

Ever Cat Fuels looks to be a player in an emerging biofuel industry.

## Making biodiesel more eco-friendly

Among the tractors and other farm equipment displayed on Machinery Hill at this year's Minnesota State Fair was a one-of-a-kind agricultural implement.

Inside a 40-foot shipping container covered with a nondescript company banner, Isanti, Minn.-based [Ever Cat Fuels LLC](#) displayed the prototype of its McGyan portable biodiesel processor — a high-tech array of pipes, tubing, switches, gauges, coils, tanks and other hardware. Designed for use on a farm, it can produce biodiesel from any nonfood-grade oil, such as the oil from plants, animal fats or used cooking oil.

It can also turn food-grade oil into biodiesel “if that’s what you want to grow,” said Clayton McNeff. “It will allow people to grow both energy and food on the same land.”

In 2006, SarTec Corp., the parent firm of Ever Cat, developed its patented McGyan biodiesel process (named after inventors McNeff, Arlin Gyberg and Ben Yan), which converts triglycerides and free fatty acids into biodiesel.

The farm-scale unit is a smaller version of the Ever Cat plant in Isanti that has been producing about 3 million gallons of biodiesel per year since opening in 2009, said company spokesman Dave Wendorf.

It cost about \$400,000 to design and build the farm-scale prototype, which is still in the “alpha and beta testing” phase, according to McNeff. “At this point, it’s a matter of refining the technology.” Eventually, SarTech would like to mass-produce and sell the on-farm system for about the price of a major piece of farm equipment, such as a large tractor or combine.

Once the feedstock is pumped through the plant’s reactors, it only takes about 30 seconds to turn it into biodiesel, according to the company. The device can produce about 100 gallons of biodiesel per day, in eight to 10 hours of use; running around the clock, it could produce at least twice that amount, McNeff said. “The design can be scaled-up to any size.”

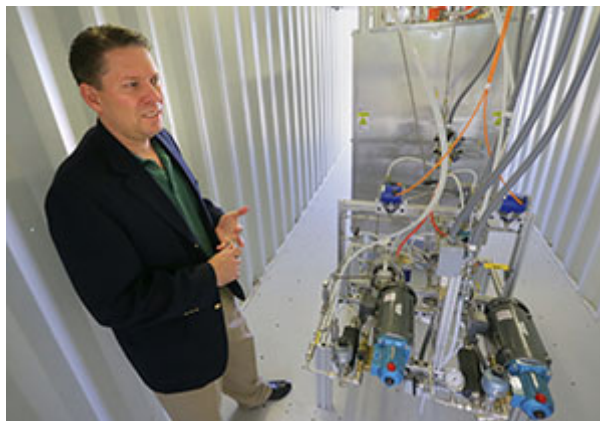
Electricity is initially used to provide heat for the process, but once refinement has begun, the biodiesel can be used to power the system. “It has a tremendous energy balance,” McNeff said.

At the fair, the biodiesel plant “got quite a bit of attention. There was a lot of interest from a variety of industries,” in addition to farmers and ag cooperatives, McNeff said.

Ever Cat’s system has inherent advantages over older methods of refining biofuel, said Dennis Timmerman, senior project-development manager at the Agricultural Utilization and Research Institute in Marshall, Minn. “It’s able to take low-quality feedstocks, animal fats and low-value greases and purify them to point where they meet ASTM (American Society for Testing and Materials) standards for fuel production. It’s very innovative,” said Timmerman, whose agency helped tested and analyzed the biofuel Ever Cat makes.

It’s also a more eco-friendly alternative to other biodiesel production methods, using less energy and water, and producing no harmful chemicals.

Meanwhile, SarTec and Ever Cat are continuing to research ways to grow non-food, weedy crops, such as camelina and pennycress, to provide oil for the process. (They have about twice the oil content of soybeans). Since 2010, Anoka-Ramsey



Clayton McNeff with his biodiesel processor in Ever Cat Fuels’ Isanti office. Designed for use on a farm, it can produce biodiesel from any non-food grade oil – such as the oil from plants, animal fats or used cooking oil. (Staff photo: Bill Klotz)

Community College has maintained a 25-acre energy crop demonstration plot at its Cambridge, Minn. campus to grow crops for biodiesel fuel.

Using a \$500,000 Department of Energy grant received in 2011, SarTec has also recruited and paid nine area farmers to grow camelina and pennycress. One of the benefits of those two crops is that they can be “double-cropped” — grown in the same field as food crops, such as soybeans, and SarTec and the college have been [researching the best methods](#) to do that, said Stephen Jones, director of continuing education and custom training at Anoka Ramsey.

To find the best varieties for Minnesota growing conditions, the experimental pennycress in the test plots has been grown using seeds originating in 10 different locations — from Iowa to Germany, Poland, Serbia and Montenegro.

Earlier this summer, once the test plot plants had reached maturity, the fields were sprayed with Roundup herbicide to kill the camelina so it would dry and then be harvested. One of the challenges for researchers was figuring out the best way to use screens to separate the chaff and other unwanted parts of the plant from the small, oil-bearing seeds.

Similar research is also being conducted at the University of Minnesota’s ag experimental station in Morris under a state grant. The practice of using food crops to make biofuels has been criticized because it can help drive up grain prices. But Ever Cat officials hope they can solve that dilemma by proving that nonedible crops can be grown for oil without interfering with food production and processing.

Currently, most of the biodiesel Ever Cat makes at its main plant is refined from used cooking oil. The firm collects oil from bakeries, restaurants, hotels and other institutional food-preparers and pays them a rate that is linked to the current price of diesel fuel.

## **Ever Cat Fuels**

**Ownership:** SarTec Corp., Anoka, Minn.

**Location:** Isanti, Minn.

**Product:** Biodiesel and biodiesel refineries

**Website:** [evercatfuels.com](http://evercatfuels.com)

**Size of facility:** Three acres of land and a 10,000 sq. ft. building

**CEO/owner:** Larry McNeff, chief manager

**Latest annual revenue:** Undisclosed

**Employees:** 30

**Projected hiring:** N/A

**What’s next:** Developing a portable biodiesel refinery