plant will produce 50 MW.

ETEC plans to build the biomass plant adjacent NAPCO's operations in Woodville. ETEC has licensed NAPCO as the sole provider of wood

chips and other wood materials to fuel the plant.

ETEC is made up of 10 not-for-profit electric distribution cooperatives.

British Government Okays Biomass Facility

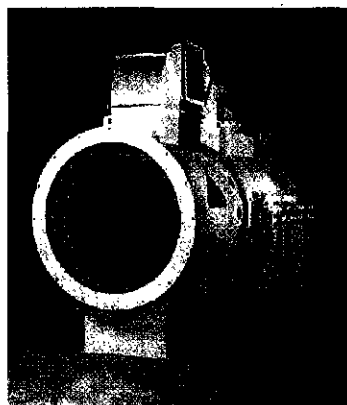
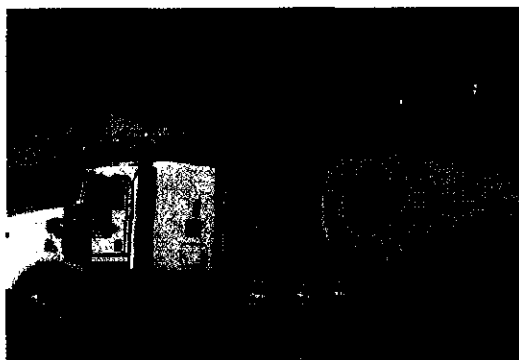
The Tees Renewable Energy Plant, located at Teesport, and being developed by British company MGT Power Ltd., has received consent from the British Government. At 295 MW capacity, the plant will generate enough electricity to meet the needs of approximately 600,000 homes and will be one of the largest biomass plants to be built in the world, according to the participants.

The plant is expected to enter commercial operation in late 2012. The plant will use 2.4 m tonnes of wood chips annually. MGT Power was established in December 2007.



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Lasting 'Bio' Power

By Rich Donnell

TELOGIA, Fla.

In 1986, long before biomass power plants became "cool," General Electric started up a 14 MW facility about 30 miles southwest of Tallahassee. It's still here and in operation, but what a long strange trip it has been.

Timber Energy Resources, as it was called, was sold in 1998 to KTI, Inc., which upgraded the operation and ran it successfully, before selling it. This began a series of ownerships, including Green Hunter Energy, which in February of this year sold it to Multitrade Biomass Holdings.

Multitrade Biomass Holdings consists of this operation, called Multitrade Telogia LLC, as well as a larger biomass power plant in Rabun Gap, Ga., called Multitrade Rabun Gap LLC. The largest investor in Multitrade Biomass Holdings is Leaf Clean Energy Company, based in the United Kingdom, which invests in "clean energy" operations in North America, including biomass, wind, solar and pretty much anything that's clean energy efficient.

One thread running through much of the history of the Telogia power plant is Ted Hill, who was the lead developer for GE when it built the plant, and has been involved with the plant in some capacity for most of the other companies that bought it.

But after KTI, according to Hill, "The succession of owners that followed were for the large part poorly capitalized, so basically Telogia was left to its own devices economically until Multitrade came along."

Today Hill is Vice President of operations for Multitrade Biomass Holdings, overseeing the two biomass power plants.

In January 2008 the Telogia plant sustained a catastrophic boiler failure, when a low water condition caused a meltdown of the boiler internals. In 23 degree F temperature, water accumulation had frozen up in the instrument air lines going to the boiler's feedwater pump, causing it to cavitate, and the boiler to subsequently run out of water.

Only as recently as this past February did the plant start up again, now operated by Multitrade Biomass Holdings (and Clean Leaf Energy), which reportedly paid Green Hunter \$4 million for the asset, assumed \$1.6 million in invoice obligation, invested \$4.6 million in the boiler repair and upgrade program, and did \$1.5 million in other repairs and upgrades.

The plant has started up with a long-term power purchase agreement (negotiated when Green Hunter owned it) with the Seminole Electric Cooperative, a Tampa-based wholesale power supplier to member distribution systems.

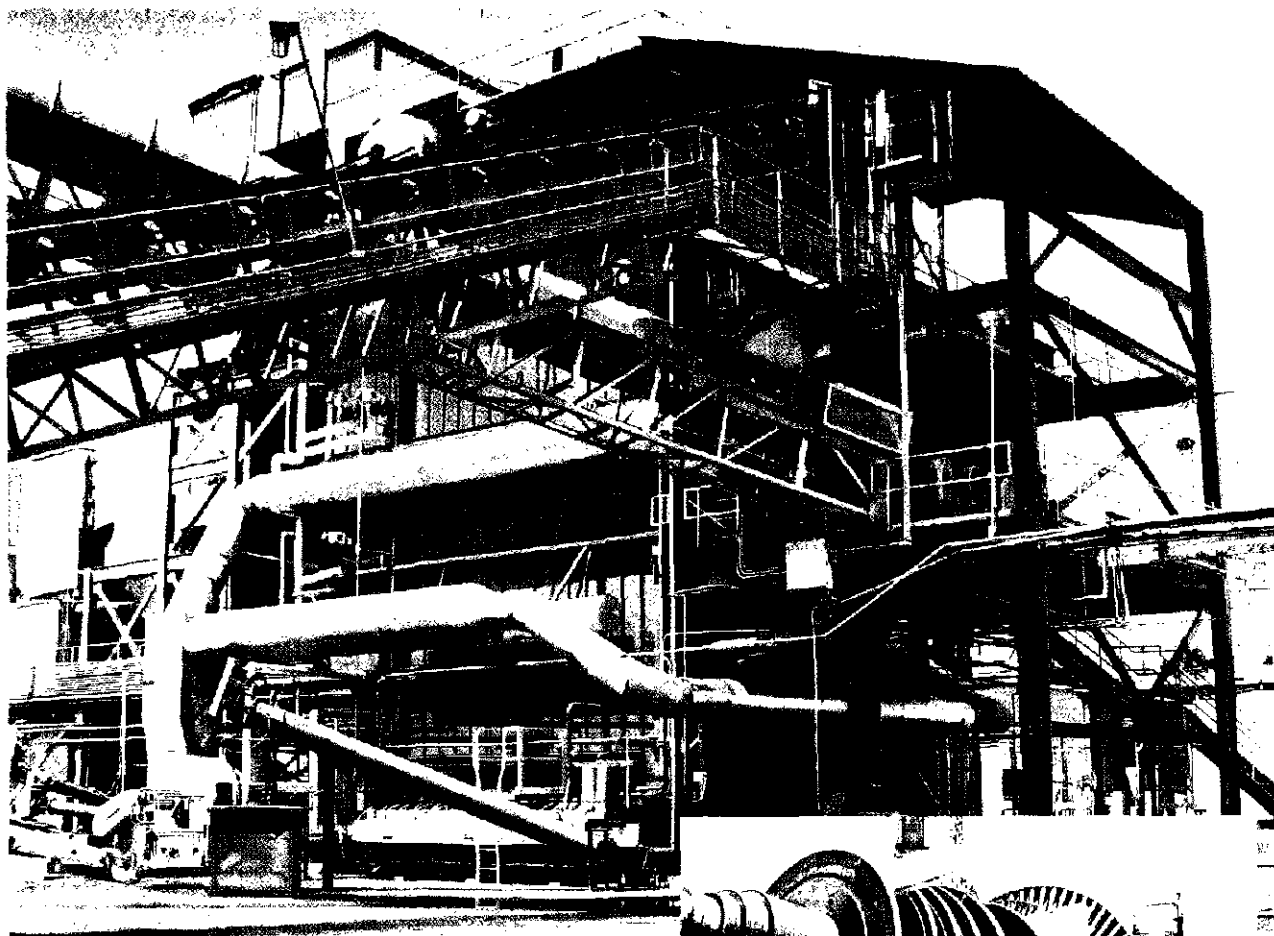
"It's a re-birth," Hill says. "The right money has been put into the right places, and we've got a very competent crew in place to operate the renewable energy asset."

While Hill's association with the plant dates back to its original construction, not far behind in longevity here is Plant Manager Jay Moon. A welder by trade, Moon applied for a position when the plant was being built, but didn't get it. However, when the plant had its first annual shut down, he was invited in for some temporary work, which has stretched into 23 years.

Moon's perception is that many of the plant's buyers through the years underestimated what it took to successfully maintain a biomass power plant, or simply lacked the knowledge thereof.

During the 14 month shutdown period following the meltdown, about a dozen of the 27 employed remained on hand, including Moon, the maintenance manager and maintenance hands, two office personnel and four boiler operators, who acted as security around the clock. This was a key factor in subsequently selling the plant, in that though the plant was down, the core competency needed to operate the plant hadn't gone anywhere. "It's not the easiest thing in this area to go out and find skilled boiler operators, trained millwrights and maintenance hands," Moon says. Employment is now back up to 22.

Telogia Power called upon the McBurney Corp. of Norcross, Ga., the original plant supplier/constructor, to rebuild

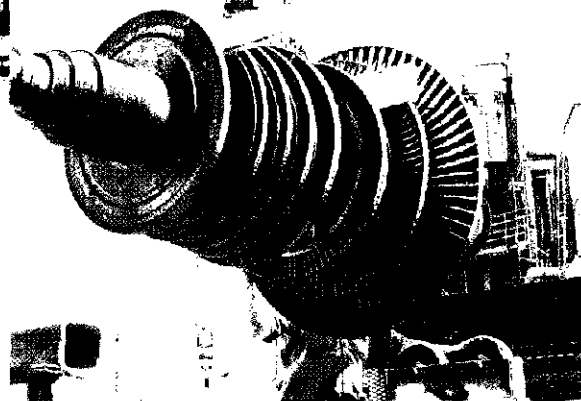


Boiler has undergone extensive upgrading.

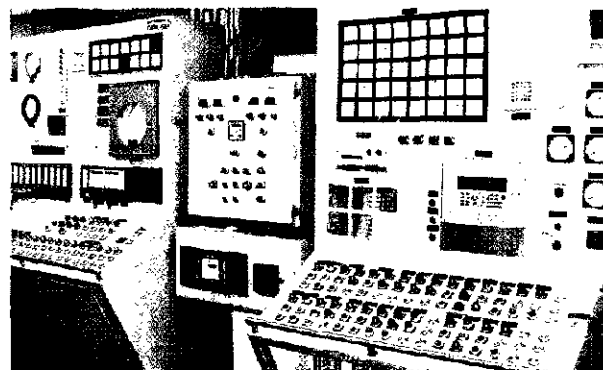
the 130,000 pounds per hour steam boiler. The overhaul required replacement of the tubes, super heater headers and pendants, fans, grates, sidewalls, as well as the installation of PLCs for boiler controls, which represents an ongoing transition for the plant from pneumatic controls to electronics. Alabama Electric has been doing a lot of the wiring on the new controls. Also installed was a classifier that re-injects unburned char back into the furnace so as to optimize combustion. The overall project was completed in four months.

A GE Bently Nevada vibration and temperature monitoring system was installed for the turbine generator. It monitors the high pressure and low pressure bearings on the turbine, four bearings on the gearbox and two on the generator. In addition, PPC Industries was retained to replace the outlet field plates in the dry electrostatic precipitator which were destroyed by thermal carryover from the meltdown. The stack was also replaced and a new constant emissions monitoring system was added. In the near future, a BM&M shaker screen will go in as work is done on the fuel conveying and hog line. The screen is employed to remove inert materials from the fuel stream ahead of combustion.

The investment was significant, but as Moon notes, "with new plant costs running at around \$3 million a megawatt, it's a drop in the bucket compared to building a



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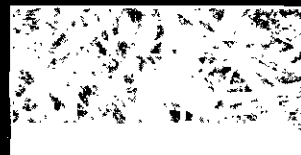
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■ power producer feature

new operation of this size.”

The operation requires approximately 185,000 tons of wood fuel annually, which consists of bark, sawdust, shavings, sawmill and panel mill cutoff trimmings, and land clearing woody refuse tub-grinded down to 4 in. and less size dirty chips. The occasional clean whole tree chip comes in from loggers. Electrical production is projected to average around 100,000 megawatt hours annually.

Moon recalls that Telogia used to burn a small percentage of paper, bringing in waste paper by rail from all over the Southeast U.S. to a processing plant on this same 125 acre site. At first they took in a lot of cardboard in the mix, ran it through grinders and cubers to create a cube for burning. Paper quality deteriorated, however, and the bonding or cubing became less efficient. They also tried just grinding and pneumatically feeding the paper into the boiler, but difficulties prevailed in the combustion process and the decision was made to shut the paper processing operation down.

