

[Task Force](#)[Schedule](#)[News Archives](#)[Library](#)[Links](#)[Webcasts](#)

Search this site:

[Home](#)

Nu-Energie biodiesel business set to hold grand opening

The Kingsport Times News
By Rick Wagner
Published: May 3, 2008

Where the Tennessee Valley Authority planned to turn nuclear power into electricity 30 years ago, a start-up company today turns virgin soybean oil into diesel fuel. But in the future, officials of Nu-Energie LLC predicted the operation might turn other feedstocks — including new or used animal fats, switchgrass and even algae — into biodiesel.

"We're capable of making it (biodiesel) from many products here," said Joel Day, vice president of Nu-Energie, located on the site of the Phipps Bend Nuclear Plant started in the late 1970s but aborted in the early 1980s and later converted into an industrial park owned jointly by Hawkins County and Kingsport.

President and founder Brian Hullette and Day are holding a grand opening and open house for Nu-Energie at 3 p.m. Wednesday, May 7, at the plant in the Phipps Bend Industrial Park just outside Surgoinsville, in Hawkins County about a 25-minute drive from Kingsport.

Day and Hullette said that Tennessee Commissioner of Agriculture Ken Givens, a Hawkins County native, and Commissioner of Economic and Community Development Matt Kisber are among those scheduled to be on hand. Other state officials may attend, joining officials from the U.S Department of Agriculture.

Already in bio-business

The company already has contracts to supply B100 — 100 percent biodiesel — to Eastman Chemical Co. and area fuel distributors, including Tri-Cities Petroleum of Johnson City, Rogers Petroleum of Morristown and Calloway Oil Co. of Maryville. Capacity at the plant and its first production line is 5 million gallons a year, although for now the operation is producing no more than 12,000 to 14,000 gallons a day or about two tractor-trailer loads.

Nu-Energie also is looking into a contract to supply the East Tennessee Zinc Mine in Jefferson City. Day said biodiesel, while currently more expensive than petroleum diesel, burns cleaner and will save the mine money on its particulate filters.

Nu-Energie, which has its corporate headquarters co-located with Day's accounting business in Blountville in neighboring Sullivan County, employs nine people now and will ramp up to about 15 soon, including eight people who would work 12-hour shifts on the line.

Two more lines, which would boost production potential up to 15 million gallons a year, are in the works but would be automated like the current line and require no additional employees.

However, Hullette and Day said they plan to add space for an office at the front of the building, at 914 Phipps Bend Road, and extra employees in sales.

Marketing biodiesel

For now, Hullette, Day and Plant Manager Mark Yonts are active salesmen for the company's product, and they say the price currently being higher than petroleum diesel is just part of the story.

"They're using it for other reasons than price," Day said.

For instance, he said mines can save money on having to replace particulate filters, part of a byproduct of Nu-Energie's clean-burning biodiesel that includes additives to reduce nitros oxide emissions.

Yonts said that biodiesel, even in smaller concentrations, increases the lubricity of diesel, making for better lubrication that can make engines last longer.

New requirements for ultra-low sulfur petroleum diesel — 15 parts per million or less — have reduced the lubricity provided by the sulfur, but that can be offset by adding biodiesel. The most common mixture is B20, 20 percent biodiesel, but it can range from B5 to B99 or even B100, although many users limit the higher percentages to the warmer months to minimize chances of gelling.

Yonts said New Holland has endorsed B100, while Cummins and Caterpillar have endorsed B30. He said the biggest concerns are that biodiesel acts as a solvent and can clog fuel filters with gunk from fuel lines and, in some cases, could attack rubber fuel seals.

Hullette emphasized that Nu-Energie biodiesel meets 16 federal testing requirements for diesel.

"We test every single batch we make," Hullette said.

Day said that in his 2007 GMC Sierra 2500 diesel, B20 biodiesel (20 percent biodiesel and 80 percent petroleum diesel) improves his mileage by about one or two miles per gallon.

Since retail biodiesel is sparse in the Tri-Cities now, he usually fills up when he's on the road, but with a new source for regional distributors he predicted biodiesel soon will be available locally.

The Hawkins County Farmers Cooperative in Rogersville sells on-road B10 and off-road B5 to its members, and Eastman Chemical, the cities of Kingsport and Johnson City and BAE Systems are among fleet users of biodiesel, as are UPS and the Tennessee Department of Transportation. A list of retail outlets for biodiesel is on the East Tennessee Clean Fuels Coalition Web site, www.ETCleanFuels.org.

"Biodiesel is the fastest-growing alternative fuel, period," Hullette said.

Day said one reason is studies that indicate it takes about one unit of energy to produce .9 units of energy in ethanol, while one unit of energy in biodiesel production makes 3.2 units of energy.

