



CROP STOKIN' STOVES: *New stove fuel pellets*

are made from agricultural residues

BY E. M. MORRISON

Minneapolis, Minn. — This winter, entrepreneur Gregg Mast invites you to curl up in front of a nice, cozy crop-residue fire.

Mast's start-up company, Earthtech Energy, Inc., has devised fuel pellets made entirely from agricultural residues. Earthtech Energy Biomass Fuel Pellets, a substitute for wood pellets, will be test marketed this fall. The new fuel for pellet- and corn-burning stoves is set to appear in hearth stores early next year.

AURI helped the company develop the ag pellet, which is the first for home pellet stoves. Mast, 29, started Earthtech Energy a year ago, equipped with a brand new MBA, personal savings and a lifelong passion for the environment. When he was growing up in Blooming Prairie, Mast's dad heated his 6,000-square-foot business with a corn stove and he has used a biomass-pellet stove to heat the family home. This got father and son thinking: could stove pellets be made from crop residues — renewable biomass that would otherwise be wasted?

Testing, testing

AURI has done extensive research on the heating values of agricultural biomass. Al Doering, manager of AURI's coproducts lab in Waseca, worked with Mast to pelletize and test more than 25 types of agricultural residue in dozens of combinations. The pellets had to burn efficiently, sustain a good flame, hold together during handling, and meet standards for density, moisture, ash and emissions, Doering says. The biomass pellets also had to cost roughly the same as wood pellets, which typically retail for about 8 cents a pound.

Earthtech's R & D included test burns in many of the residential pellet and corn stoves now on the market. "We think this is a great product," Mast says. Earthtech's proprietary biomass pellets burn cleanly in both agitating and non-agitating appliances, giving off little odor, according to Mast. The fuel pellets produce about 8,000 Btu's of heat per hour, matching the output of premium wood pellets, he says.

The biomass pellets are now being "betatested," as Mast (a member of the wired generation) puts it, by Midwest stove dealers. "We're soliciting feedback. We feel confident our product will be well-received." Mast expects to begin manufacturing and distributing the pellets by year end. AURI helped the company source raw materials and locate a contract manufacturer. Eventually Mast hopes to put up his own manufacturing

facility.

Emerging market

To begin with, Earthtech Energy plans to market its product through retail stove and hearth stores in the Midwest, Great Lakes, New England and Mountain states, where alternative-heating system markets are growing the fastest. More than 600,000 North American homes now use pellet stoves, fireplace inserts or furnaces, according to the Pellet Fuels Institute, an industry trade group. Pelletburning appliances resemble wood or gas stoves, but are specifically designed to burn small, compacted fuel pellets, which look like rabbit feed.

Pellet stoves are more convenient to operate than conventional wood stoves or fireplaces and produce much less air pollution. In fact, pellet stoves are the cleanest solid-fuel-burning home heating appliances, according to the U.S. Department of Energy. Pellet-stove sales rose more than 250 percent between 1999 and 2003, the Institute reports.

And pellet fuel consumption has jumped by one-fourth during the last three years. To encourage energy independence, the 2005 Renewable Energy Security Act authorized financial incentives for the purchase of pellet appliances. The industry could also benefit from the rising cost of natural gas and other traditional heating fuels, Doering says. "The price of fossil fuels will drive this industry to grow."

Pellet fuel heating is still an emerging industry, however. The first residential pellet-burning stoves were introduced in 1983. Today, there are about two dozen pellet stove-makers and about 70 North American pellet mills. The pellet-fuels industry last year produced about 900,000 tons of pellets, worth \$150 million.

But no single supplier has a dominant share of the pellet fuels market, Mast says, and there is little product differentiation or brand loyalty. So that makes it a good time to launch a new and distinctive pellet, Mast says. "The market is not mature enough to require players to struggle over market share with each other, but instead, the continuing expansion of the market helps the industry as a whole."

Annually renewable

Earthtech's biomass fuel pellets have several advantages over competing wood pellets, Mast says. They are renewable in 180 days, in contrast to wood, which takes years or decades to regenerate. The supply and cost of agricultural biomass is more stable than wood, too, he says. A 40-pound bag of biomass pellets will retail for the same or less than wood pellets, Mast says. And unlike wood pellets, biomass pellets can be burned in corn stoves, too.

Start-up story

While he's getting Earthtech Energy off the ground, Mast continues to work full time in the financial services industry. He runs the company out of his Minneapolis home, with advice from his father, a retired businessman, and help from several other enthusiastic young entrepreneurs who believe in the product. The ambitious Earthtech team aims to sell about 16,000 tons of fuel pellets in

2006.

Mast is committed to sustainable energy and the environment. Earthtech Energy's mission is to use "earth's abundant raw materials and innovative technology" in a product that offers "environmental, ecologic and economic benefits." He adds, "It is a rare occasion when a company can make a significant contribution to our environment." ■

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