Today the plant accepts green and dry wood fuel, soft-



Generator rotor being removed for testing.

wood and hardwood (which is mainly pine and oak). The plant will run off 30-35° moisture content biomass, and the dryer the better, but the greater emphasis is on clean fuel. A small percentage of peanut hulls are also used seasonally.

Operating around-the-clock, the plant requires 25 to 30 truckloads of raw material daily. To this juncture, the plant has relied on spot market fuel deliveries, but the operation is

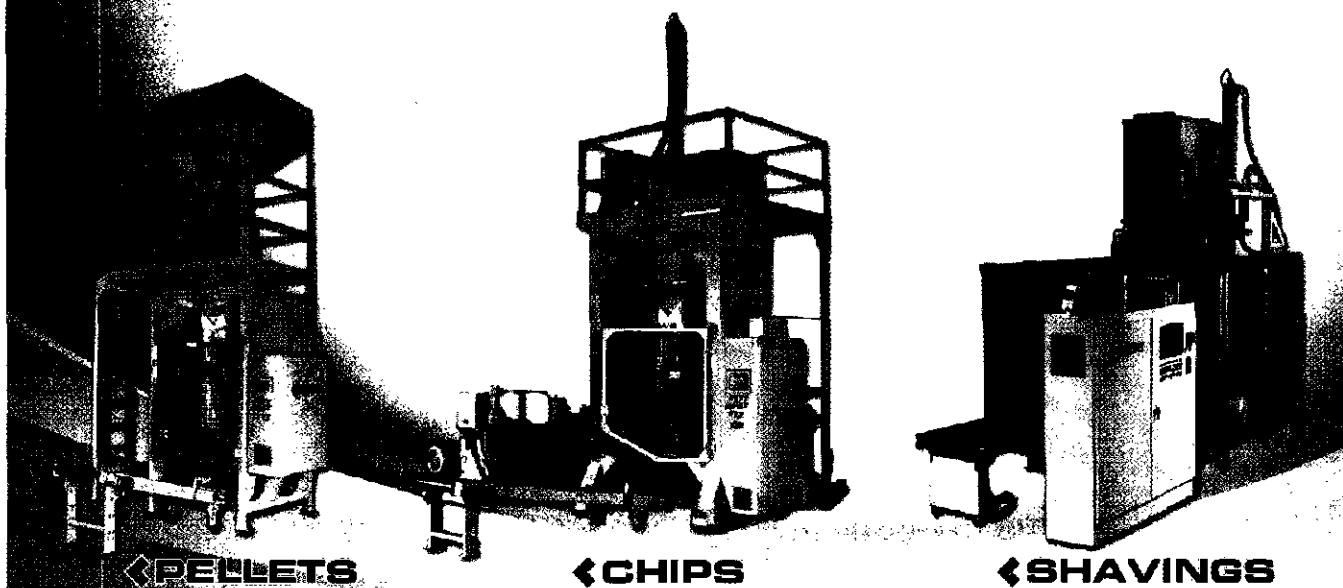
looking at brokering in its fuel via long-term contracts going forward.

A truck dump unloads trucks and a front-end loader operator moves the fuel to a 100x300 ft. fuel storage shed. The operator layers and mixes the biomass to maintain a consistent blend of materials and moisture content, which keeps the boiler from spiking up and down performance-wise. A drag chain conveyor moves wood to a BM&M shaker screen that shakes out fines and sand, while oversize materials go to the grinder and accepts convey to the grinder out-feed. Material is conveyed up to a fuel shed, drops onto



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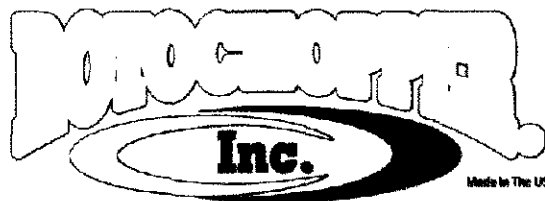
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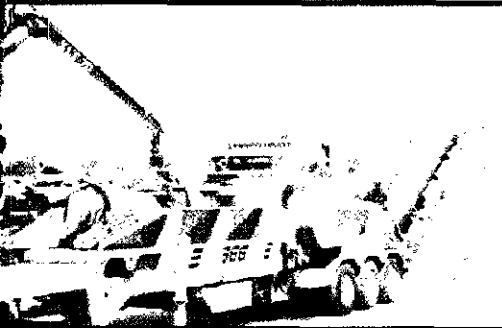


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another chain conveyor and feeds into five pressure-driven auger surge bin feeders that feed the boiler. The boiler master control is set to run at 700 pounds pressure.

The steam pressure turns a GE Marine turbine generator at 6,808 revolutions per minute, with reduction gear down to 1800 RPMs on the generator. Since the generation facility is powering itself, the 14 MW plant is actually selling 12.5 MW to Seminole. Telogia Power owns and runs about five miles of power lines, ties onto the Progress Energy grid in Hosford and is wheeling power across the Progress Energy lines to Seminole.

The plant runs on 12 hour shifts with four shift teams. Other than a planned annual maintenance shutdown of two weeks, the plant should run 24/7. "We want to run flat out; that's what it



New outlet nozzle, transition, stack and opacity monitoring system

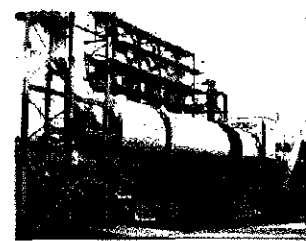
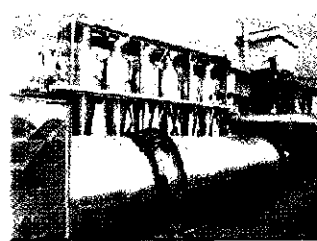
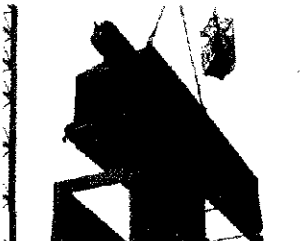
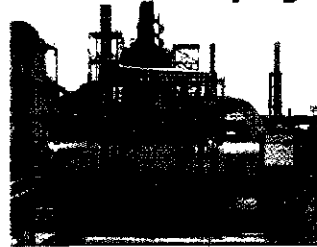
is designed to do," Moon says.

Moon says the plant has never had a problem procuring a sufficient wood fuel supply. He does shake his head a little at some of the recent announcements for new energy plants that indicate wood fuel tonnage intake three and four times greater than Telogia. "We're burning 500 to 600 tons a day," Moon says. "That's a lot of fuel."

Meanwhile VP Hill is looking forward to the future of the newly enhanced Telogia plant. "It should fly like a bird," he says.

Hill has also been busy as of late at the Multitrade Rabun Gap biomass plant in Georgia, which is undergoing a \$25 million investment. The 18 MW facility, which was originally built to provide power for a production facility, is expected to commence operation in October. ■

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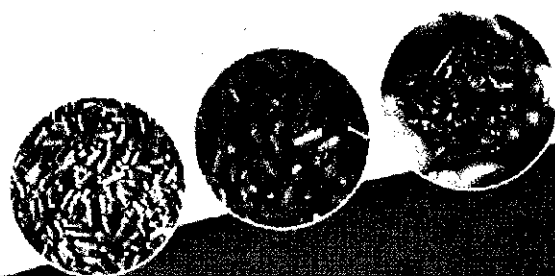
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Beetle-Damaged Fuel Wood



Pine Star switched from conventional logging to biomass recovery last year with a mobile Ransit grinder and Medjit loader.

By David Abbott

PRINCE GEORGE, BC

The mountain pine beetle has dealt a severe blow to tens of thousands of acres in British Columbia's interior—some data indicates that up to 80% of North America's mature pine forests may be leveled by the rice-sized bug over the next five years. The beetle measures just 5 mm in length and targets trees under stress, including those that are old, injured or overcrowded. But though the timber may no longer be standing, the debris still has value for those able to capture it. Pine Star Logging Ltd., a contractor based in Prince George, quickly saw the potential and seized the opportunity.

Switching gears from conventional logging, the family-owned-and-operated company sold off all of its old equipment and set its sites on a different kind of wood fiber harvesting: wood bioenergy recovery. Pine Star invested \$750,000 in a new Bandit Beast mobile grinder and Madill loader to service a local wood pellet manufacturing plant owned by Pacific BioEnergy.

The mountain pine beetle epidemic has forced many logging contractors to settle for salvaging the least-damaged trees, or parts of them, for traditional commodities markets—tossing the rest aside. The debris is piled to the side, much of it scheduled for burning. Pine Star and Pacific BioEnergy saw a better alternative: utilizing the "waste" to make pellets.

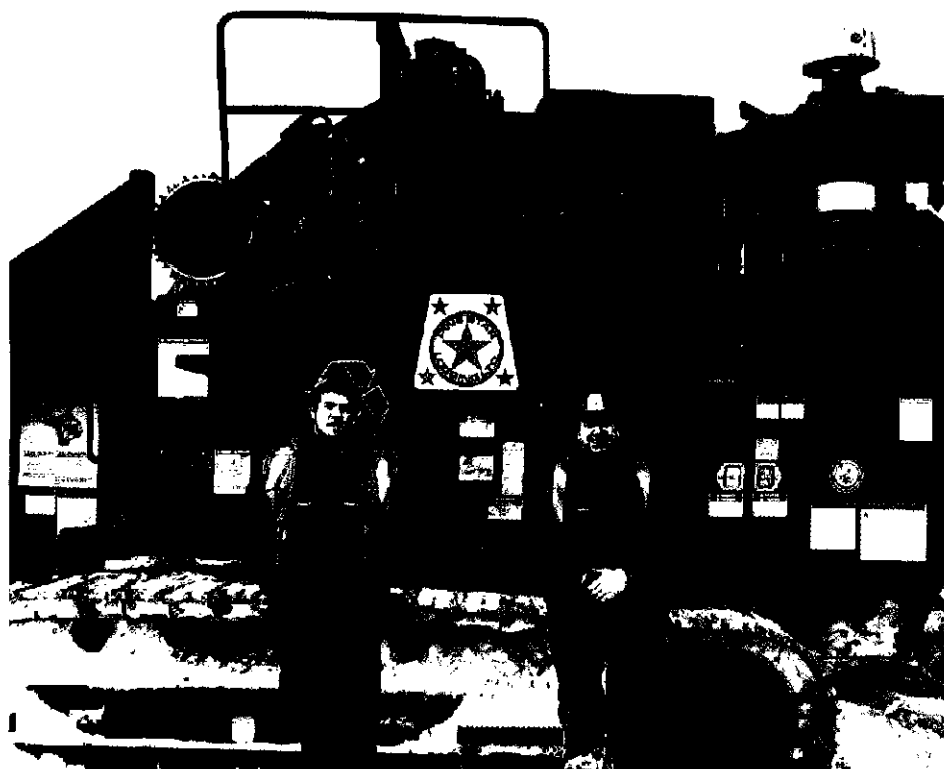
Pine Star is a true family operation. Brothers Keith, 31, and Neal Brandner, 27, are the owners and run the operation with help from their father, Ray. They have no employees. Ray started the company in 1986, and his sons, having grown up in the business, bought it from him five years ago. Lately, though, Keith and Neal had been looking for something different, with declining markets straining the already tenuous bottom line more than ever. As loggers, they had been producing 300,000 m³ in their best years, but with the economy as it is, they knew the time had come that they had only two options: grow, or change to something else. "We didn't want to get bigger," Keith says. "It was enough headache already." Grinding waste for wood pellets seemed like just the thing.

"It's not necessarily more profitable," Keith relates;

they now produce only about 60,000 m³ a year. But that wasn't the point. "With the way the forest industry has changed, this is a growing market."

Having learned that Pacific BioEnergy was requesting proposals from contractors, the brothers submitted theirs and won. They are the only contracted supplier for the pellet plant, which also sources residue from area pulp, lumber and plywood mills.

When Cortez landed in Mexico to conquer the Aztec Empire, the conquistador instructed his men to burn their



Neal and Keith Brandner bought the operation from their father Ray five years ago.

ships, leaving themselves no escape and thus, no option but success. Likewise, Pine Star committed itself fully to its new venture by selling off all of its old logging equipment. Today they operate a mobile Bandit grinder fed by an 1800 Madill button top tracked loader, both purchased in the fall of 2008. These two machines process the piles of beetle-damaged debris and load trucks at roadside. The streamlined operation, Keith gladly admits, is far less of a headache than logging. Even trucking is contracted through the mill.

"This is the beginning of a brand new industry because what was once considered waste has new value," Brandner

■ biomass contractor feature

believes. "We've made this investment because we see a future in bioenergy. Plus, the portability (of the Beast) means we can go wherever we need to and harvest what has previously been left behind on the forest floor."