Research into switchgrass is ongoing that could lead to the production of both ethanol and biodiesel from the crop, which can be readily grown in Northeast Tennessee.

He said key to both biofuels is getting away from direct competition with human foods such as corn and, to a lesser extent, animal food stocks like soybeans.

"A year ago, biodiesel was a little cheaper than petroleum diesel," Day said. Petroleum prices have ballooned based on a higher demand for petroleum fuel from China, India and other countries that historically used less petroleum.

In addition, the weakening U.S. dollar makes foreign oil more expensive in America, and international tensions have made the oil market jittery.

As for biodiesel, Day said many farmers who grew soybeans switched to corn because of a shift toward ethanol fuel but that many of those same farmers are switching back to soybeans because prices of soybeans are going up.

"We don't want to end up competing with the food markets," Day said.

Federal law requires more and more biofuels and other alternative fuels to be used, starting with 1 billion gallons by 2012 and going to 36 billion gallons in 2022.

In a way, however, ethanol and biodiesel are a throwback to the early days of the internal combustion engine. The first successful diesel motors used, among other things, peanut oil, and early Model T Fords were designed to run on ethanol.

In the future, they predicted that the United States would follow Europe's lead and have more and more diesel-powered vehicles, from workhorse trucks and equipment to race cars.

Looking behind the diesel

Nu-Energie's biodiesel, a honey-colored liquid, resembles the soybean oil from which it is made. However, the raw oil has a consistency and smell similar to cooking oil, while the finished product feels like regular diesel but does not have the traditional diesel smell.

Biodiesel is biodegradable, and table salt is 10 times more dangerous for the environment, Day said.

For now, the raw product — mostly from fields in North Carolina, Virginia and Georgia but some from West Tennessee — arrives by tractor-trailer tankers, but when a railroad siding is completed, scheduled for later this year, the soybean oil can arrive by train tankers.

The Phipps Bend Joint Venture oversees the park, which soon will have a new railroad siding thanks to a \$750,000 Tennessee grant to Hawkins County. The siding will include about a half mile of rail and can serve other existing and future businesses at the park.

As for future technology, Nu-Energie is working with Oak Ridge National Laboratories on a new process to be unveiled next year, Hullette and Day said.

They said research into algae is promising since soybean yields generally run 50 to 56 gallons an acre while algae production can net 100,000 to 300,000 gallons per acre and that Shell Oil Co. has bought algae ponds in Hawaii.

The current process takes virgin soybean oil and converts it into biodiesel, with glycerin as a byproduct.

The business sells the glycerin, which is purified further and used for other things.

Since diesel prices have skyrocketed with other petroleum products, the Internet is awash with do-it-yourself kits to make biodiesel from used cooking oil, using methanol, lye and water.

Day said the process Nu-Energie uses is similar.

But instead of using methanol, lye — or sodium hydroxide — and water, Nu-Energie uses virgin methanol and methanol

recaptured during the process and sodium methyrate instead of lye for the catalyst.

And instead of using water to wash the biodiesel, Nu-Energie uses an ion exchange resin system.

The resin washes the biodiesel and is then sent to a company that rejuvenates it, eliminating the need for the system to use wastewater treatment. The system, Day said, is somewhat similar to a water softener except that the resin is reused instead of disposed of like water softener salt pellets.

Using animal-based oils would require additional cleaning. Meeting the 16 federal testing mandates means that stray glycerin and other materials must be removed from the biodiesel before it leaves the plant.

Staffing Nu-Energie

Nu-Energie is Hullette's second business in the park. The first was the adjoining Box Worx, which makes shipping crates. Hullette started that business and has operated it for five years.

Hullette, 34, and Yonts, 43, are graduates of Volunteer High School, while Day, 34, graduated from Central High School and then got a business degree with a concentration in accounting from East Tennessee State University in Johnson City.

Day originally was Hullette's accountant. After a temporary downturn in the box business caused when a customer in the park had some down time, Hullette was looking for another business opportunity when a friend half-jokingly suggested bio-fuels. After researching the matter, Hullette started the company and recruited Day, who became a stockholder.

Day said that even if the world has enough petroleum for 50 years or more, control of supplies and the ease of obtaining it is questionable. And having more U.S.-produced fuel will help the economy.

Yonts, who joined Nu-Energie in September of 2007 after serving as a plant manager and engineer for GNK Services, said that was much of the reason he went to work at Nu-Energie.

"One reason I came to work for Brian is I really believe in what we're doing," Yonts said of moving toward fuel self-sufficiency. "It's leaving a legacy for our children and our children's children."

School groups, business officials and others are welcome to tour the plant. To schedule a tour or for more information on Nu-Energie, call (423) 279-9700, (423) 345-4246 or go to www.nu-energie.com.

For original article, [click here](#).