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STACKING UP PROFITS: Recognizing that the vast majority of wood-burning appliances in North America cannot handle wood pellets, producers of are increasingly introducing briquette and log products into their production environment.

PHOTO: RUF BRIQUETTING SYSTEMS

Densifying Dynamamos

Fuel log, puck and briquette production equipment manufacturers are expanding customers' feedstock options and extending their market reach.

BY TIM PORTZ

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sunomi, llc



Giordano Checchi
P.O. Box 347 - Plainfield, VT
05667-0347 - USA
office: 1-802-454-9310
mobile: 1-404-759-3574
<http://www.sunomi-llc.com>

Two years ago, Chad Schumacher, general manager at Superior Pellet Fuels in Fairbanks, Alaska, came to the conclusion that he had built a woody biomass densification facility that produced a product that only 10 percent of the market could utilize. “Studies in the Fairbanks area show that of the wood-burning appliances in the Fairbanks market, somewhere around 87 percent, are nonpellet-burning systems,” says Schumacher.

The facility, built in 2010, had unutilized capacity that Schumacher and his team were anxious to capitalize on. With fuel receiving, drying and size-reducing equipment already deployed and operational, the team at Superior Pellet Fuels opted to invest in a fuel log machine. “By expanding and adding the compressed log line, we are now able to address the needs, in theory, of the entire wood-burning market in our area,” Schumacher says.

In the most basic sense, fuel log and briquetting machines do the same work as their pelletizing cousins. Using pressure, these machines compress woody biomass and other feedstocks into fuel products for use in industrial and residential applications. A closer inspection of these machines reveals significant operational differences that their manufacturers say offer real advantages to operations seeking to add value to any number of biomass streams.

DiPiu of Italy

Once committed to expanding his product offering and adding briquetting to his operation, Schumacher ultimately decided upon a BRIK MB80, manufactured by DiPiu, an Italian OEM. Giordano Checchi, president of Sunomi, a distributor of DiPiu briquette machines, personally installed the new machine at Superior Pellet Fuels, and is perhaps the most vocal proponent of the



ENERGY BY VOLUME: Schumacher and his team ultimately decided the DiPiu MB80 was the right fit to bring compressed log manufacturing to Superior Pellet Fuels. Schumacher says the machine is currently yielding around 1 ton per hour of production.

PHOTO: SUPERIOR PELLET FUELS

technology. “In terms of densification, this approach reaches the highest density,” he says. “The heat value per pound is the same, whether the wood is loose or densified. However, the amount of energy by volume is directly proportional to the density you are achieving.”

While density varies by species, seasoned cord wood weighs around 30 pounds per cubic foot, notes Checchi, while compressed briquettes or fuel logs manufactured by mechanical compression on DiPiu machines can achieve densities of 80 pounds per cubic foot. For comparison, pellets can be expected to weigh around

50 pounds per cubic foot. The result is a product with far more energy by volume. Checchi notes that a cordwood log placed on a fire can be expected to burn for 30 minutes, while a manufactured compressed log is likely to burn for three or even three and a half hours.

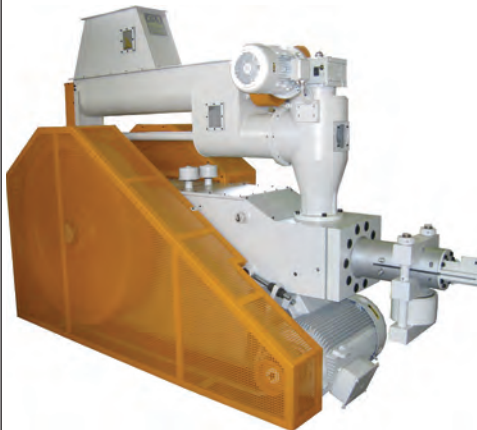
Like his colleagues, Checchi underscores how much more forgiving the production of fuel logs is than the manufacture of wood pellets. Additionally, the combination of intense pressure and temperature inside of DiPiu machines makes it possible to densify species that simply cannot be pelletized. “These machines allow you

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www.sunomi-llc.com info@sunomi-llc.com



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Low Power Consumption
Highest Energy Density
Proven Reliability
Low Maintenance



Lowest cost
firelogs
and pucks



to use cheap fibers like aspen,” says Checchi. “You cannot pelletize aspen. If you use mechanical compression, you can make a fire log or a briquette from aspen. It will stay formed, because it is a compression system, not extrusion.”

Checchi asserts that DiPiu machines, transferring energy from a motor to the ram by a crankshaft, achieve the highest pressures in biomass densification, nearly 36,000 psi. The design, he says, is highly efficient with nearly 98 percent of the energy from the main motor being harnessed for compression. “There is no intermediate,” he adds.

DiPiu offers a range of machines, starting with the MB50, which is capable of producing 650 pounds of finished product per hour, all the way up to an MB120, capable of producing over 3 tons per hour.

Just in Time

For Schumacher, Checchi’s deployment of the Di-Piu machine was perfectly timed. In addition to helping him and his team fully utilize the facility they built, the fuel logs are contributing mightily to Superior’s growth strategy. While the compressed log machine has only been operational for 18 months, the timing for its deployment could not have been better.

In winter, Fairbanks, Alaska, has some of the poorest air quality in the country. Virtually every energy product is difficult to get to Alaska and, as a result, is expensive. Many residents in Fairbanks and throughout Alaska heat their homes each winter with cordwood. Often, cordwood that is not properly seasoned gets burned and emissions levels are very high. To counteract this problem, the Fairbanks North Star Borough Air Quality Division rolled out a Split, Stack, Store & Save public awareness campaign to reduce the amount

of under seasoned wood burned each year. For Schumacher, this seemed imperfect. “We wanted to take that one step further, and take that education piece out of the customer’s hands by offering a dry product to them,” he says. “With a compressed log with low moisture content and a high energy factor, we were able to provide a product that the customer simply couldn’t burn too early or too late.”

The state of Alaska has since tested Superior’s products and the results were surprising, even to Schumacher. When burned with seasoned firewood, the compressed logs reduced emissions by 40 percent, and when burned with unseasoned wood, the emissions reductions were even higher, at 60 percent. “The best part for us is that people didn’t have to move their home heating system away from wood fuels,” says Schumacher. “They could use their existing wood stove and still greatly reduce those emissions.”

While Schumacher reports steady growth in sales since he introduced compressed log manufacturing, he is looking forward to even greater market response in the upcoming heating season. “I fully anticipate that we will see tremendous growth in this product line in the coming year.”

For Schumacher, the product flexibility he gained with the introduction of a compressed log machine was not just a matter of incremental growth, it may well end up delivering Superior Pellet Fuels to the kind of asset utilization he and his team have been working toward since 2010.

Author: Tim Portz
Executive Editor, Biomass Magazine
tportz@bbiinternational.com
701-738-4969

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