The Beast

When they decided to get into biomass recovery, the brothers knew they had to find a grinding machine that could handle the job. "We looked at other machines but the Beast made the best product for the mills we supply and the most consistent size of piece," Keith explains.

The Bandit 3680, one of eight towable and tracked Bandit models, features a 42 in. diameter by 63 in. wide cutter-mill with a 35 in. by 60 in. opening. The unit has a self-propelled steel track undercarriage and, according to Bandit, the grinder can produce up to 500 cubic yards an hour depending on the type of material being processed. The area dealer is Bandit Tractor Ltd. with sales, parts and service in 21 locations across western Canada.

The Madill grapple loader feeds limbs, tops, butts, undersized stems and branches from the side of the road directly into the grinder. The Beast dumps the material via conveyor into a 54 ft. trailer. Pine Star had no troubles establishing healthy production levels. They can produce about 40 green tons an hour, Keith reports, adding that they fill approximately 10-12 loads per day, each weighing about 25 metric tons. Each trailer takes 30-40 minutes to load.

"The mills have been extremely happy with our product," Keith says. "We run a combination of Bandit's Helmet Head and Splitter Fan teeth to produce a consistent 2 in. size product. From the different types of teeth we have tried, this combo has been the best so far."

New Frontier

The new market, Keith notes, is very different than logging. For one thing, there is more involvement from the government, as existing legislation drafted for harvesting on crown land presented an obstacle to the beetle-pine recovery Pine Star proposed. Happily, he says, the government has been very helpful in overcoming those obstacles. Under the crown land system (most of the beetle-damaged timber is on government-owned timberland), the logging contractor pays a stumpage tax. Because this is essentially a salvage operation in the public service, cleaning a fire hazard from public land, Pine Star pays a very minimal fee, Keith says.

Since Pine Star is exploring relatively uncharted territory for itself, it is no shocker that it has its fair share of kinks to work out in day-to-day operations of the new venture. Perhaps the biggest and most consistent bug in the system is trucking. Pacific BioEnergy provides trucking contractors based on what Keith and Neal project they will need. The logistics of having trucks available when needed are still a work in progress, so there are times when the loader and grinder sit idle waiting for the next truck.

Another issue awaiting resolution is the positioning of the debris piles, which were built with burning in mind, not reclamation. Breaking the piles apart and feeding the material to the grinder can be problematic, especially when temperatures reach -30° and lower.

Keith estimates that the beetle-killed area surpasses 80,000 square miles. Due to the massive area, he has no fears that Pine Star will run out of material anytime soon. "We've been doing it for a year, and there is enough to keep us going for at least the duration of our three-year contract. At the end of that, I think we'll be able to renew for another three years without even trying hard."

On one recent job, Pine Star anticipated gleaning roughly 300 loads of chips from the tract. The company had logged the block before, then getting 63,000 m3 of logs from it. "Our dad said it was the first time in 30 years we got paid for everything out in the bush," Keith laughs.

Pellets

According to the company web site, Pacific BioEnergy only purchases wood fiber from certified companies that practice sustainable forest management. It started manufacturing wood pellets in 1994 and started exporting overseas to international utilities in 1998.

The pellets are transported by rail to Vancouver, from there to be loaded and shipped to Belgium. Demand for biomass fuel in the European markets, especially for wood pellets which are widely used there, is currently strong enough that it is economically feasible to ship the product across the Atlantic.

George Stedeford, manager of commercial operations for Pacific BioEnergy, expresses hope that a new culture can be built around utilizing logging debris rather than burning it, for both economic and environmental reasons. "A reduction in the burning of logging debris will decrease the amount of fine particulate released into the air, creating a better air shed and air quality for Prince George and its surrounding communities." He explains that Prince George is an industrial area with several mills, so the air shed is quite sensitive. The burning of thousands of acres of beetle-killed pine would further overburden the system. "We take about 70% of the debris so that reduces the burning. This in turn reduces the amount of particulate that is released." Pacific BioEnergy can't take use all of the debris. Branches and needles are hard on a pellet system. The branches have too much bark relative to the amount of white wood, leaving too much ash in the pellets, and needles and cones have no lignans, a chemical compound in the wood that is used to hold pellets together.

Wood waste used for energy generation counts as carbon-neutral, meaning that the amount of carbon it releases into the atmosphere as energy is balanced by the amount it absorbs during its lifetime as a tree. This is why many believe the growing use of bioenergy, if used in place of non-renewable energy sources, will help lower the total volume of carbon dioxide released into the atmosphere. ♻

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Panel World magazine and Georgia Research Institute, sponsors of the 2010 Panel & Engineered Lumber International Conference & Expo (PELICE), are collaborating with Wood Bioenergy magazine to present a PELICE pre-conference Bio-Energy, Fuels & Products Symposia.

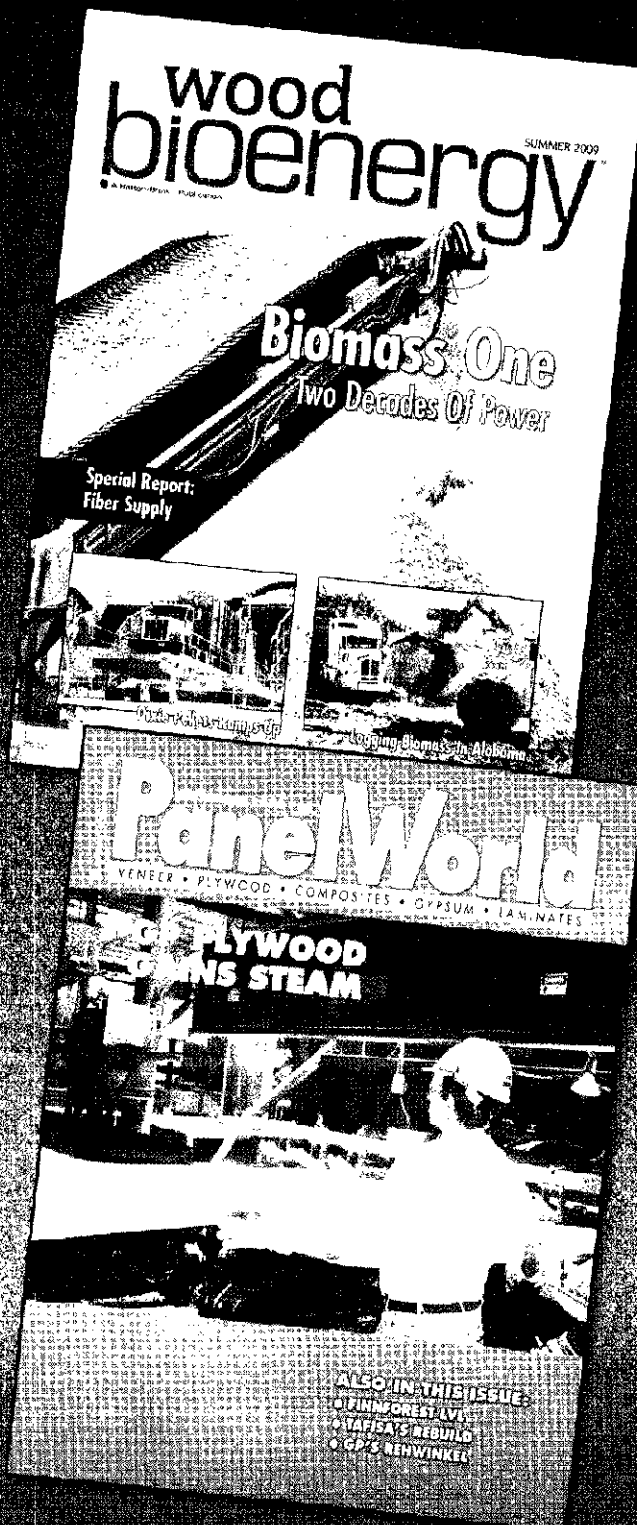
The symposia will be held at the Omni Hotel at CNN Center in downtown Atlanta, Georgia, USA, and precede PELICE 2010 which will be held at the same facility on February 5-6.

The pre-conference symposia will be held on February 4 and will address feedstock developments, industrial processing and legislative trends in the bioenergy industries. Cost of the symposia is \$195. An Early Bird Special price of \$495 includes the Bio-Energy Symposia and PELICE.

In conjunction with the symposia on February 4, exhibit spaces are available for \$300/make.

For information, contact:

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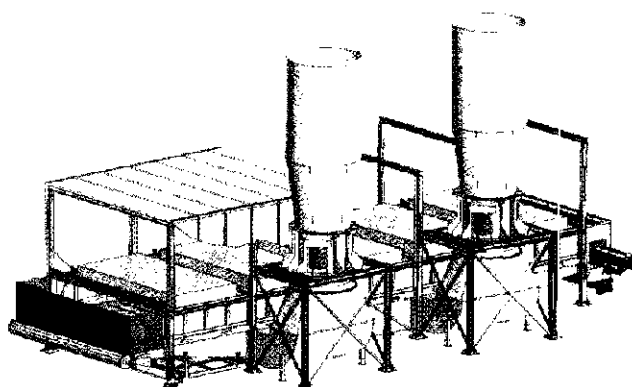
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■ ethanol feature



KL Energy's demonstration plant accepts whole-tree feedstock; the company's commercial plant designed here has 100,000 metric

By Dan Shell

UPTON, Wyo.

Building on the success of its commercial scale demonstration plant here on the windswept west slope of the Black Hills region in northeast Wyoming, KL Energy is poised to make a major announcement before the end of the year concerning its first commercial scale cellulosic-based ethanol (CBE) plant. Company representatives are actively working with economic and project development groups in the Southeast and Northwest U.S. and in Europe and South America, says KL Energy CEO Steve Corcoran. "It's a very exciting time, and we could be looking at announcing something in



Steve Corcoran

the next four to six weeks," he adds.

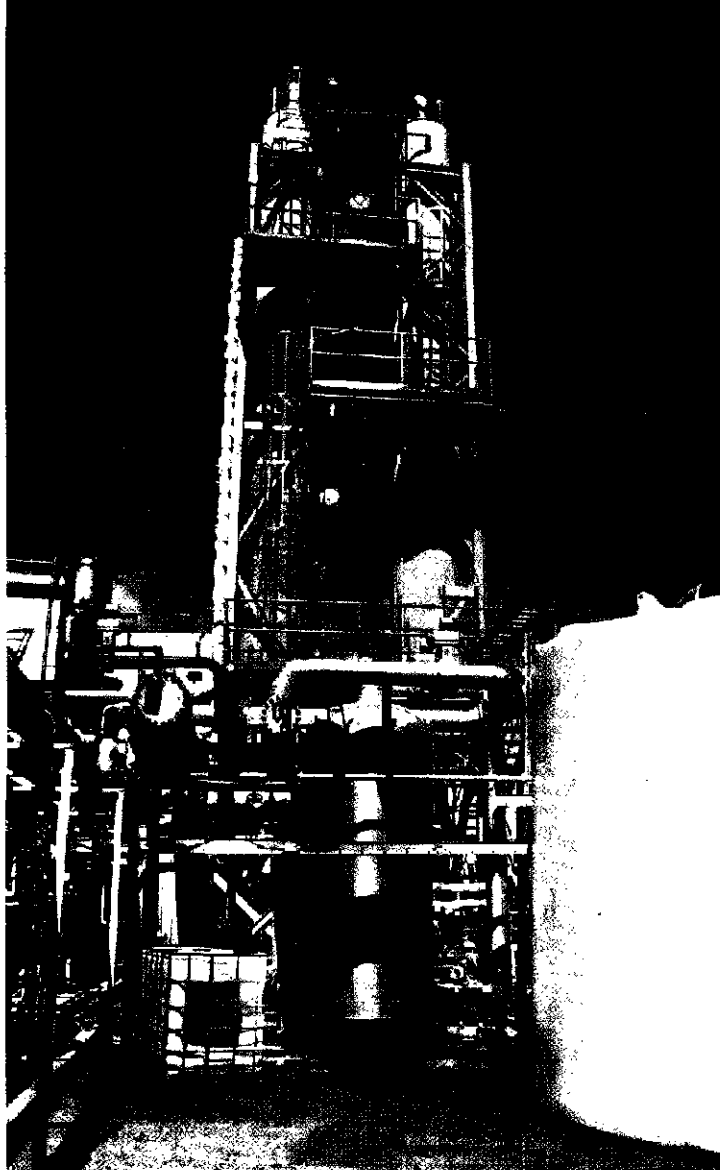
The company, a longtime corn ethanol industry player, has developed a thermo-mechanical pretreatment for woody biomass that does a high quality job of exposing cellulose particles to an enzyme and fermentation treatment that converts wood sugars to ethanol. Working from an R&D lab at its Rapid City, SD of-

fice, KL Energy developed the ethanol-refining technology for Western Biomass Energy, the subsidiary formed to operate the demonstration plant here.

