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Workers install roof panels Tuesday on a building that will house the oat hull-burning biomass burner at the General Mills plant in Fridley. The burner is the company's first foray into using a food waste product as an energy substitute.

It's a food, it's a fuel

General Mills will use oat hulls, left after milling the grain for cereal, to power the plant where the process takes place. The biomass steam boiler cuts carbon output by 21 percent.

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General Mills has used oats for its high-energy cereal Cheerios for nearly 70 years, but the food giant is now preparing to put the grain to work as a source of energy for itself.

Construction is under way this spring on a biomass steam boiler at the Golden Valley-based company's milling plant in Fridley, where it produces oat flour for Cheerios, Lucky Charms and other cereals.

The boiler, scheduled to go online early next year, will burn oat hulls left over from the milling process. It replaces natural-gas boilers, making the mill partially self-sustaining, said John Hellwig, the project's manager.

It will also cut the mill's carbon footprint by 21 percent, he added.

The General Mills project is the latest example of how food manufacturers are discovering new value in the very old energy tech-



nology of biomass.

The category encompasses everything from pig and poultry manure to waste from grain processing such as oat hulls to good old-fashioned wood, a fuel for hundreds of years dating from the dawn of the Industrial Revolution.

Food companies are rediscover-

ing it. Kraft Foods, for instance, built anaerobic digesters a couple of years ago to turn whey at cheese plants in New York State into biogas to help run the operations that make its Philadelphia Cream Cheese line.

The cheese-based biogas offsets the plants' natural-gas use by

30 percent, replacing enough natural gas to heat about 2,600 northeastern U.S. homes, said Kraft spokesman Richard Buino.

In two European plants, Kraft burns spent coffee grounds instead of fossil fuels to improve energy efficiency. One plant in Banbury, England, where an English brand of instant coffee is made, uses coffee grounds to meet up to 85 percent of its total electricity needs, Buino said.

Northfield, Ill.-based Kraft, the world's second-largest food company, aims to reduce its nonrenewable energy use next year by 25 percent over 2005 levels, Buino said. The company has achieved a 15 percent reduction so far, he said.

The Fridley oat hull-burner is General Mills' first foray into using a food waste product as an energy substitute.

"After we get some experience with this one, we're looking at any

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> Oat hulls fuel

and all possibilities in the future," Hellwig said.

Companies can save 20 percent to 30 percent on their fuel costs by switching from a purchased fuel like natural gas to a waste fuel, according to Chip Rennie, global director of industrial energy for Emerson Process Management, a St. Louis-based company with \$20.9 billion in annual sales that helps businesses retrofit their power-producing equip-

ment, among other large-scale projects.

"I think you are seeing a new trend here," he said.

The decision is not a slam-dunk, however.

Putting a tarp over a wastewater treatment pond to capture methane is a low-cost process and very cost-effective. But converting from a gas to a solid-fuel boiler that can burn oat hulls or other waste is more complex, said Casey Whelan, vice president for strategic initiatives for U.S. Energy Services, a Plymouth company that helps businesses manage their energy practices.

At today's prices, natural gas

is cheaper than oat hulls, but Whelan noted that the futures market puts the prices for natural gas higher than oat hulls by the end of 2012 and beyond.

If Congress enacts a tax or cap on carbon from fossil fuels like natural gas and coal, oat hulls look even more attractive, he added.

The hulls release the same carbon they absorbed from the atmosphere as plants, making the process essentially carbon neutral, and there is almost no additional carbon cost for transportation to use it.

General Mills produces 90,000 tons of oat hulls a year from its two mills in Fridley

and northeast Minneapolis, and it will use about 10 percent of that to power its Fridley plant. The hulls, which have 80 percent of the energy value of coal, could cover a football field up to 200 feet tall, or nearly 20 stories, the company estimates.

The company also sells its oat hulls to the Koda Energy plant in Shakopee, a joint venture between Rahr Malting Co. and the Shakopee Mde-wakanton Sioux Community. The plant is 100 percent biomass-powered and produces malt for brewing.

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