Citing some of the CBE production technologies now going in at several pilot plants around the country, such as gasification, diluted acid and steam explosion, Corcoran says, "All those technologies will offer a solution but the effectiveness of the process is what's critical, and the big challenge is the scaling up from lab, pilot, to demonstration scale, to commercial."

Since KL Energy's ethanol plant commenced startup operations the second half of 2007, "We've learned a lot of lessons," Corcoran says, "our focus is on our pre-treatment technology, and we're commercially ready now."

Another commercial-ready product the ethanol plant creates is a concentrated lignin solid that has a BTU content capable of reaching that of coal, Corcoran says. The lignin comes off a centrifuge that separates solids from liquids prior to fermentation, and provides a high-quality wood fuel that could be used in a biomass-fired boiler or



Distillation columns rise behind sieves in foreground.



One plant characteristic is a high-BTU lignin byproduct.

as feedstock for premium-BTU wood fuel pellets. In fact, Corcoran reports KL Energy is currently considering a proposal to install a pellet-making line at the Upton plant.



Dennis Harstad

KL Energy's ethanol-refining process, with its capability of utilizing wood waste or whole trees and its high-value byproduct, is ideal for co-location with a pulp and paper facility or other forest products operation, Corcoran says. He adds that he can visualize a joint venture where a mill could use residual woody biomass to feed the ethanol plant to produce transportation fuel while utilizing the lignin by-product on site as boiler fuel or selling it as a pellet feedstock or pellet product.

Corcoran adds that KL Energy's ethanol plants are designed as 5-7 million gallon annual production facilities,

which use around 100,000 metric tons of biomass each year and also produce about 70,000 tons of concentrated lignin, making such ethanol operations ideal to operate in conjunction with a forest products plant.

"I see a great tie-in between our technology and the forest products industry," Corcoran says. "Leveraging the experience of a sawmill or pulp and paper plant would be very attractive to us. The synergies of using woody biomass grow naturally between many different industries."

Demonstration Plant

The KL Energy Western Biomass Energy demonstration plant's background dates to 2000-01, when the company began looking into CBE, which executives believed would eventually overtake corn-based ethanol in the marketplace.

Wyoming's state forest agency helped with a feedstock supply analysis that determined there was enough feedstock within a 20 mi. radius of the plant to support it—and that was just on state and private land, not counting the huge amount of biomass available in the Black Hills National Forest, says Dennis Harstad, KL Energy vice president of operations.

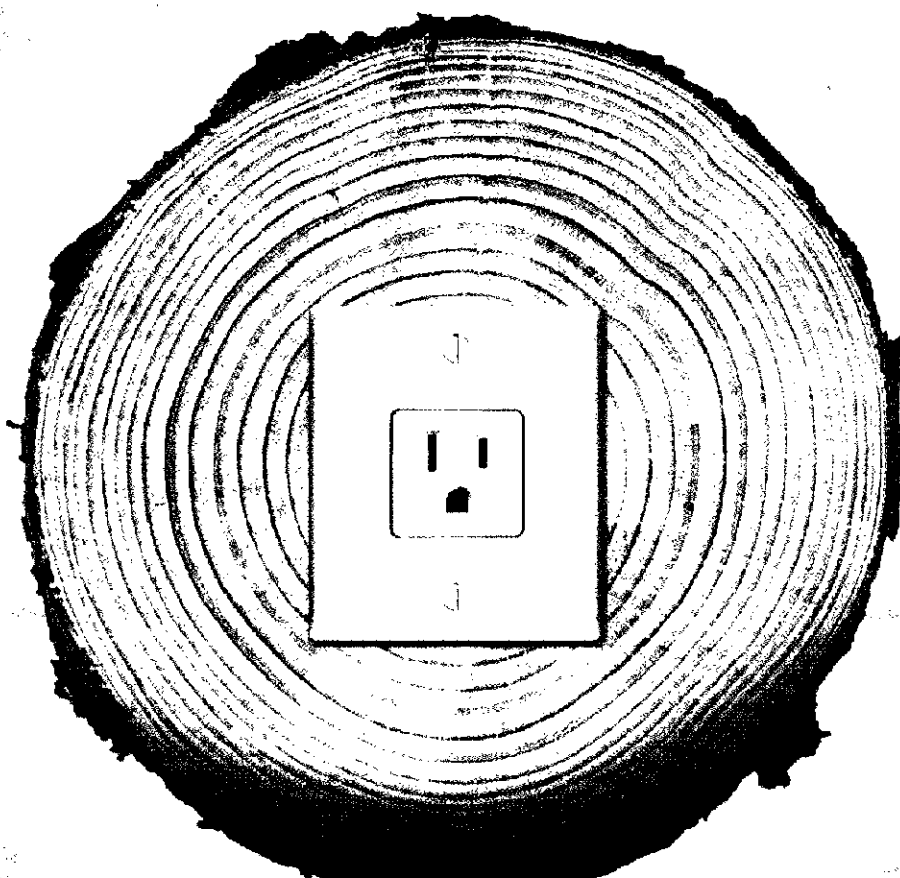
"We're concentrating on woody biomass now because it's so available," he adds, noting that the Black Hills NF

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A large industrial machine, likely a wood processor, with a conveyor belt and a large hopper, set against a dark background with dramatic lighting.

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is a major biomass producer, with leadership aggressively managing for forest health, which means lots of thinning that has traditionally created slash piles for burning in the fall and winter.

The company chose Upton as its site for several reasons, not least among them a Wyoming state ethanol production incentive of 40 cents/gallon. The small town had also recently lost a big employer when a bentonite plant there closed, giving KL Energy a ready-made facility to begin operations.

Plant construction was completed in August 2007, and personnel began doing batch processing and testing for the better part of a year until mid '08, when the plant shifted to continuous operation. When *Wood Bioenergy* visited in August, the plant was going through a brief period of batch processing, which allows a more detailed and thorough analysis of each separate plant process.

A big factor in the plant's design, startup and operation is the use of refinery modeling software by KL Energy Vice President of Engineering Dave Litzen, who worked with Shell Oil 15 years, and his staff. The program tightly integrates design, job costing and operational simulations, allowing process engineers to immediately see what impact system modifications have on overall plant performance.

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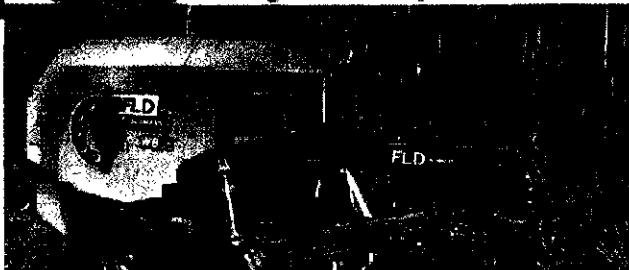


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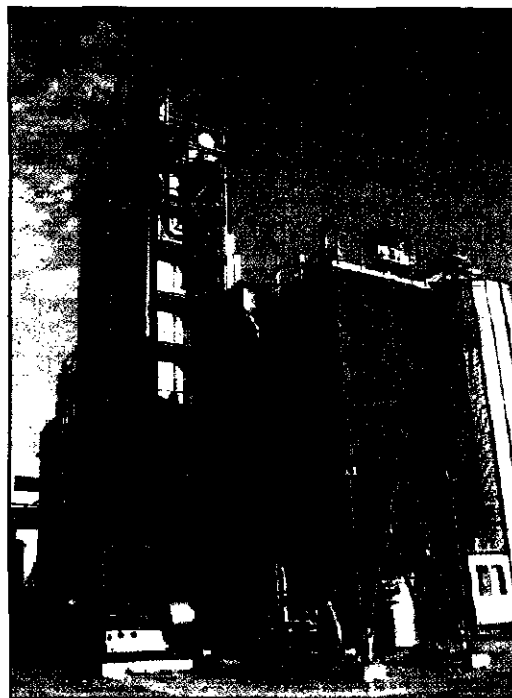
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Technology

A key to KL Energy's ethanol production process is its mechanical pre-treatment of wood fiber, including processing through a hammermill, reactor, flash cooling and an additional proprietary mechanical process that, in Harstad's words, "unwinds" wood fibers instead of chopping them into smaller and smaller segments. This process greatly aids in separating cellulose from lignin fiber—the big challenge in efficiently producing CBE.

Baker Forest Products of Rapid City, SD, which operates a sawmill and logging crews, has Western Biomass Energy's supply contract, providing chips and sawdust. The facility can accept all whole tree fiber, Harstad says, including bark, needles and cones, and is currently consuming 50 tons of biomass per month. A Cat wheel loader with bucket moves biomass to a chip bin with Bindicator level transmitter.

From the chip bin, feedstock moves along a shaking conveyor belt, past a set of Eriez magnets that pull out any metallic material and across an air knife system before entering a Buffalo/Schutte hammermill, where the fiber size is reduced.

Feedstock from the hammermill is fed into a reactor and steam heated under heavy pressure for a set time. Harstad says, adding the process also helps break wood fibers apart

and reduces energy requirements for downstream processes.

The softened wood fiber is then conveyed across a set of Weigh-Tech scales for additional proprietary mechanical pre-treatment that further opens and "unwinds" wood fibers, making it much easier to release the fibers' lignin-trapped cellulose.

The mechanically treated fiber is fed into a slurry/mix tank serviced by Durco pumps, where water is added, along with enzymes and aqua ammonia for pH balance. The slurry is then pumped to a storage tank where enzymes break complex wood sugars into glucose.

From the storage tank, the mixture is then fed into a Sharples centrifuge supplied by Avid Solutions and rebuilt by Centrifuge Technology that separates the highly concentrated lignin solid from what is now wood-based sugar water.

Yeast is added as the glucose-rich liquid is pumped to the fermenters. Harstad notes that new yeasts are in development that will convert C5 as well as the predominant C6 glucose sugars present in the mixture, increasing yields. The fermenters receive regular steam, hot water and microbial treatments to maintain cleanliness.

After the glucose is converted to ethanol in the fermenters, the fluid is pumped to the distillation system, heated with a Tranter PHE indirect steam heat exchanger

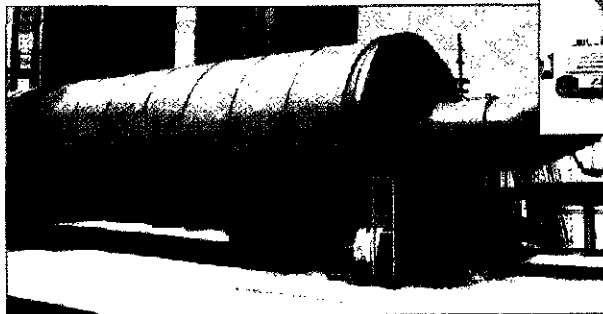
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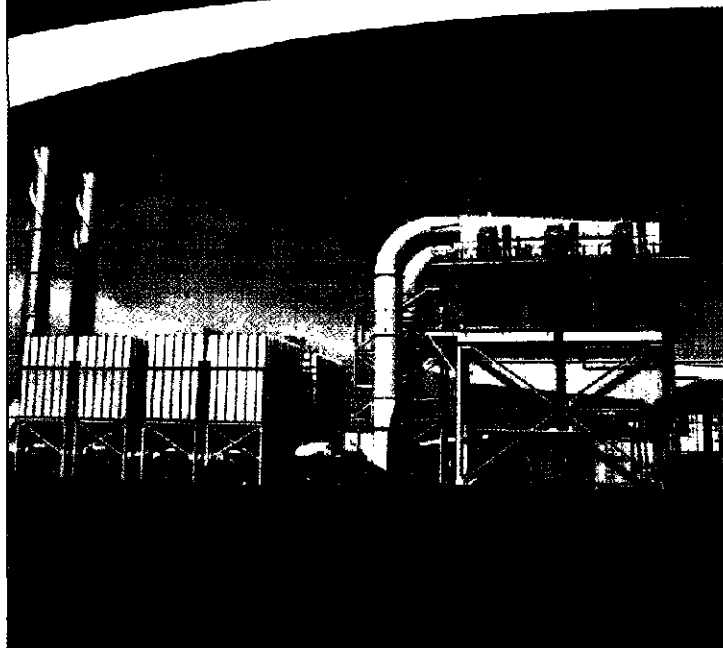
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and featuring a four-stage Sheffers evaporator. The distilling system essentially separates liquids by boiling point then condenses them, pulling the ethanol, with its lower boiling point, off the top of the distillation columns. The 190 proof ethanol coming off the first column is reevaporized in the second, then pressurized through a dessiccant to draw any remaining water out, creating pure, 200 proof ethanol that's pumped to two large storage tanks. Water from the bottom of the distillation columns goes to the plant's evaporative system featuring a four-stage Sheffers evaporator and is used as process water.

The evaporation process also produces another byproduct, a "syrup" of concentrated dissolved solids that can be mixed into livestock feed, burned as fuel or added to a wood fuel pellet to increase BTU value and binding.

The demonstration plant's computerized process monitoring system runs on Wonder Ware software. Key process control suppliers include Allen-Bradley PLCs and switchgear, ABB drives, Honeywell flow transmitters and Jamesbury valves and actuators. A Gardner-Denver air compressor runs automatic control valves, and a Van-Air dryer removes humidity from compressed air, while Baltimore Air Cooling provided the plant's cooling system. The plant's on-site laboratory uses a Shimadzu high-pressure liquid chromatograph for product testing. ●

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Reducing Gas Consumption

An oriented strandboard mill in Texas was renovated in a strategic effort to better utilize self-generated southern pine biomass fuel and increase overall operating profits by reducing the mill's dependency on natural gas. The project at Norbord in Jefferson, Tex. included the complete replacement of an existing natural gas/wood waste fired heat energy system that supplied heat to two flake dryers and thermal oil to the press.

Before the project began, a study was done to determine how best to accomplish the goal of reducing the total amount of natural gas consumption. The mill had previously replaced a heat exchanger due to corrosion. However, in a short period of time the replacement had begun to deteriorate, reducing the efficiency of the heat energy system by increasing the usage of natural gas. More than 20 heat and balance scenarios depicting multiple operational parameters were created and evaluated in order to establish equipment, systems and controls design criteria, and a controls philosophy for the full range of operating variables. The final equipment selection and system requirements were made not only on the basis of reducing natural gas consumption and increasing efficiency, but also minimizing plant downtime during construction.

Hunt, Guillot & Associates, Ruston, La., was contracted by the client's project management team to provide the detailed engineering services necessary to complete this venture.

Project Scope

Hunt, Guillot & Associates was responsible for the overall project plant layout and coordination. This task included designing foundations, electrical grounding, structural steel equipment supports, ductwork, new fuel and flake conveyors, and a new MCC building.

Two direct wood fired furnace packages were purchased, each with a rating of 150 MMBtu/hr and a 25 MMBtu/hr

thermal oil system. Plant-generated wood waste would be used to fuel these furnaces. Other major components that were specified and purchased for the improvement project were two cyclones, two modified dryer infeeds, two regenerative thermal oxidizers (RTO) and an electrostatic precipitator (ESP).

In order to minimize production downtime, construction of the project was performed in two phases. Phase I involved the installation of two new cyclones, temporary cyclone inlet and discharge ductwork, as well as a new dry flake conveyor system. These new pieces of equipment would transport dry



An innovative feature of the Norbord project was the re-use of the RTO discharge gas to eliminate VOC condensables in the cyclone outlet gas by use of a double duct. The RTO, precipitator and heat energy unit are shown.

flakes to the dry flake distribution conveyor. The existing dry flake conveyors were also shortened during this time in order to create space for the new heat energy equipment.

Phase I

In Phase I, ductwork from the dryer discharge to the existing cyclones and from the existing cyclones to the existing ID fans was removed. To aid in reducing material costs, this ductwork was salvaged and used to fabricate temporary duct to be installed from the existing dryers to the new cyclones and from the new cyclones to the existing ID fans. By installing temporary ductwork, production would be able to



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■ heat energy feature

continue through most of the construction of the remainder of the new heat energy system.

With exception of the existing cyclone ductwork and portions of the dry flake conveyor system, all existing equipment was kept in operation to

minimize production downtime during construction. Designing around this existing equipment became one of the most challenging aspects of the project. Due to congestion at ground level and the elevation of the existing duct and facilities, the most economi-

cal way to locate the new equipment in close proximity of the fuel system and the dryers was to install much of the interconnecting ductwork at higher elevations.

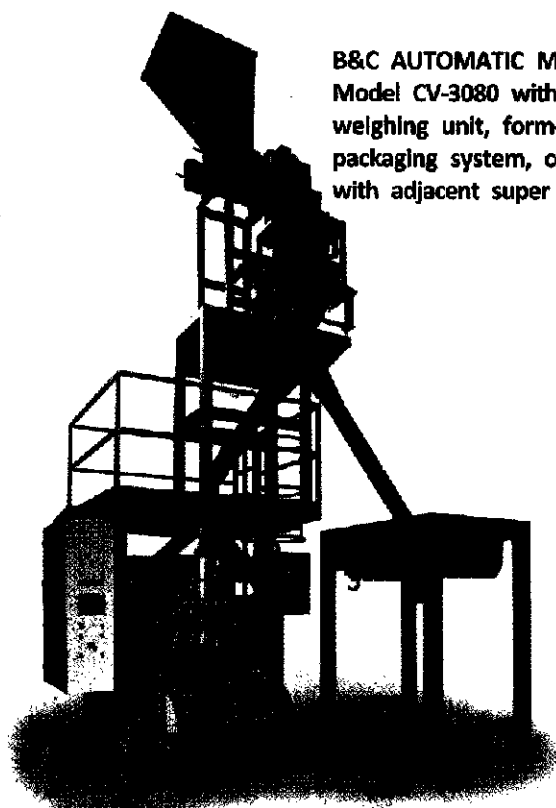
Building at a higher elevation minimized the lengths of conveyors and ductwork that would have been quite significant under any other scenario in the given conditions. Structural supports for the two cyclones and temporary ductwork had to be designed, and the footings for these structures had to be placed such that no interferences occurred with the equipment located at ground level. Some of these structures reached heights of 115 ft. from ground level. The main purpose of Phase I was to enable the plant to operate during demolition and removal of old equipment, installation of new equipment during Phase II, and to minimize the duration of the Phase II plant shutdown.

Phase II

Phase II consisted of relocating the existing fuel conveyor and designing new fuel conveyors to extend from the existing fuel storage silo conveyor to the furnace fuel bins. These modifications required the dry fines conveyor to be re-routed so that it would discharge recovered high value fuel into the fuel system. New flake conveyors were also installed from a transfer structure to the new dryer inlets. Demolition of old equipment—existing cyclones, air locks, and fire dumps—was also conducted during this phase.

The heat energy system equipment, ESP, RTOs, RTO fans and other ancillary equipment were installed during Phase II with the plant in operation. A 92 in. duct was fabricated and routed from the ESP discharge through two parallel RTO fans to the two RTOs. From the two RTOs the ducts reconnected into a single 96 in. diameter and continued through a horizontal 53 ft. long, 108 in. by 69 in. rectangular environmental duct section, then continued as a 96 in. round duct. At the optimum point that minimized overall duct lengths, the 96 in. round duct split into two 69 in. diameter ducts, which connected to

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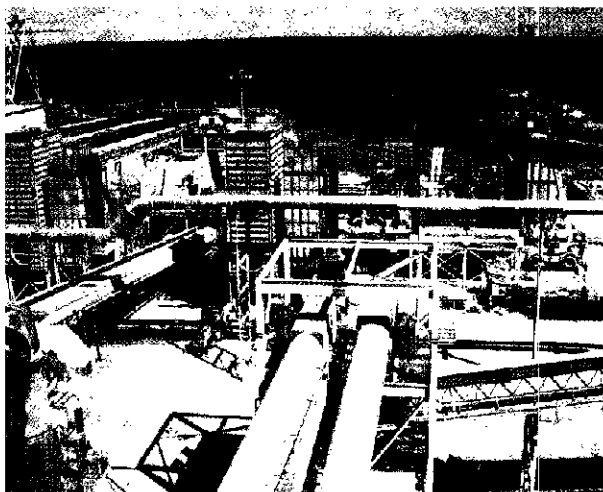
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Heat energy systems and ESP during construction

the 106 in. diameter shells of the two double duct systems.

As a preventative measure to lessen the risk of fire hazards, double ducts were provided between the ID fan inlet mixing box duct to the cyclones. The 72 in. diameter inner duct was fed by the 275° exhaust gas from the dryers through the cyclones. A design constraint of maintaining the dryer exhaust gas in the inner duct to a minimum of 275° was established in order to prevent buildup of volatile organic compounds (VOCs) on duct walls. Eliminating this buildup would thus reduce the probability of a hazardous fire explosion in the duct. To accomplish this goal of maintaining the inner duct temperature, a 106 in. diameter duct encased the inner duct and was fed RTO exhaust at a temperature of 560° to 630° from the two 69 in. diameter ducts. The two cyclones were encased by one common hood also to meet the requirement of maintaining the temperature in the cyclones above the 275° minimum. The exhaust air in the outer ducts traveled through this common hood and into the atmospheric exhaust stack.

Minimal Downtime

The goal of minimizing downtime during construction was accomplished. Phase I required a downtime of two weeks, while Phase II only required one week of downtime. Over a two-year period, including the year of inception of the project, production rates were increased by 16%. The \$30 million investment made in this new heat energy system reduced the mill's gas consumption by approximately 70%. The improvement also reduced the company's global natural gas consumption by nearly 25%.

By depending on the use of wood waste as the primary source of heat energy, this drastic move toward energy self-sufficiency greated capital gains by limiting the direct impact volatile energy prices have on operating costs. The success of this project is largely due to the efforts devoted to front-end engineering and planning. ■

Article submitted by Hunt Guillot & Associates, Rushton, La., 318-251-5929; hga-llc.com.



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Developments In Drying/Energy

During its 130-year history and more than 2,000 installed drying systems later, Büttner has established itself as a premier supplier of complete industrial drying technology. Since joining the Siempelkamp Group of Companies in 1995, Büttner has strengthened this position throughout the world.

Büttner supplies direct and indirect heated single-path drum dryers for the drying of fibrous material such as wood chips and wood particles, bark, beet pulp and other organic and inorganic materials. The drying capacity of the different systems is from 5 to above 70 t/hr resp. from 11 to above 154 lbs/hr.

In addition, 1- and 2-stage fiber dryers are part of the Büttner scope of supply. Its product line is complemented by flash-tube pre-dryers. These dryers are either utilized as

a stand-alone solution or in combination with a drum dryer. In this case flash-tube dryers function as pre-dryers with the ability to handle different material flows with varying moisture contents. All dryers are equipped with state-of-the-art energy efficient energy systems and the complete control system.

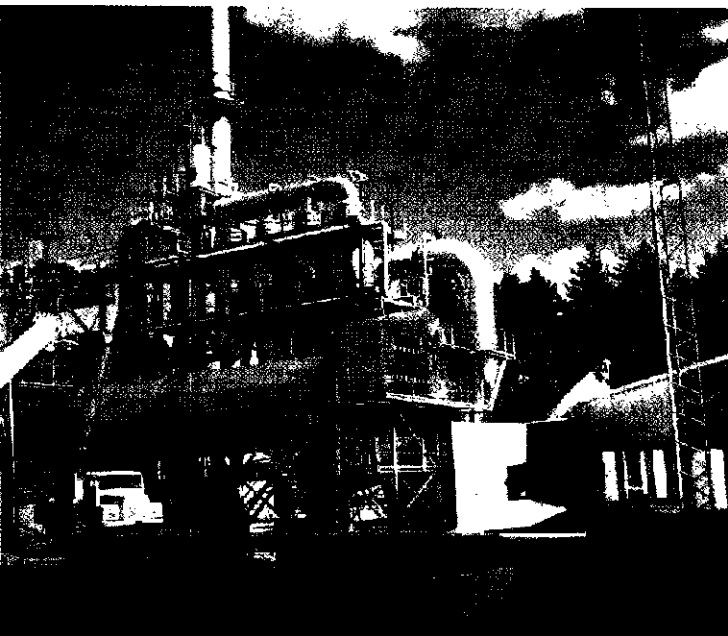
Büttner's indirect heated dryers are neither heated with combination burners nor with flue gases from a furnace. In fact, steam, hot water or thermal oil is used for the heat supply. This hot media is guided through pipes within the dryer. Particles and shavings are dried by contact. The drying method is particularly of interest for clean drying processes. The material to be dried does not get in contact with contaminated flue gases and stays clean within the dryer. Further, the low drying temperature limits the emission of wood volatiles such as VOCs.

Bioenergy

Dryer solutions for the wood pellet industry and the preparation of biomass for power plants are another very successful application for Büttner dryers. For these applications a wide spectrum of direct heated single-path drum dryers as well as low emission, indirect heated dryers with extremely minimized exhaust air volumes are utilized. The closed loop energy system/dryer concept only requires a bag filter or dry electrostatic filter (ESP) for emission control. This concept can be offered with energy systems either utilizing combination dust/gas burners or furnaces for waste wood and bark combustion.

Especially for the production of premium pellets for residential use, indirect heated dryers offer advantages since the pellets remain clean and ash-free according to the technical guidelines.

For over 22 years SES has supplied grate fired furnaces to the industry utilizing biomass as a heat source. Originally established by the company Sunds in 1987, SES was acquired from the company Metso by Siempelkamp in October 2007. The acquisition of Metso's energy systems

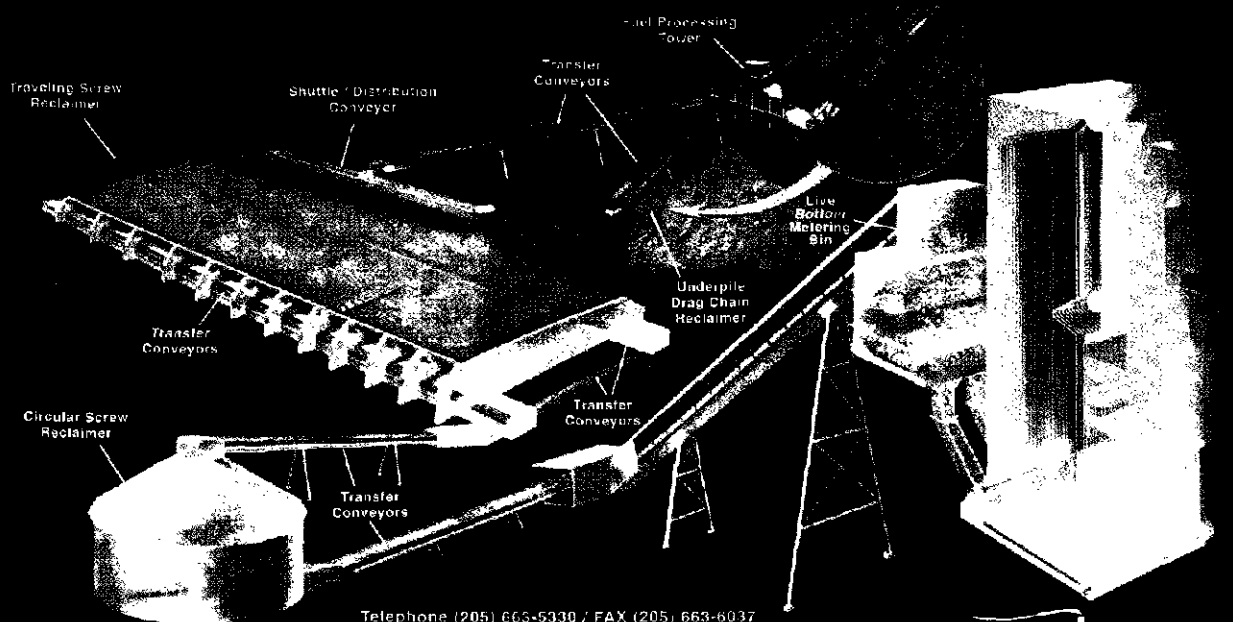


Büttner joined Siempelkamp group in 1995.

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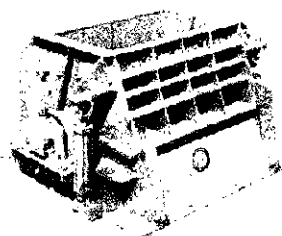
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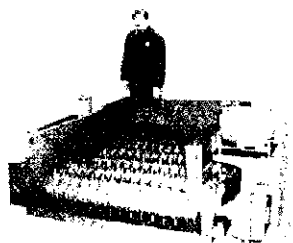
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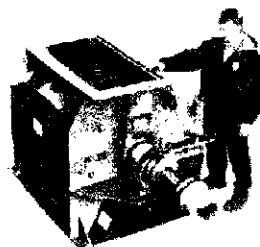
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SES stems from Metso and Sunds. Siempelkamp offers systems to wood pellet and biomass power producers.

division was viewed as a strategic expansion to provide the Siempelkamp/Büttner customers with an integrated, well defined energy system/dryer concept virtually deleting a, until then, difficult and complex interface between the two areas.

The SES energy systems design

of the grate and the combustion chamber is equivalent to the well known GTS design which was bought by GTS in 1990. Now, SES has successfully installed more than 50 energy systems worldwide.

The patented, high temperature resistant cast steel grate bars can be

sized for grate sizes of up to 60 m² (645 sf) with firing capacities reaching 92 MW (280 MMBTU). Designed for continuous operation, this highly innovative system is equipped with a fully automated dashing system and allows for fuel moisture contents ranging between

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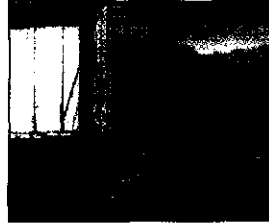


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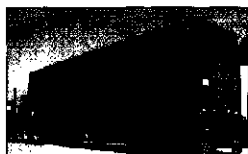
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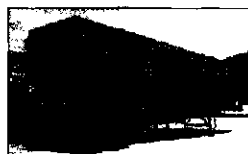


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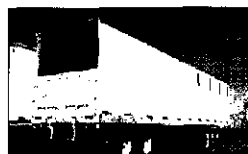
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The applications reach from flue gas generation for direct heated dryers to steam and thermal oil generation.

Power generation by utilizing steam or excess thermal oil for ORC modules is the latest development to increase the efficiency of Siempelkamp's energy systems. With the use of suspension dust burners, coal-fired energy systems can be modified to also burn wood materials.

Several system options can be added to meet specific emission and environmental aspects: Flue gas recirculation for temperature control in the combustion chamber, urea injection for NOx reduction, use of waste water in the combustion chamber, and the use of exhaust air from different areas in the plant as combustion air.

Further, several SES service packages allow for cost savings by combustion parameter optimization, increase of system availability and capacity increase.

Together with sister company Siempelkamp Energy Systems as well as partners for the subsequent pelletizing and bagging equipment, Büttner is able to supply complete pellet production systems.

Environmentally friendly and cost effective fuels such as bark and wood waste are used in SES energy systems. Main attention is given to energy savings and exhaust air volume reduction. Customers profit from synergy effects of engineering expertise and receive a mature and optimized complete system out of one hand with no interfaces.

With its complete line of process equipment Büttner offers integrated concepts, proven technology and expert knowledge all out of one hand. Such advantages are not only offered to customers for greenfield projects, but as well for system modernizations of existing energy and dryer systems from different vendors.

In North America Büttner has established itself since the early 1990s. In fact Büttner introduced the single-path dryer technology to the market at that time. Now, the single-path

dryer technology has succeeded the then widely used triple-path dryer technology. The advantages are clear and well accepted by the industry. Due to the varying residence time of different size material within the dryer drum, a more even moisture

content can be reached. A total of 34 Büttner dryer installations are in operation in the U.S. and Canada. ■

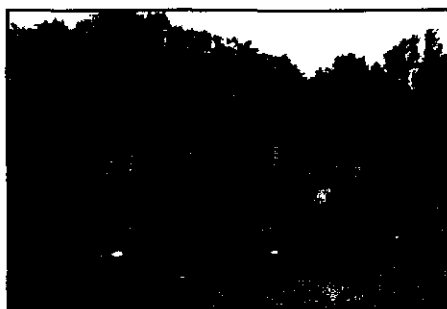
Article submitted by Büttner/SES; visit buettner-dryer.com and siempelkamp.com; call 704-522-0234; e-mail d.koltze@buettner-dryer.com.



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Jansen Supplies 50th Boiler Upgrade

This past spring Jansen Combustion and Boiler Technologies, Inc. supplied its 50th upgrade in 10 years of the combustion system of an existing biomass fired boiler. This unit, located in Tennessee, burns wood fuel and pulverized coal and has a maximum steaming capacity of 550,000 lb/hr. The upgrade included a new overfire air (OFA) delivery system and new fuel spouts.

The rising cost of fossil fuels, stricter regulatory emissions performance requirements, and general desire to increase power generation from green, renewable resources have been the driving forces behind these projects. Consistent improvements in performance and fuel economy have been commonly experienced by the upgraded biomass boilers, namely:

- an increase in biomass burning

capacity (i.e., bark, hog fuel, wood residues) ranging from three to 20 ton per hour, depending on boiler size.

- an improvement in the ability to handle wet biomass/mixed wood and sludge with a moisture content covering a wide range.

- a reduction or complete elimination of the need for fossil fuel co-firing (oil, natural gas, coal).

- an increase in thermal efficiency by reducing excess air, flue gas temperature in the stack, and unburned carbon in the ash.

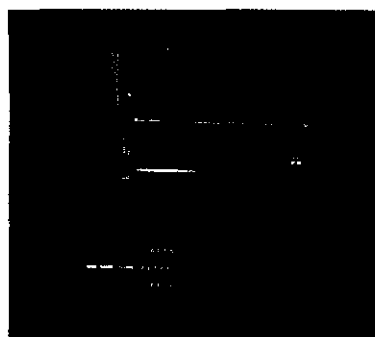
- a reduction in carryover of fly ash, thus lowering the abrasive impact and erosion on pressure parts, ducting, and ID fan, etc.

- a reduction in stack emissions of CO, NO_x, and particulate matter (PM).

Jansen has designed/supplied OFA system upgrades for units by a variety of original manufacturers, such as Babcock & Wilcox, Com-

bustion Engineering, Foster Wheeler, Erie City, Riley Stoker, Zurn, Kipper and Union Iron Works, with original installation dates ranging from the mid-1950s to early 1990s. Visit jansenboiler.com.

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berg, Germany. That's why its engineers have developed a new biomass chipper which is described as "mini but mighty."

"The biomass chipper is extremely compact in design and therefore only takes up a minimum amount of space in the plant," explains Irene Scheidweiler, founder of Vecoplan.

The biomass chipper still has in various applications a comparable throughput capacity as the traditional drum chippers. The biomass is processed by four rollers. The three lower rollers (base) are toothed and strengthened; the upper roller (oscillating), on the other hand, has aggressive spikes.

The biomass chipper has a dual-action cylinder on each side. It features a fast lifting and gentle lowering function. The clamping plate rotor has a large chip pocket volume and divided knife. Changing the knives is quick and maintenance-friendly.

The drum chippers and biomass chippers from Vecoplan have the following features in common:

- A swivel-mounted screening basket facilitates changing the basket.
- The shredding tools are changed at the front of the machine which guarantees ergonomically friendly maintenance

"The biomass chipper is another important product in our company's range," emphasizes Scheidweiler. "We are now able to offer even more tailored solutions to our customers." Phone +49 (0)2661 6267-376; visit vecoplan.de.

Masonite To Install ASG At Laurel

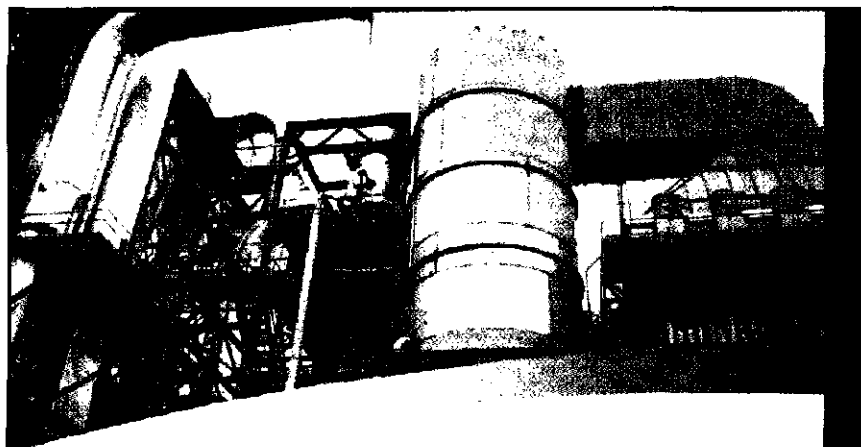
Energy Products of Idaho (EPI) is providing a fluidized bed advanced staged gasifier (ASG) that converts plant waste materials and other biomass into usable energy to Masonite's operation at Laurel, Miss. The system will provide two separate energy streams, steam and cleaned high temperature gas from a single fluidized bed ASG cell.

The system includes a specially designed blend chamber that combines the boiler system exhaust gas

with hot flue gas directly from the outlet of the ASG and ambient air. This system supplies 100% of the heat input required for the plant's chip dryers and replaces the purchased fuel previously used by the dryers with biomass residues from

Masonite's manufacturing process.

The ASG provides the energy for a biomass boiler system designed for this project. The steam produced by the boiler is also used to heat the board press and other plant process applications.



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Electric Grinder Has Big Appetite

CW Mill has been building electric and diesel powered grinders for decades. HogZilla customer Grays Harbor Paper in Hoquiam, Wash. uses

biomass to provide electricity for plant operation. Biomass material is not only processed with the company's TC-1564SE HogZilla, but in turn the processed material powers the electric powered HogZilla as well.

CW Mill states that whether your



grinding operation can be geared around electric power or not, be aware of the added efficiency and torque that its true torque-multiplying torque converters provide where other diesel powered units fall short. Call 800-743-3491; cwmill.com

Packaging Supplier Assists Latest Mills

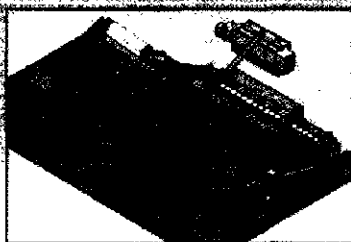


Creative Packaging Inc., a packaging systems integrator located in Lookout Mountain, Tenn., has been supplying packaging systems for the wood pellet industry since its inception some 25-plus years ago. Creative Packaging has designed and supplied both semi and automatic packaging systems (including printed poly films and bags) to more than 30 pellet producers throughout the U.S. Collaborating with engineering firms such as Construction Management LLC, Coeur d'Alene, Id., the company also assists companies with new turnkey pellet operations, such as the recently opened Piney Woods Pellets, Wiggins, Miss.; Great Lakes Renewable Energy, Rice Lake, Wis.; and Bayou Wood Pellets, West Monroe, La.

Addressing the Pellet Fuel Institute at one of its annual conferences several years ago, President Fred

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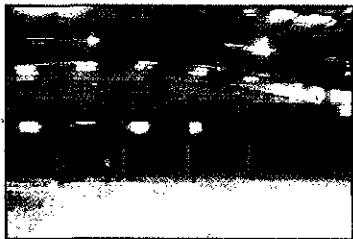
Thomson Brothers Inc (TBI), N. Andover, MA



Designed and Built by CBI



S.B. Cox, Inc., Richmond, VA



Designed and Built by CBI

To see more samples of CBI stationary projects, go to <http://www.cbi-inc.com/out-equipment/stationary-systems.aspx>

In the past 20 years, Continental Biomass Industries, Inc. (CBI) has designed and installed hundreds of purpose-built stationary machines and systems for customers all over the World. From outdoor plants for mulch and fuel production to entire processing systems turning C&D and MSW into recyclables and RDF. This includes simple stand-alone Getzly Mills® as well as, horizontal grinders and complete multi-dimensional systems — featuring combinations of slow speed primary shredders, screeners, conveyors, picking stations, magnetic separators, water tanks, and secondary and tertiary grinders to assure specific product size. Our superior equipment, engineering and experience ensure your success. We Guarantee It.

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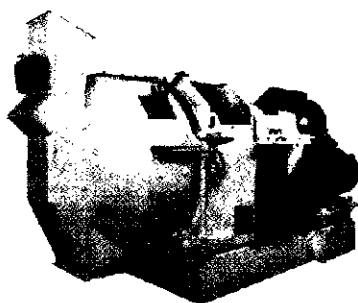


Continental Biomass Industries, Inc. 122 Western Street, Newton, MA 02459-1000 © 2006 All rights reserved.

Schumpert recommended that the industry consider more automated packaging systems and diversification into other markets, such as pelletized animal bedding and cat litter, generally produced from the same wood residuals (sawdust and shavings). Today, many of the pellet firms, producing in excess of 60,000 annual tons, offer a family of products and have upgraded to labor-saving, automatic packaging systems, including form-fill-seal bagging, palletizing and either pallet stretch wrapping or pallet stretch hooding.

With sawmill residuals now at a premium, several pellet companies have resorted to producing their own raw material, and some who utilize pine trees are now entering into the baled wood shavings market, primarily used in equine bedding, as well. Creative Packaging again has led the way with custom-designed, product-delivery, packaging and palletizing systems for this new market development. Phone 423-825-5311.

Pellet Mill Alliance In North America



Comact announces an alliance with Promill-Stolz to manufacture, supply and service pellet mill equipment in North America. Promill-Stolz of Seville, France is known as a leader in northern and southern

Europe in the pellet industry. It offers pellet mills for the manufacture of fodder, compound feeds, wood pellets, cereal byproducts, urban waste and animal slurry, fertilizers and soil additives. It claims half the maintenance costs compared to a gear box type pellet mill, and simplified die installation by thermal expansion to reduce pellet mill vibration. Phone 418-628-2888; visit comact.com.

Biomass Gasification Agreements Made

Rentech, Inc. has completed two investment agreements with biomass gasification technology companies. Rentech is acquiring SilvaGas Corp. and its biomass gasification technology, which converts urban waste feedstocks into synthesis gas (syngas).

Rentech has also executed agreements with ClearFuels Technology Inc., a bio-energy gasification and project development company, whose technology converts rural virgin cellulosic biomass feedstocks into syngas. Rentech has acquired a 25% ownership interest in ClearFuels, and has agreed to the installation of a ClearFuels biomass gasifier at the company's Product Demonstration Unit (PDU).

With the SilvaGas acquisition, Rentech acquires a biomass gasification technology that has operated at commercial scale and is planned for deployment at Rentech's Rialto Renewable Energy Center under a licensing agreement with SilvaGas. The SilvaGas gasifier can handle urban waste streams that are more varied than the virgin biomass streams. Visit rentechinc.com.

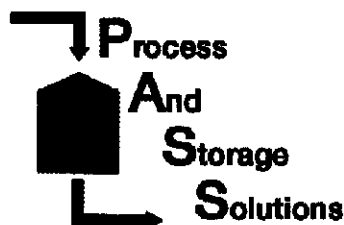
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Clean Microchips Streamline Process

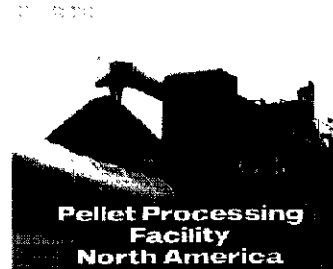
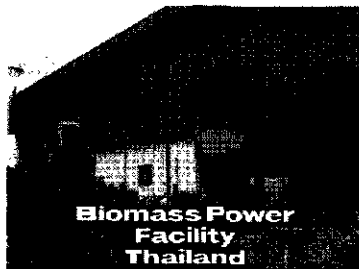
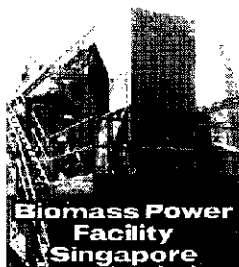
As sawdust and shavings become harder to procure, residential pellet producers have had to find alternative sources for fiber to feed the ever-growing market. Continental Biomass Industries, Inc. has been producing a four pocket drum chipper (6400 or 8400) capable of making

large volumes of consistently sized $\frac{1}{4}$ in. chips for these producers. These chips, because of the consistent size, do not have to be run through a grinder prior to going into the dryer. The elimination of this grinding step dramatically reduces the price of the pellet installation.

When the microchips come out of the dryer they are at the necessary moisture content to go into the



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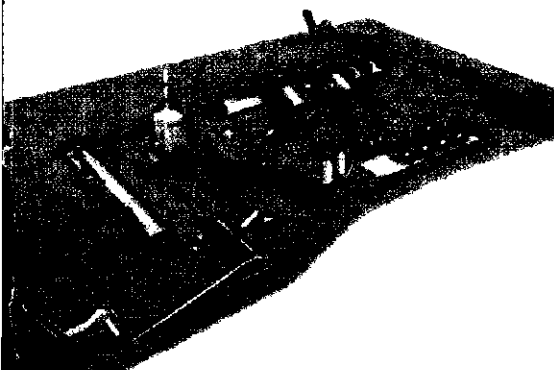
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system, according to CBI. The fact that they already have the short fiber length also dramatically reduces the horsepower required to grind them to a final size on the backside of the dryer.

Residential fuel pellet producers need to use clean chips to ensure there are no ash causing materials (dirt, sand, etc.) in the pellet furnish. To further improve this, CBI has introduced the first track mounted three drum flail delimber debarker, the CBI Magnum Stripper. The hydrostatically driven flail drums use cutting edge technology to properly position the flails to maximize debarking efficiencies and enable the unit to provide clean material at the high volumes to satisfy the voracious appetite of the 6400 chipper. Call 603-382-0556; visit cbi-inc.com.

Turnkey Pellet Plants Offered



Dieffenbacher Group provides turnkey plants for the production of pellets. The company says its knowledge gained in particleboard plants is directly transferable to pellet plants and guarantees a sound plant concept.

Major elements (heat energy generation, dryer, screen, cleaning, electric, process control, plant engineering) are available in-house.

The pellet plants are offered for all raw materials (logs, sawmill residuals, whole tree chips and some kinds of recycled wood) and for the use of the pellets in power plants as well as in household stoves. Dieffenbacher covers annual plant capacities from 200,000 to more than 600,000 tons.

Grinders Process Diverse Feedstock



WSM's Titan Series Horizontal Grinders are designed to process high volumes of diverse types of biomass feedstock including stumps, land clearing, and urban wood waste into high quality biomass fuel and other valuable finished fiber products.

The Titan is a complete grinding system with heavy-duty multi-strand drag chain infeed conveyor, large diameter powered feedroll, and fully proportional load sensing feed controller for efficient feeding of material into the grinder. The massive rotor assembly features rigid hammers with reversible/replaceable tips. Modular sizing screens ensure a consistent sized, premium quality finished fuel. This stationary electric grinder can be supplied with single or dual electric drive motors for efficient and economical operation, with drive sizes from 400-1500 HP. Call 800-722-3530; visit westsalem.com.

Texas Firm Touts Proprietary System

Biotricity, based in Houston, is developing and constructing a biomass power generation station. The company's technology uses a proprietary vortex combustion chamber to convert the energy in biomass into electricity to be sold to the power grid. Unlike wind and solar facilities, biopower stations can run continuously and be installed for half to one-fourth the cost per megawatt as compared to wind and solar, according to the company. Visit biotricity-power.com.

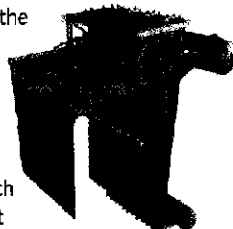
Biomass-to-Energy Boilers

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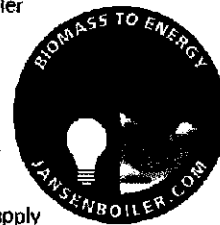
and/or superheater upgrades of over 80 biomass, chemical recovery, MSW, and RDF boilers.

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- > Replacement or upgraded superheater design and supply
- > Boiler circulation analyses
- > Computational Fluid Dynamics (CFD) modeling
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Chippers For Short Fiber Applications



A growing number of specialized biomass applications require short fiber thin wood chips. These include the wood pellet industry, co-milling with coal, and certain gasification processes.

Peterson's 5900 chipper and 5000H model delimber, debarker, chipper can be adapted to produce uniform chips as short as 0.25 in. (6-7 mm) and 0.08 in. (2 mm) thick.

Wood chips need to be a consistent thickness for uniform process control in a digester or dryer. Short fiber length is especially important if the chips will be further reduced in a hammermill. If low bark and ash are a requirement, the Peterson 5000H can achieve less than 1% bark content in many conditions. The Peterson 4800 stand alone flail debarker can also be paired with the 5900 disc chipper for low bark applications. Visit petersoncorp.com.

Scrapwood-Burning Furnace Starts Up

G & M Pallet Co. of Cleveland is heating its 30,000 sq. ft. manufacturing and warehouse complex with a scrapwood-burning furnace from Biomass Combustion Systems.

Use of the wood-burning furnace allows G & M to keep its building temperature an average of 15 degrees higher than previously during winter months. The greenhouse-gas-neutral process of wood combustion also lowers the company's carbon footprint and will reduce or eliminate the need to purchase carbon credits to comply with evolving government regulations. Phone 508-798-5970; visit biomasscombustion.com.

BC-Based Operation Focuses On Energy/Power

Northern Energy Constructors (NEC) Group of Companies, headquartered in Prince George, BC, provides turnkey solutions relating to high temperature process heating/heat transfer plants, waste heat recovery, biomass power production, ORC-power generation systems and municipal solid waste-to-energy gasification technology. NEC is the exclusive North American marketing and manufacturing licensee for classen apparatebau Wiesloch heat transfer components. Affiliated companies include:

- Northern Steel Ltd., a certified fabrication and machine shop manufacturing center in business for over 32

years. Located in Prince George, Northern Steel Ltd. has over 40,000 sq. ft. of shop space with the capability of handling heavy components in excess of 100 tons. Northern Steel Ltd. is well suited to all aspects of steel and alloy fabrication for the bioenergy industry.

● **classen apparatebau Wiesloch**, a global operating and leading manufacturer and supplier of industrial high temperature process heating systems and highly-customized heat transfer installations. Wiesloch designs, fabricates and installs high-efficient thermal oil heaters, steam and hot water generators, hot gas generators as well as gaseous, liquid and solid waste incinerators based on its state-of-the-art firing systems with related combustion chambers. The supply range is completed by de-central and modular power stations based on the organic Rankine-cycle (ORC turbo generators) to not only solve industrial waste disposal issues but to turn these waste streams into profit.

● **Allnorth Consultants Ltd.**, a multi-disciplinary engineering firm providing consulting services to international customers on all aspects of industrial projects, including the bioenergy industry. With over 250 experienced personnel, Allnorth Consultants Ltd. has the ability to customize a project team for job-specific requirements ranging from feasibility study stage through the design phase and into construction management and commissioning during plant startup.

In addition to the above team of companies, NEC has its own engineering staff with more than 25 years of experience specific to the biomass and bioenergy sectors, and with a strong industry leader such as **classen apparatebau Wiesloch** as a licensing partner, the ability to provide customers with turnkey solutions from feasibility right through to commissioning and after-sales service makes **Northern Energy Constructors** a dependable choice for the bioenergy industry. Visit apparatebau-wiesloch.com.

Biobaler Combines Mulching/Baling



Supertrak, Inc. is the U.S. dealer and distributor for the WB55 Biobaler. The Biobaler was designed and is manufactured by **FLD Biomass Technologies, Inc.** of Canada. It is a towable mulching and baling system that is capable of harvesting woody material, encompassing it into bales, and then enables

the bales to be used in a number of applications including the bioenergy industry. The WB55 biobaler is an implement that combines the technologies and applications of forestry mulching/mowing along with hay baling technology. The unit is towed behind a 150-200 HP farm tractor.

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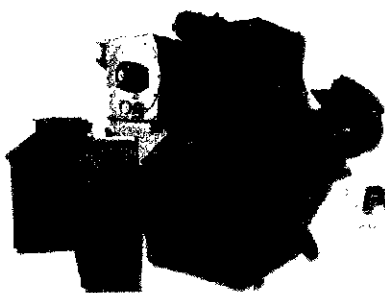
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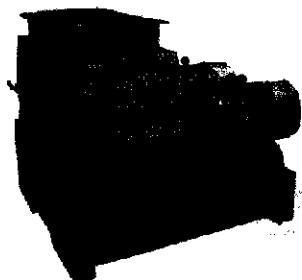
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right of center to the rear of the tractor or it can be pulled directly behind the tractor. The unit is designed to harvest 4 in. diameter material and under by mulching the material either on the ground or as it stands. The mulcher is composed of a specially designed mulching drum that is reversed, runs backward and cuts the material in an upward direction as opposed to standard forestry mulchers that cut downward.

Once the harvested material has been lifted and thrown into the mouth of the baler, a horizontal shaft lifts the material and forces it into the baling chamber. It is rolled up in a bale and released out of the rear of the baling apparatus. The finished product biomass bales can then be handled just as a hay bale would be and loaded for distribution. Visit supertrak.com.

Forest Concepts Receives USDA Innovation Contract

The USDA Small Business Innovation Research program awarded Forest Concepts with a two-year \$350,000 Phase II contract to advance the development of their technologies for reprocessing hog fuel and other chipped woody biomass to create clean streams of wood fiber and bark, while removing dirt, rock and other contaminants.

The chip beneficiation process (sorting the wood from the wood) being developed by Forest Concepts can be optimized to produce precision feedstocks for bioconversion or thermochemical processing.

The organic co-products can then be directed to other solid biofuels, soil amendments and other uses.

"We are very pleased that USDA is backing this development program that will benefit just about everyone in the cellulosic bioenergy industry," says Forest Concepts' Chief Technology Officer Dr. Jim Dooley.

"Regardless of which conversion technologies become the commercial winners in the future, they all are dependent upon clean, high yielding feedstocks. We believe that our technology will be key to ensuring cellulosic feedstock quality at the front end of biorefineries." Contact Dooley, 253-333-9663.

Morbark Expands With Warrior

Morbark has signed a dealer agreement with Warrior Tractor and Equipment and Warrior of Arkansas for Warrior to represent Morbark's recycling and forestry product lines in Alabama,

Debarking and chipping for pulp mills or pellet plants



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Arkansas and three counties in Tennessee (Wayne, Lawrence and Giles).

Warrior Tractor operates 12 branch locations in Alabama and Arkansas. Warrior Tractor will handle Morbark's complete line of forestry machines, including biomass chippers, Chipvestors and flails. The company will also cater to the recycling industry with Morbark tub and horizontal grinders.

Honeywell Firm Meets Standards

Envergent Technologies LLC, a Honeywell company, reports that pyrolysis oil produced using its Rapid Thermal Processing (RTP) technology meets American Society for Testing and Materials (ASTM)

standards for biofuels used in industrial burners.

The ASTM standard ensures that pyrolysis oil, a liquid biofuel made from biomass such as wood chips or straw, maintains the highest levels of quality, reliability and performance

when used as a fuel in industrial burners for the generation of renewable heat and power.

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commodity fuel," says Envergent Technologies Managing Director Mark Reno. "Our focus is to establish the best pathway for the conversion of biomass into valuable renewable fuels for power, heating and transportation."

EPI Provides Wood System At Plant

Energy Products of Idaho (EPI), a provider of solid fuel-fired renewable energy systems, has been selected to provide two fluidized bed energy systems to Ameresco Federal Solutions in support of its contract with the U.S. Dept. of Energy's Savannah River

Site project. The contract includes two identical fluidized bed boiler islands that utilize wood waste and chipped tires as fuel to produce superheated steam to drive a turbine for power production. Process steam is extracted from the turbine for use at the Savannah River Nuclear site.

Astec Purchases Pellet Technology Firm

Astec Industries Inc., parent company of Peterson, has acquired certain assets of Industrial Mechanical & Integration of Walkerton Ontario. IMI provides machine technology to make wood pellets. Rick Minke,

President of IMI, and key employees will remain with the company to further develop and promote the company's new technology.

According to Dr. J. Don Brock, Chairman and CEO of Astec Industries, "We are excited about the potential of this new technology. Conventional pellet production machines were designed for easy to use materials and do not always work well with a wide variety of wood species. With this acquisition, Astec Industries can provide a one stop solution to customers desiring to own a pellet plant that can process material from roundwood all the way to the finished product." Visit industrial-mi.com.

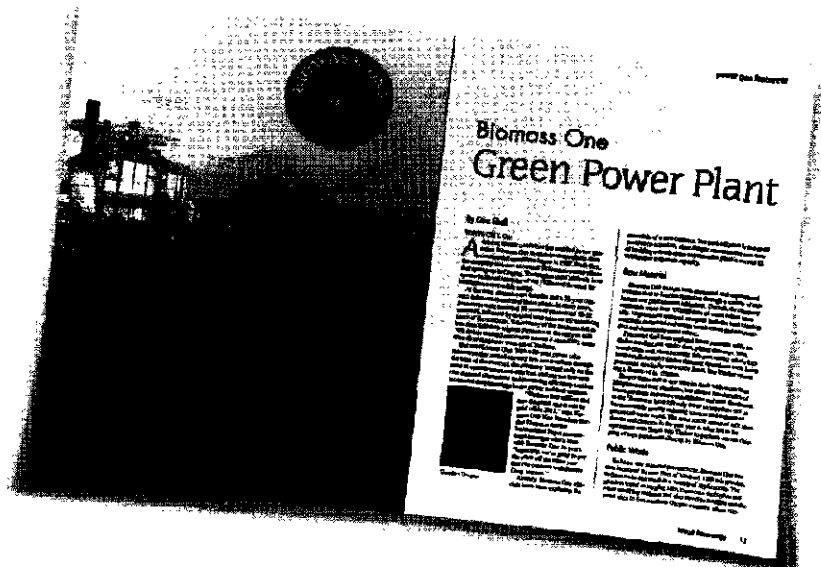
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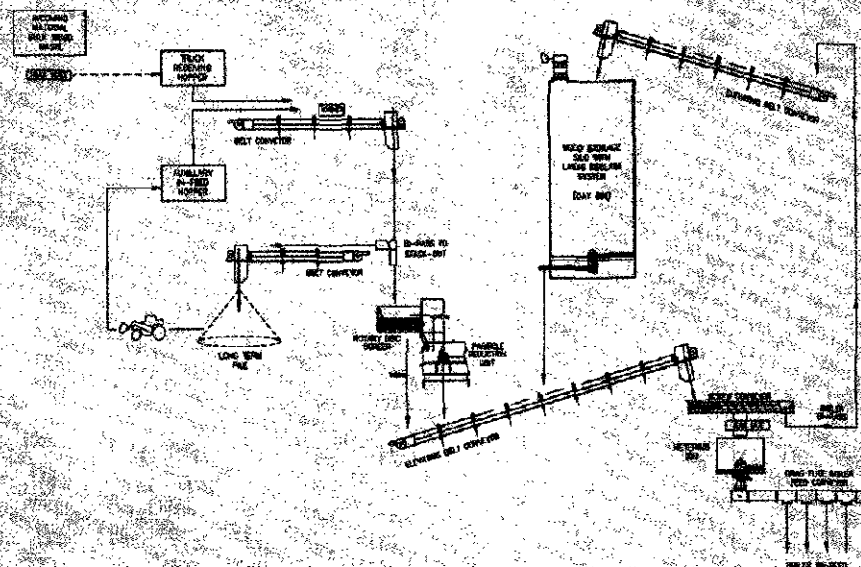
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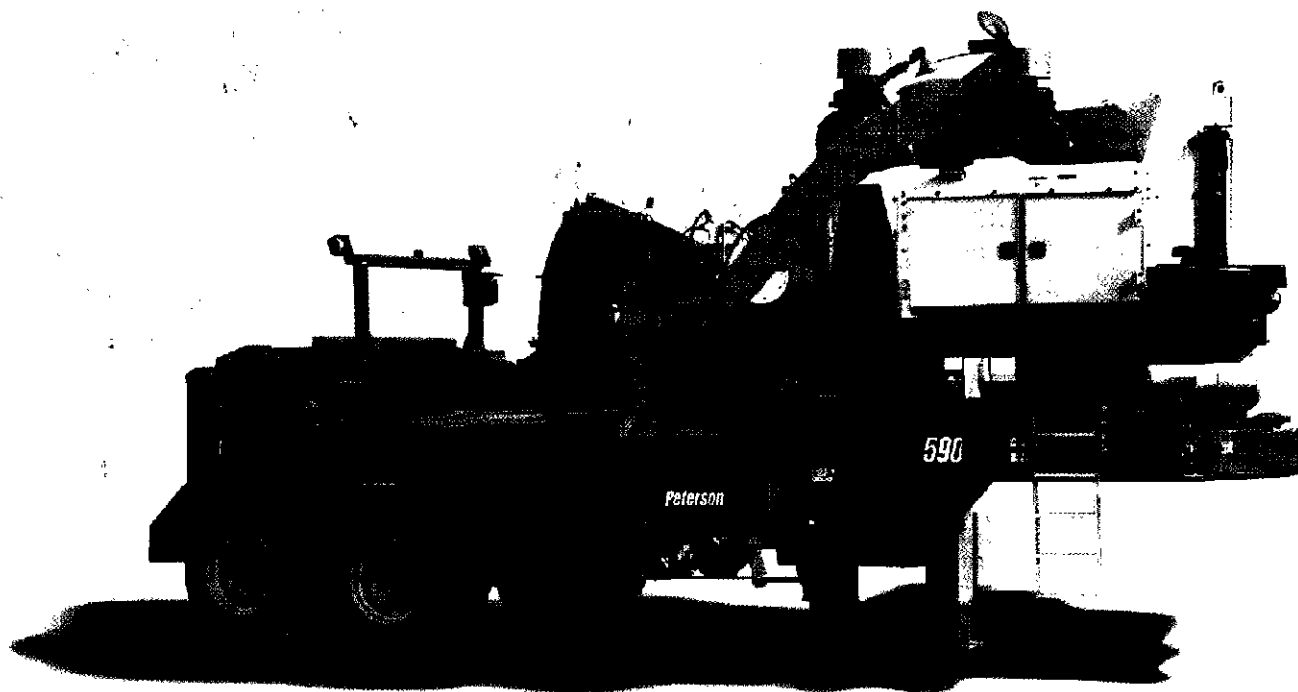


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